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Integrated Pest Management: a catalogue of extension and training materials

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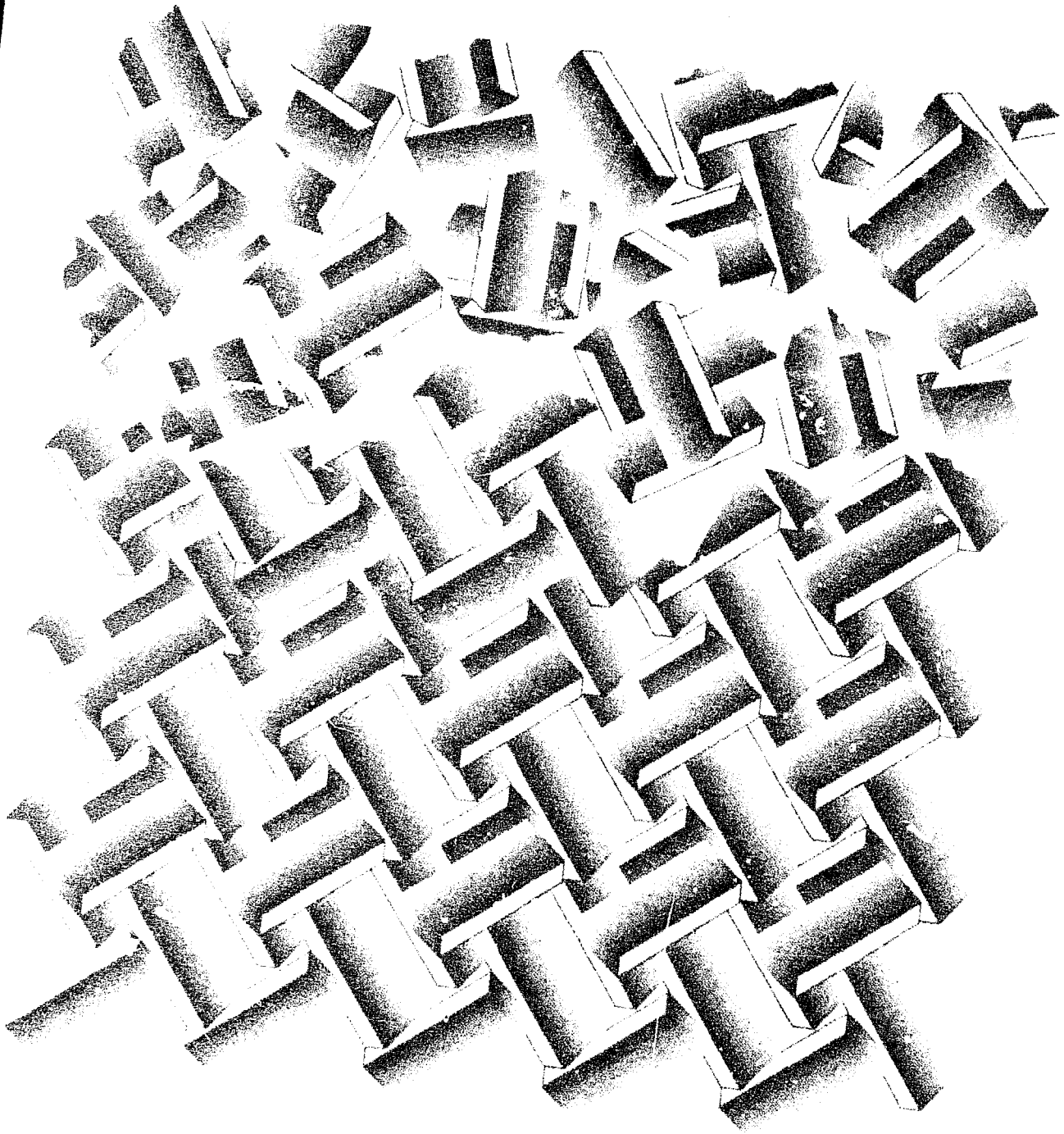
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Integrated Pest Management

A catalogue of training and extension materials

F. A. N. van Alebeek



 **CTA**
Technical Centre for Agricultural
and Rural Cooperation



Department of Entomology
Wageningen
Agricultural University

INTEGRATED PEST MANAGEMENT

A CATALOGUE OF TRAINING AND EXTENSION MATERIALS FOR PROJECTS IN TROPICAL AND SUBTROPICAL REGIONS

Errata:

page:	item no.:	changes:
216	I008	CIPA CIPA no longer exists. It has been replaced by COSAVE (Comité Técnico Regional de Sanidad Vegetal para el Area Sur) in Montevideo, Uruguay.
217	I011	CPPC The Technical Secretary is now located in Port-of-Spain, Trinidad & Tobago.
223	I039	ODNRI The address of ODNRI should be changed into: Central Avenue, Chantham Maritime, Chantham, Kent MF4 4TB, United Kingdom. (Telephone: +44 634 880088, Telex: 263907/8 LDN G).
224	I041	OIRSA OIRSA headquarters have been replaced to San Salvador, El Salvador. Other offices have been established in Panama and the Dominican Republic.
247	K003	EAP Change P.O. Box number to 191 (in stead of 225), and telephone number to (514)398 - 7771.
250	K019	VFLU The address of VFLU should be changed into: Langasse 24/H, D-6200 Wiesbaden-1, Federal Republic of Germany. (Telephone: 06121-370371)

This publication is available to:

- institutes, organizations and individuals in the ACP countries (African, Caribbean and Pacific states signatory to the Lomé Convention) from

Technical Centre for Agricultural and Rural Cooperation (CTA), P.O. Box 380, 6700 AJ Wageningen, The Netherlands

- institutes, organizations and individuals in all other developing countries from

Department of Entomology, Wageningen Agricultural University P.O. Box 8031, 6700 EH Wageningen, The Netherlands.

All further correspondence concerning this publication should be sent to the address of the Department of Entomology given above, mentioning 'IPM catalogue of training and extension materials'. Interested readers are invited to send in material or descriptions, samples, review copies, addresses, criticisms and suggestions for a second, revised edition.

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INTEGRATED PEST MANAGEMENT

**A catalogue of training and extension materials
for projects in tropical and subtropical regions**

F.A.N. van Albeek

With a foreword by D. Assoumou Mba,
Director of CTA

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Technical Centre for Agricultural and Rural Cooperation (CTA)
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Abstract

This catalogue of educational and extension materials for integrated pest management in tropical and subtropical regions contains handbooks, field manuals, pocket guides, brochures, slide sets, posters and instruction cards, films and videos, tape recordings and other materials. A directory of research and information includes newsletters and periodicals, international research institutes as well as information centres and book shops. Information is provided on the misuse and overuse of pesticides. Prepared for research institutes, plant protection services, agricultural extension organizations, agricultural colleges and university departments of plant protection and production in the tropics and subtropics, the catalogue is suitable for all groups or individuals working in tropical agriculture.

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FOREWORD

Integrated Pest Management (IPM) integrates chemical applications with cultural methods, breeding for pest-resistance, and biological control. It also aims to incorporate pest control in an economical manner by using low-cost materials.

In 1940, DDT was discovered to have insecticidal properties, and soon became widely available on a commercial basis. Used in small doses, it was capable of killing a broad range of insects and mites, and had a long-lasting residual activity. Insect pest control was revolutionized almost overnight, and a series of other new synthetic organic insecticides was rapidly discovered and made commercially available.

In general, pesticide application in the tropics was limited at that time. Farmers in the tropics grew traditional cultivars adapted to local conditions such as soil, humidity, and pests. The widespread introduction of new, high-yielding crop varieties and the large acreage of monocultures during the last two decades considerably improved living conditions for insects and other pests, but the higher yield potentials of new cultivars also put increased pesticide applications economically within the reach of farmers. Furthermore, the extensive ban on organochlorines in industrialized countries caused dumping prices for these chemicals in tropical countries.

Many undesirable side-effects were noted, including the accidental destruction of natural enemies of pests, development of pest resistance to insecticides, hazards to human health, and general ecological disruption. The relatively high prices that must be paid for these chemicals have also resulted in considerable social and economic disruption of small farming communities.

A general awareness of this situation led to the concept of IPM, defined in 1967 by the FAO panel of experts on integrated pest control as 'a pest management system that, in the context of the associated environment and the population dynamics of the pest species, utilizes all suitable techniques and methods in as compatible a manner as possible and maintains the pest population at levels below those causing economic injury'.

Over the years, much research has been done in this direction and many scientists have published their findings. Worldwide training and extension material for IPM, or related aspects, subsequently became available and it is the mission of the Technical Centre for Agricultural and Rural Cooperation (CTA) to provide the African, Caribbean and Pacific Countries with better access to this and other agricultural information.

CTA is sure that this catalogue will help create greater awareness of the IPM materials, current research and information services that already exist. In this way, it will function as a catalyst in the implementation of pest control methods that are both environmentally sound and economically feasible

A handwritten signature in black ink, consisting of stylized initials 'D' and 'A' followed by a long horizontal line.

Daniel Assoumou Mba
Director, CTA

ACKNOWLEDGEMENTS

The initiative for this study was taken by a group of non-governmental organizations (NGOs) in the Netherlands concerned with rural development and environmental strategies for the tropics, in cooperation with the Department of Entomology of the Wageningen Agricultural University. The participating NGOs were: the Pesticide Action Network Netherlands (PAN), Foundation Mondiaal Alternatief (MA), Information Centre for Low External Input Agriculture (ILEIA), and The Netherlands Centre for Development (CON).

The inventory of IPM material on which this catalogue is based was made possible by the Netherlands Ministry of Housing, Physical Planning and Environment (VROM). Publication was realized by the financial support of the Netherlands Directorate General for International Cooperation, and the Technical Centre for Agricultural and Rural Cooperation (CTA).

Many people have contributed to the information contained in the catalogue. It is impossible to mention everyone, but the assistance of those named below is gratefully acknowledged:

Ir. J.J. van der Weel provided valuable information and addresses for the inventory of materials. Ir. L. Eilenkamp, Ir. L. Faber, Ms. C. Broos and Ir. F. Meerman translated the questionnaires into Spanish and French. The staff of the Department of Entomology, especially Prof. Dr. J.C. van Lenteren and Dr. Ir. A. van Huis, supported the project with their scientific and personal guidance. Practical assistance, valuable information and suggestions, critical discussions, and moral support during production of the catalogue were provided by: Arnold van Huis, Willem Takken, Frans Meerman, Dan Papaj, David Karowe, Lucas Noldus, Gerard Pesch, Jan van de Waerdt, Huub Venne, Ronald Gerrits, Coen Reijntjes, Vera Kappers, Gerrit Hekstra, Andries Dusink, Joy Mukanyange, Jonathan Schmidt, Piet Posthuma and Cora van der Sar.

Many thanks to all those who contributed to the realization of this catalogue, particularly the many people worldwide who took the effort to complete long questionnaires and provide valuable suggestions, publication lists, addresses, and copies of useful publications.

ABBREVIATIONS

Dfl.	Dutch guilders
DM	Deutschmark (German marks)
FF	French francs
HDC	Highly Developed Countries (*)
IPM	Integrated Pest Management
£	British pounds sterling
LDC	Less Developed Countries (*)
MIP	Manejo Integrado de Plagas (Spanish equivalent of IPM)
NGO	Non-Governmental Organization
ULV	Ultra Low Volume (of pesticide applications)
US \$	United States dollars

(*) Several terms are used to refer to the 'Third World' and 'First World', that is, developing and industrialized countries. The terms HDC and LDC are used simply to refer to the different prices of publications that international research institutes such as CIMMYT, IRRI, and ICRISAT, charge for countries of destination. All other abbreviations refer to names of institutes or organizations, and are explained in the text directly or can be found in the lists of addresses (Sections H, I or K).

IMPORTANT TERMS

Pest: An animal causing damage or annoyance to man, his animals, crops or possessions, such as insects, mites, nematodes, rodents, birds. In phrases such as 'IPM' and 'pest control', the term is used in a broader sense to mean all harmful organisms including fungi, bacteria, viruses and virus-like organisms, and weeds.

IPM: Integrated Pest Management, sometimes referred to as Integrated Pest Control. The FAO definition is: 'a pest management system that, in the context of the associated environment and the population dynamics of the pest species, utilizes all suitable techniques and methods in as compatible a manner as possible and maintains the pest population at levels below those causing economic injury'. In this catalogue, the term IPM includes all elements contributing to an effective, safe, sustainable and economically sound crop protection system (see Chapter 1).

Biological control: The use of natural enemies such as predators, parasites, and pathogenic micro-organisms or antagonists to control pest populations or diseases. This can be achieved either through conservation and stimulation of indigenous natural enemies, or by the importation and mass introduction of exotic natural enemies.

Cultural control: A method of crop protection using careful timing and a combination of agronomic practices such as tillage, planting, irrigation, sanitation, mixed cropping and crop rotation, which makes the environment less favourable for the proliferation of certain pests or diseases.

Resistance: With respect to plants; all properties enabling them to fight and overcome, partially or completely, the pathogenic effects of a disease or pest attack. This also includes 'tolerance', the ability of a plant to grow and develop in spite of pest or disease attack. With respect to pests and diseases; the ability of a pest population or disease to survive the poisonous effect of a pesticide.

Extension: All methods, techniques and activities aimed at the dissemination and proliferation of agricultural information in rural communities, which make such information more easily accessible to desired target groups such as small farmers, pest control operators, and agricultural students.

Chapter 1: INTRODUCTION

The major task of tropical agriculture today should be the production of sufficient food for the quickly expanding population, and income for the farmers. The most important tropical food crops are almost exclusively grown by small farmers, and any significant increase in food production can only be achieved by this group of producers (Brader, 1982).

One of the constraints in food production is the damage caused by pests, diseases and weeds. According to the FAO, worldwide losses due to pests, diseases and weeds in the field amount to 36% of the potential yield. Losses during storage account for another 14% of the potential yield.

Despite many improvements in farming systems, techniques for pest and disease control are often not available to small farmers or are not appropriate for their circumstances. With respect to crop protection under small farming conditions in the tropics, proper control systems still have to be developed in most cases (WAU, 1987). It has become clear that, in the long term, large-scale use of non-selective chemical crop protection causes severe problems, which are more important and pronounced in developing countries (Bull, 1982).

Integrated Pest Management (IPM) is a new direction in crop protection. IPM aims to conserve and enhance naturally-occurring limiting factors, such as parasites and predators, as much as possible, in order to contain pest organisms below thresholds causing economic damage. In this approach, chemical pest control is applied selectively, and only when other methods and techniques have proven unsuccessful in keeping pest populations below acceptable levels. Use of sampling techniques and traps can be important means of assessing population densities and forecasting outbreaks.

The following elements can be used as components of an IPM system:

- biological control: natural enemies and pathogenic micro-organisms (Greathead & Waage, 1983);
- cultural control: traditional or new agricultural practices;
- host plant resistance;
- mechanical control, for example, hand picking, flooding;
- chemical crop protection: selective, based on economic thresholds whenever possible.

Although the need for sound crop protection methods and IPM systems in small farming situations is generally recognized, implementation of such systems in the tropics is advancing at a very slow rate. There are many difficulties and constraints in implementing IPM which are magnified for developing countries

(Brader, 1979; IOBC, 1981; Goodell, 1984; Matteson et al., 1984) and stem from the general poverty and low agricultural outputs of small farmers. Economic constraints and farmers' credit schemes dictate the technology which is applied. Pesticide subsidies and technological packages frequently replace extension services which are then unable to function at their full potential.

In addition, governments do not always recognize the necessity of increasing the small farmer's output and profit in order to improve food production. Consequently, plant protection and agricultural extension services frequently suffer from low governmental priority. This may be accompanied by under-developed scientific infrastructures and instability of institutions and their personnel. There are often no facilities for essential research which can modify external experiences of IPM for a particular crop to the local situation. These restraints are exacerbated by generally inadequate levels of funding.

Another of the major constraints in development of IPM systems in tropical and subtropical regions is the lack of information (WAU, 1987), especially acute at the level of national research institutes, plant protection and extension services, and all levels of agricultural education. National documentation services are poorly equipped, and specific information in IPM is difficult and costly to obtain. It is spread throughout the world in libraries and institutes, a large amount existing as 'non-conventional literature' such as national magazines, project reports, and local newsletters which are only available locally (WAU, 1987).

To ensure that crop protection methods and techniques are properly adapted to local situations, research on IPM should be carried out at a local level. IPM development depends heavily on availability of information, and requires cooperation and communication between scientists, extension workers and farmers. Extension and education play a central role in this vital communication process. It was this realization that led to the inventory of IPM training and extension materials for tropical food crops, which in turn resulted in compilation of this catalogue.

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Chapter 2: GUIDE TO THE CATALOGUE

Objectives

Improvement of crop protection methods requires well-planned campaigns with long-term strategies, and the use of training and extension material is just one element of such a campaign. It is hoped that by helping in the transfer of information and by making people aware of the importance of sharing such information, this catalogue will contribute to improvement of crop protection and the eventual increase of food production and improvement of living conditions for small farmers in the Third World.

The catalogue was written for research institutes, plant protection services, agricultural extension organizations, agricultural colleges and university departments of plant protection and production in the tropics and subtropics, although it is also suitable for other groups or individuals working in tropical agriculture.

The objectives of the catalogue are:

- to make existing information accessible for those working in the field of plant protection;
- to provide suggestions for materials useful in staff training, courses for personnel in extension and plant protection services, and agricultural education;
- to provide examples of material adaptable to local situations, used to train farmers in crop protection techniques;
- to provide addresses which may help establish international research networks and locate new sources of information;
- to provide descriptions of materials suitable for establishing a small library on crop protection;
- to prevent unnecessary repetition of crop protection research;
- to provide contacts who may assist with fund-raising for research projects.

Limitations

The catalogue is the result of a detailed inventory. Over 600 questionnaires were sent to research institutes and information centres worldwide. More than 100 respondents returned descriptions of material, publication lists and copies of material. In addition, several specialized libraries of the Wageningen Agricultural University, the Royal Tropical Institute (KIT) in Amsterdam, collections of the participating NGOs (see Acknowledgements) and private collections of IPM specialists in the Netherlands were consulted. The accuracy of the information

and the availability of the material was checked wherever possible, but cannot be guaranteed. Furthermore, the catalogue cannot claim to be exhaustive because much useful IPM information only exists locally and has not yet reached international information systems.

It is not the intention to provide a 'shopping list' of materials that could be used to instruct small-scale farmers. Each kind of material has its own characteristics and many have been developed for specific regions and circumstances which may differ substantially from those in other areas. A critical appraisal of all material in relation to the target group and the available budget is therefore advisable.

Quoted prices are intended only as a guideline, as they are subject to change. Availability of materials was based on the most recent publication lists. It was assumed that all publications before 1980 are out of print and were not included, except in the case of important handbooks. Materials with no known publishing address were also omitted.

The majority of material may be too complicated and unsuitable for large-scale use by small farmers worldwide. It should be adapted by extension workers and researchers working in the field.

Some material may not appear related to IPM in its strictest sense. The majority of publications deal with recognition of pests, diseases, and their symptoms in the field, and references to chemical crop protection are also included. However, these and related topics are all basic elements of a pest control system, and can be used as steps in integrated crop protection methods.

How to use the catalogue

The main part of this catalogue (Chapter 3) details materials used in the training and extension of crop protection techniques in the tropics and subtropics, following on with a directory of institutes and organizations which may serve as sources of IPM information (Chapter 4).

The information is organized according to the types of material or addresses, each of which is compiled in separate sections, indicated by a capital letter, as follows:

- Section A: Handbooks
- Section B: Field manuals, pocket guides, and brochures
- Section C: Slide sets
- Section D: Posters and instruction cards
- Section E: Films and videos
- Section F: Tape recordings and other materials
- Section G: Newsletters and periodicals

Section H: International research institutes

Section I: International information centres and book shops

Each catalogue item has been given a unique code in the left-hand margin of each description, made up of a character followed by a number; the character refers to the catalogue section and indicates the type of entry (see above); the number is for identification within a section. Related materials (for example, referring to a specific crop) have been kept together as much as possible within each section.

The final chapter provides information on materials and organizations dealing with pesticide misuse and overuse, and the risks and hazards associated with pesticide use. Such information is difficult to obtain in the tropics and subtropics, but is often essential to balance against the information given by pesticide industries and sales representatives. Descriptions of materials related to this topic are found in Section J, descriptions and addresses of organizations in Section K.

Each item description is given in a standardized format, as explained below:

- The first line consists of the item's code number, and the title and subtitle (in the original language of the publication).
- The next paragraph contains comprehensive information about the publication, such as name(s) of the author(s) or editor(s), or the publishing institute or organization if this is not known, year of publication, number of pages, size, number of illustrations and whether these are colour or black & white, presence of indexes or references, available language(s) of the publication, and the International Standard Book Number (ISBN) if known.
- The second block of information describes the contents of the material, ending with an indication of the target groups for the material, and the geographical region for which it is primarily intended.
- The last paragraph provides the address where the material can be obtained, any special requirements for ordering, and the price of the material. References are often made to another section, for example 'Available from IRRI (see H007).' In such cases, the ordering information also applies to other materials described in the catalogue and is detailed in descriptions of the relevant publishing organization or institute in Section H, I or K.

This format applies to all items described in Chapter 3. The details given in the first paragraph are adapted for other materials to include information such as duration of a film, number of slides, or type of video system, as well as the availability of background materials, for example, study guides, and scripts.

Five indexes are provided organized according to: item title (L); organizations and institutes (M); crop, and geographic regions within the crop category (N);

crop, and groups of pests and diseases within the crop category (O); and crop, and methods and techniques of crop protection (P). The indexes refer to the identifying code numbers. The character in the code number of each item immediately indicates the type of material.

As an example, if looking for information about crop protection in rice in Indonesia, index N (crop and region) should be selected, the reference 'rice' located and then 'Indonesia'. All materials and addresses referring to that combination are listed. The same applies for the other indexes. If interested in a certain title, it can be referred to in index L. If looking for slide sets dealing with maize, the 'maize' reference can be selected in index N, O or P, and items located which begin with 'C' in the code number.

Guidelines for the use of specified materials

Characteristics of materials in the catalogue are described below, together with suggestions about the use of specific material, organized according to the sections of Chapters 3 and 4.

Handbooks (A): Section A lists crop protection handbooks which provide general, basic introductions to the principles and philosophies of crop protection, and are therefore suitable to establish a small, basic library for plant protection officers, extension staff and field workers. Some introductory student texts are also mentioned, but no specific target groups or geographic regions are given.

The selection and description of materials differs slightly from other sections in that they are nearly all available from international commercial book shops. Several handbooks published before 1980 are also included because of their importance. It was not possible to provide details on stock and prices, or new, updated editions.

To establish a library in an institute or organization, a librarian is necessary, preferably with an agricultural background. An inventory of books already present should first be made, including those which can be shared or borrowed from related organizations, departments or institutes. A registration system then needs to be organized and existing books and those likely to be obtained in the future have to be indexed. Using the same system as related institutes or university departments will facilitate communication and exchange of information. The SATIS-Classification system is otherwise recommended as it is widely used by international development centres. The system uses a three-digit decimal system to organize topics, based on a thesaurus of 2,500 terms (see SATIS, I045). Once established, the library should subscribe to important newsletters and journals in order to provide up-to-date information. Suggestions are given in Section G.

Field manuals, pocket guides, brochures (B): This section comprises more than one-third of all materials described in the catalogue, and includes a wide variety of books and booklets suitable for plant protection and extension service personnel. Several of the field manuals and pocket guides are also suitable student reference texts for plant protection courses in specific crops, although the information should be extended with data and examples of specific local situations. The text is mostly in English, Spanish, French or Portuguese, and is often illustrated with photographs or drawings.

Plant protection and extension workers should have access to pocket guides and field manuals aimed at the crops they are working on whenever possible. Most of the material in this section deals with the recognition and identification of pests and diseases and their symptoms in the field, often accompanied by general remarks on chemical control methods. Cultural control, natural enemies and the use of resistant host plant varieties are also included in some instances.

Slide sets (C): Slides are a means of education that is becoming increasingly popular. Provided that the necessary equipment is available, they can be successfully used for group discussions and classroom lessons.

There are several advantages of using slides, the main one being that a set can be used several times over, and the information can reach a large group during one presentation. The coloured illustrations are often detailed and of good quality. Slides also provide great flexibility as a series can be rearranged according to the topic or audience. A presentation can easily be interrupted at any moment for discussion, and an earlier projection can be returned to if required.

The drawbacks are that most slide sets in this catalogue are rather expensive, and need relatively costly equipment to show, namely a projector and sometimes a tape recorder for accompanying cassettes with spoken commentary. Such equipment is sensitive and prone to defects under field conditions. Readily available spare parts and light bulbs are a necessity. Access to constant electric power (or batteries) is required, adding to the difficulty of using such material in remote rural villages.

World Neighbors (see I056) is an organization specialized in producing cheap and simple film strips for agricultural and rural development. This organization also provides relatively cheap projectors that are well suited for use in remote locations and may be used with a variety of power sources. More information can be obtained from the World Neighbors training materials catalogue. Provided there is access to a camera, films and a developing service, slide sets can also be produced locally and adapted to the specific situation to show circumstances that farmers or students recognize.

Posters and instruction cards (D): Posters are an inexpensive means of presenting information to a large group of people. They can be used as a type of advertisement by forming a permanent display in public places or classrooms, or as a teaching tool for use in group discussions or lessons. The latter is more effective than the passive advertising of information. The posters mentioned in this catalogue often illustrate information that is also available in books, field manuals or brochures, with the advantage that although one book cannot easily be used in group activities, a single poster can.

Instruction cards are miniature posters, mostly A-4 size (approximately 29.5 x 21 cm, or 12 x 8 inch), which often contain condensed information from books or brochures. Because of their size, instruction cards cannot be used in group instructions unless every student or farmer has access to a (series of) card(s). Most of those described in this catalogue are very expensive, and therefore cannot be used in great numbers. Only the larger institutes will have access to a copy of these card series, and it will be difficult to transfer this information to farmers or students. It should, however, be possible to produce simpler and cheaper cards locally, which provide nearly the same information.

Films and videos (E): The material described in Section E often seems highly desirable to Third World researchers and extension workers who believe that this high-quality material (mostly from industrialized countries) provides the best information, and forms the most advanced means of presentation. However, this is not always the case.

Films and videos share most of the advantages and disadvantages of photographic slides (see above). Additional disadvantages are that it is less easy to stop a film in the middle of a presentation for discussion, and that the information is given at a fixed speed. Films and videos cannot easily be edited (whereas slide sets can be rearranged, expanded or shortened), and they require even more expensive presentation equipment which may be more vulnerable to defects and harder to repair in rural areas than slide presentation equipment. Slide sets are in fact preferable to films and videos in many cases as they are cheaper and more readily adaptable to individual situations.

Regardless of whether slide, video or films presentations are used, they should always be combined with discussions and explanations, together with field excursions and actual materials whenever possible, as it can be difficult for those unaccustomed to projected images to associate them with real life.

Tape recordings and other materials (F): Several organizations and campaigns on crop protection use radio broadcasts as elements of their extension programmes. At first sight this is attractive, because it is a relatively cheap form of communication, requiring only a few people and relatively little organization, which can reach a large audience over vast areas (for example, populations

dispersed over several islands). Another major advantage over printed material is that the information is easily available to illiterate people, and can easily be translated into local languages. Broadcasts can also provide up-to-date, accurate information about pest or disease status and can support the coordination of area-wide control campaigns.

The disadvantages, however, are related to the advantages. The programmes are difficult to adapt to large, diverse target groups in a variety of local situations. As a result, programmes tend to be of a rather general nature. Furthermore, a large proportion of the target group must have access to a radio receiver, or a cassette recorder when tapes are used. In addition, target groups need to be made aware of the broadcasts, as well as interested in them, and should know when to listen.

Radio broadcasts and tape recordings are therefore only useful as elements of a much larger and broader campaign which uses other materials and extension methods.

The Developing Countries Farm Radio Network (DCFRN) in Canada is an organization specialized in producing and distributing simple radio broadcasts on health and agricultural and rural development. Their packages provide simple, ready-for-use techniques and methods for small scale farmers and rural communities. The tapes are free on request, and participants are invited to send in their own ideas and tapes in exchange (see I013 for more information).

Miscellaneous materials are only occasionally included in this catalogue. Materials such as micro-fiches, computer databases, calendars illustrated with pest control recommendations, and other items were encountered, but most of these proved inappropriate for general use.

International newsletters and periodicals (G): Section G provides a list of newsletters and periodicals that deal with plant protection in the tropics, or tropical agriculture in general. Newsletters are major sources of new ideas about developments, techniques and equipment. An extension service can improve its performance by locating local journals and newsletters produced by plant protection services and research institutes, from surrounding countries whenever possible. Information from such local sources is the most appropriate for regional situations and it may be possible to establish new contacts and build up a network for information exchange via these periodicals. It was not possible to make a list of regional newsletters.

Apart from these important local sources of information there are a large number of international scientific periodicals and journals. Many of these deal with fundamental research only, and are not very useful for the applied approach of extension and training organizations. An effort has been made to compile a list

of periodicals which are useful as information sources for IPM extension and education, although the reader must decide which best serve the local situation.

High subscription rates of many periodicals is a major constraint in obtaining this type of information, although a number of newsletters from international research institutes can be obtained free of charge for libraries and institutes active in related fields of work. An exchange of periodicals between organizations may also reduce the costs. Furthermore, many institutes and organizations for developmental aid have reduced rates or free subscriptions for non-profit making organizations in developing countries. There are frequently special rates and procedures available for countries that are part of international treaties (such as the Commonwealth, and the Lomé convention), and organizations may be eligible for special reductions. Foreign embassies could also be contacted for funds to subscribe to important journals. International development programmes often include, or should include, such a budget.

International research institutes (H): Section H gives an overview of the most important international institutes and several national organizations that undertake crop protection research including IPM. A brief description of the organization or institute, its objectives, the crops or topics it is working on, and some of the major publication activities are given, together with the full name and address and ordering information. Training and extension is often an integrated part of their activities, and some of these institutes provide a wealth of scientific and training publications. One of this catalogue's objectives is to help avoid duplication of often expensive research work in different geographical regions by building communication networks for the exchange of information.

In the last 30 years, a series of 13 international research institutes has been founded with the help of international organizations such as the Consultative Group on International Agricultural Research (CGIAR). The research and training programmes undertaken by these research centres seek to supply developing countries with superior varieties of essential crops and improved farming systems for higher food production. National institutes often participate in the research programmes of these international centres and may also be supported by these or other international organizations.

Information centres and international book shops (I): There are a great number of organizations whose prime objective is the dissemination of agricultural information. Section I is concerned with those that predominantly provide information about crop protection in the broadest sense. Most of these organizations are active in networking, and may be able to bring people from different regions into contact with colleagues in comparable situations. Some of the organizations may also be able to provide funds for research or extension programmes, or advise on possibilities for raising such funds elsewhere.

A list of international book sellers and distributors supplying publications in the field of agriculture is given in the second part of the section.

Gathering further information

Apart from the lack of IPM training and extension material in most developing countries, there also is a great need for updated information, exchange of ideas and coordination of work. To achieve this, scientists and extension workers must have ways of communicating with co-workers and colleagues in other regions of the world.

It is one of the objectives of this catalogue to provide information about newsletters and other periodicals together with addresses of research and information centres in order to make such communication possible, but there are a number of other steps which can also be taken.

Other colleagues may be able to provide information about materials used locally for training and extension. It may be helpful to determine which basic text books concerned with plant production and protection are used in local agricultural colleges and universities or in nearby regions, and what type of training materials are successfully used.

It may also be possible to find national or international donor-agencies willing to support an institute or organization's budget. International publishers often send free review copies of books and other publications on request, and organizations for developmental aid are sometimes eligible for reduced rates.

If several people in the same institute, organization or in related organizations make use of training and extension materials, findings should be exchanged. Where possible, joint collections of materials should ideally be shared and exchanged, or cooperative projects organized to make new material.

When training and extension material from other regions is used, the information should be compared to local practices and experiences. Attempts should be made to determine which control actions are applied by local farmers, to avoid reliance only on recommendations provided in field guides or manuals. For example, certain natural enemies may be effective in suppressing pests in one specific region and it would therefore be a drawback to upset such natural control with pesticide applications recommended for other situations. Alternatively, farmers may have developed successful cultural practices, such as ploughing at certain periods in the growing season, or burning stubble helping to lower pest or disease incidence. By being aware of the possibilities of such local practices, unavailable in manuals about other regions, their use can be shared with other farmers.

Designing new material

As mentioned earlier, material in this catalogue is often unsuitable for direct use by small-scale farmers. It should be possible, however, to make simpler and cheaper material based on catalogue examples, such as stencils and instruction cards with simple line drawings. Such materials could be inexpensively produced locally in sufficient numbers, adapted to local circumstances, needs and budget, and then used as aids in group education and field instruction.

To translate and adapt such material, it is important to work closely with local farmers. New materials should also be 'pre-tested' to guarantee that the actual needs of the farmers are met as much as possible. The following types of questions need to be answered:

- which are the highest priority problems (losses due to drought periods may be far more important than those due to pests, meaning that new investment in pest control would be of little interest)?
- which pests or diseases cause the greatest losses?
- which conditions set limitations on possible control actions (for example, absence of necessary equipment, lack of funds for new investments, availability of information and support by the extension service, complexity of new control methods and the extent to which they can easily be incorporated into existing farming systems)?
- what control options are available that are reliable and appropriate to small farmers' circumstances?

New materials can also be tested in group discussions of farmers, and careful observation may provide useful suggestions for improvement. After adaptation of the material in this way, it is probable that it will be appreciated and used by the farmers.

**Chapter 3: CATALOGUE OF IPM EDUCATIONAL AND
EXTENSION MATERIALS**

Section A: Handbooks

A001 The scientific principles of crop protection.

H. Martin & D. Woodcock, London, UK, Edward Arnold, 1983, 7th ed., 486 p., (24 x 17 cm), references, indexes, English, ISBN 0-7131-3467-4.

A detailed survey of the scientific principles underlying modern methods of crop protection. Chapters deal with plant resistance, nutritional and climatic factors, biological control, pesticides, measurement and mechanics of toxicity, and details of fungicides, natural and synthetic insecticides, herbicides and fumigants. Seed and soil treatments, traps, and the elimination of infection centres and vectors are also discussed.

Available from most bookshops, price unknown.

A002 Pest control and its ecology.

H.F. van Emden, London, UK, Edward Arnold, 1974, Studies in Biology no. 50, 60 p., (21.5 x 14 cm), 22 black & white illustr., 17 references, English, ISBN 0-7131-2472-5.

A comprehensive and easy-to-read introduction to the basic principles of pest control. Aspects of chemical pest control, causes of pest outbreaks, biological control, new methods of control with biological principles, host plant resistance, cultural, physical and legislative control, and integrated pest management strategies are discussed. Suitable for student text book.

Available from most bookshops, price unknown.

A003 Plant protection: a summary of principles, methods and products, for use in agricultural training in tropical and subtropical regions.

The Hague, The Netherlands, Ministry of Agriculture and Fisheries, 1986, 45 p., (29 x 21 cm), English.

A guide to training in crop protection providing general, basic principles and methods. Chapters deal with crop injury, prevention of injury, direct control of biotic factors, chemical control, composition of pesticides, forms of pesticide application and methods, application equipment, classification of pesticides, fungicides, insecticides and acaricides, nematocides, rodenticides, safety precautions, weeds and weed control, and the application and classification of herbicides. Suitable for plant protection staff, teachers, and extension workers in the tropics and subtropics.

Available from Netherlands Ministry of Agriculture and Fisheries, Agricultural Education Dept., P.O. Box 20401, 2500 EK The Hague, The Netherlands; or from TOOL (see J050) for Dfl. 8.00, excluding postage.

A004 Integrated pest management.

A.J. Burn, T.H. Coaker & P.C. Jepson (eds.), London, UK; New York, USA, Academic Press, 1987, 474 p., (23.5 x 15.5 cm), 50 black & white illustr., references, index, English, ISBN 0-12-145740-0.

Introduces basic aspects of IPM, such as forecasting and monitoring, cultural methods (plant and crop), biological control, chemical control methods, genetic control, and planning of IPM systems. Also gives the current state of the art of IPM in West European crops (cereals, horticultural crops, sugar beet, fruits, forests, protected crops and stored products). Although oriented on West European crops and conditions, it provides a useful introduction to general ideas and methods in IPM.

Available from most bookshops, price unknown.

A005 Introduction to integrated pest management.

M.L. Flint & R. van den Bosch, London, UK; New York, USA, Plenum Press, 1981, 240 p., (23.5 x 16 cm), 93 black & white illustr., approx 160 references, index, English, ISBN 0-306-40682-9.

An easy-to-read introduction to IPM. Following a general introduction, chapters deal with human-managed ecosystems, pests, a history of pest control, costs of pest control, philosophy of IPM, practical IPM procedures, case history in IPM, role of IPM specialists, and the future of IPM. Suitable as introductory text for students and field workers.

Available from most bookshops, price unknown.

A006 Integrated pest management.

J.L. Apple & R.F. Smith (eds.), London, UK; New York, USA, Plenum Press, 1976, 214 p., (23.5 x 16 cm), 31 black & white illustr., references, index, English, ISBN 0-306-30929-7.

Selected articles on the development of IPM systems in the USA. Introductory chapters deal with the origins of IPM concepts, economics and pest management, implementing IPM programmes, principles and philosophy of pest management, ecological perspectives, and agro-ecosystems. Examples of IPM programmes are discussed for tobacco, cotton, deciduous fruits and forests. The final chapter deals with problems and prospects for IPM. Although oriented on the USA, the handbook may be a useful introduction to other geographical regions.

Available from most bookshops, price unknown.

A007 Pest management.

G.A. Matthews, Harlow, UK, Longman Group, 1984, 231 p., (24 x 16 cm), 76 black & white illustr., approx. 480 references, appendices, index, English, ISBN 0-582-47011-0.

Covers ways of assessing crop losses, assessing pest populations (sampling and traps), methods of pest control (cultural, biological, chemical, integrated control, use of behaviour-modifying chemicals), determination of pesticide dosages, application methods and techniques, evaluation of pesticide effectiveness and effects on non-target organisms, and the concept of pest management.

Available from most bookshops, price unknown.

A008 An introduction to insect pests and their control.

P.D. Stiling, London and Basingstoke, UK, Macmillan Publishers, 1985, 97 p., (21.5 x 14 cm), 26 black & white illustr., 21 references, glossary, index, English, ISBN 0-333-39240-X.

Basic introduction to the principles of insect pest control. Chapters include the origins and types of pests, their damage, a history of pest management, insect morphology, development and classification, pest control techniques, integrated pest management, and insects as control agents for weeds and as disease vectors. A recommended basic text for students.

Available from most bookshops, price unknown.

A009 Biological control by natural enemies.

P. DeBach, London, UK, Cambridge University Press, 1974, 323 p., (23 x 15 cm), 37 black & white illustr., 175 references, index, English, ISBN 0-521-09835-1.

An introduction to biological control dealing with creation of pests due to pesticides, natural enemies of insects and weeds, ecology in biological control, early history of biological control, recent projects on biological pest control worldwide, research requirements and public action in biological control, other biological methods, and the integration of biological control with chemical control.

Available from most bookshops, price unknown.

A010 Biologische schädlingsbekämpfung: unter berücksichtigung integrierter verfahren.

J.M. Franz & A. Krieg, Berlin and Hamburg, Federal Republic of Germany, Verlag Paul Parey, 1982, 3rd rev. ed., Pareys Studentexte 12, 252 p., (23 x 15.5 cm), 46 black & white illustr., approx. 600 references, appendices, glossary, index, German, ISBN 3-489-60266-9.

Introduction to biological control and IPM. Chapters deal with population dynamics, drawbacks of chemical pest control, characteristics of natural enemies, use of vertebrates, arthropods, nematodes, and snails as natural enemies, biological control of weeds, genetic pest control, use of pathogenic micro-organisms against insect pests, use of other invertebrate pests against vertebrates, weeds, and plant diseases, biotechnology, and integrated pest management. Suitable for students, oriented towards West Germany and Europe.

Available from most bookshops, price unknown.

A012 Biological control.

R. van den Bosch & P.S. Messenger, UK, 1973, International Textbook, 180 p., (23 x 15 cm), 35 black & white illustr., approx. 140 references, glossary, index, English, ISBN 0-7002-0230-7.

Easy-to-read introduction to biological control. Chapters deal with the nature and scope of biological control, ecological basis, history and development, characteristics of entomophagous insects, introduction of natural enemies, factors limiting success, analysis of classical biological control programmes, natural control, other methods of biological pest control, and future prospects.

Available from most bookshops, price unknown.

A013 Microbial control of plant pests and diseases.

J.W. Deacon, UK, Van Nostrand Reinhold, 1983, Aspects of Microbiology no. 7, 88 p., (21.5 x 14 cm), 19 black & white illustr., 60 references, glossary, index, English, ISBN 0-442-30512-5.

Introduction to the use of micro-organisms for control of crop pests and diseases, and the underlying principles. Use of bacteria, viruses and fungi for pest control are discussed and also the use of specific microbial agents, manipulation of the microbial balance and other mechanisms for disease control. Suitable textbook for students and research workers.

Available from most bookshops, price unknown.

A014 Biological control by augmentation of natural enemies: insect and mite control with parasites and predators.

R.L. Ridgway & S.W. Vinson (eds.), New York, USA; London, UK, Plenum Press, 1977, 480 p., (25.5 x 17 cm), 40 black & white illustr., references, indexes, English, ISBN 0-306-36311-9.

The mass production and repeated release of natural enemies of insect pests are discussed, including the biological and ecological principles underlying this method, requirements for and aspects of mass rearing, examples of programmes from the USSR, China, Western Europe, and the USA, and analysis of further prospects.

Available from most bookshops, price unknown.

A015 Theory and practice of biological control.

C.B. Huffaker & P.S. Messenger (eds.), New York, USA; London, UK, Academic Press, 1976, 788 p., (24 x 16 cm), 40 black & white illustr., references, index, English, ISBN 0-12-360350-1.

Basic handbook on biological control. It is divided into sections dealing with history and ecological basis of biological control; biology and systematics; biological control in specific problem areas including tropical crops and fruits; elements of integrated control including biological control, selective pesticides, cultural control, host plant resistance, genetic control, and the integration of methods.

Available from most bookshops, price unknown.

A016 Biological control.

C.B. Huffaker (ed.), New York, USA, Plenum Press, 1974, 511 p., (23 x 15 cm), 93 black & white illustr., references, 2 indexes, English, ISBN 0-306-20008-2.

This introduction to biological pest control comprises 4 sections (20 chapters) which deal with its theory and ecological basis, outstanding recent examples, naturally occurring biological control, and biological control as a key element in IPM.

Available from most bookshops, price unknown.

A017 Biological control of pests and weeds.

M.J. Samways, London, UK, Edward Arnold Publishers, 1981, Studies in Biology no.132, 58 p., (21.5 x 14 cm), 23 black & white illustr., 42 references, index, English, ISBN 0-7131-2822-4.

This comprehensive, easy-to-read introduction to the principles of biological control discusses its objectives, advantages and disadvantages, types of target pests and natural enemies, methods of classical biological control, examples of biological control programmes, other methods for control and integrated pest management. Suitable as introductory text.

Available from most bookshops, price unknown.

A018 Economic entomology in the tropics.

K.P. Lamb, New York, USA; London, UK, Academic Press, 1974, 195 p., (23 x 16 cm), 31 black & white illustr., approx. 100 references, index, English, ISBN 0-12-434650-2.

A general introduction to economic entomology in the tropics. Subsequent chapters deal with descriptions of the insect orders, giving the most important families in each order together with examples of major pests. Several chapters deal with insect pest control, and summaries of the major insect pests of coffee, tea, cotton, cocoa, sugarcane, rice and coconuts are included.

Available from most bookshops, price unknown.

A019 Insect pest control, with special reference to African agriculture.

R. Kumar, London, UK, Edward Arnold Publishers, 1984, 298 p., (21.5 x 14 cm), 27 black & white illustr., references, 2 indexes, English, ISBN 0-7131-8083-8.

A basic textbook on insect pest control. Information is provided about insect pests, crop loss assessment and economic thresholds, forecasting and monitoring, and control methods including physical, cultural, biological, genetic and chemical control. Use of host plant resistance, formulation and application of pesticides, behaviour-modifying chemicals and aspects of pest management are discussed. Suitable for agricultural students, trainers, extension officers, and all other interested readers in Africa.

Available from most bookshops, price unknown.

A020 Pest and vector management in the tropics with particular reference to insects, ticks, mites and snails.

A. Youdeowei & M.W. Service, Harlow, UK, Longman Group, 1983, 399 p., (22 x 15 cm), 108 black & white illustr., approx. 240 references, 2 indexes, English, ISBN 0-582-46348-3.

A complete overview is given of methods and strategies for pest and vector management for developing countries in the tropics. Following introductions to pest and vector problems in the tropics, concepts of their management, and the role of insecticides in integrated pest and vector management, a large chapter deals with sampling methods and techniques. Plant pest management in selected crops (coffee, cotton, cocoa, sugar-, rice, maize, subsistence crops and stored products) are also discussed at length. A chapter on vector management deals with several important vectors of human and veterinary diseases. Attention is also focused on socio-economic considerations, training and policies of tropical pest and vector management. Suitable textbook for students and extension workers.

Available from most bookshops, price unknown.

A022 Agricultural insect pests of the tropics and their control.

Dennis S. Hill, Cambridge, UK, Cambridge University Press, 1983, 2nd ed., 746 p., (19 x 19 cm), approx. 700 black & white illustr., more than 500 references, index, list of terms, English, ISBN 0-521-24638-5.

A general introduction to insect pests in the tropics. Chapters deal with the principles of pest control, methods for pest control, pest damage, biological and chemical control. The book describes some 300 insect and mite pests and gives overviews of pest spectra in about 100 crops. Suitable for extension workers, pest control operators, agricultural students and scientists in the tropics.

Available from most bookshops, price unknown.

A023 Pests of crops in Indonesia.

L.G.E. Kalshoven & P.A. van der Laan, Jakarta, Indonesia, P.T. Ichtiar Baru-Van Hoeve, 1981, 701 p., (25 x 18 cm), 493 black & white and coloured illustr., approx. 300 references, indexes, English.

Describes the biology, life cycle, damage symptoms, important natural enemies and control of animal pests in crops in Indonesia. Pests are organized according to their taxonomical relationship (class, order, family, genus), the more important of which are described in detail. An index on host plants refers to the pests attacking each crop. Recommended for use in South-East Asia.

Available from most bookshops, price unknown.

A024 Les ravageurs des cultures vivrières et maraichères sous les tropiques.

J. Appert & J. Deuse (eds.), Paris, France, G.P. Maisonneuve & Larose, 1982, Techniques Agricoles et Productions Tropicales XXXI, 420 p., (24 x 16 cm), 76 black & white illustr. and 48 coloured photographs, 25 references, appendices, glossary, indexes, French, ISBN 2-7068-0814-4.

Begins with a general introduction to the biology, physiology and classification of insects, damage they can cause to crop plants, and their population dynamics. Identification keys are provided for pests attacking cereals, root and tuber crops, food legumes and vegetables, based on crop species and plant parts sustaining damage. Animal pest species are described, together with their distribution, host plants, biology, and damage. General control recommendations are provided. The second part of the book deals with pest management in general, different crop protection systems, and several aspects of chemical control (characteristics, nomenclature and application techniques of pesticides).

Available from most bookshops, price unknown.

A025 Las plagas invertebradas de cultivos anuales alimenticios en America Central: una guía para su reconocimiento y control.

A.B.S. King & J.L. Saunders, 1984, 182 p., (24 x 17 cm), 9 black & white and 413 coloured illustr., 192 references, index, Spanish (also available in English), ISBN 0-902500-12-0.

After a general introduction on integrated pest control, the most important insect pest species of major food crops and vegetables are identified by keys. Detailed descriptions of pests are given, including distribution, life cycle, importance, damage, biological control methods and chemical control, illustrated with high-quality photographs. General information on safe and effective pesticide use is also included. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from ODNRI (see I039) for £ 11.50, including postage, quoting order code B004S (or B004 for English version); or from CATIE (see H012).

A026 Diseases, pests and weeds in tropical crops.

J. Kranz, H. Schmutterer & W. Koch (eds.), Berlin and Hamburg, Federal Republic of Germany, Verlag Paul Parey, 1977, 666 p., (24 x 16 cm), 238 black & white illustr. and 250 coloured photographs, references, indexes, English (also available in German, French and Spanish), ISBN 3-489-68626-8.

A recommended guide to crop protection in the tropics, dealing comprehensively with all major pests, diseases and weeds. The emphasis is on symptoms, biology, ecology and control of organisms harmful to important tropical field crops. Chapters deal with diseases, pests and weeds, organizing each into taxonomical groups. Pests, weeds or diseases in specific crops can be selected via the indexes.

Available from most bookshops, price unknown.

A027 Pests and diseases of tropical crops: principles and methods of control (vol. 1).

D.S. Hill & J.M. Waller, London, UK; New York, USA, Longman Group, 1982, 190 p., (21.5 x 19.5 cm), 66 black & white illustr., references, glossary, index, English, ISBN 0-582-60614-4.

An easy-to-read introduction to the principles and methods of pest management in the tropics. Chapters deal with pests and diseases in general, economic aspects, forecasting, legislative control, host plant resistance, cultural methods, biological control, integrated control, physical methods, characteristics of pesticides, application methods and equipment, efficient and safe use of pesticides, major groups of insecticides and fungicides. Vol. 2 (Field Handbook) is in preparation.

Available from most bookshops, or from TOOL (see I050) for Dfl. 21.00, excluding postage.

A028 Epidemiology and plant disease management.

J.C. Zadoks & R.D. Schein, Oxford, UK; New York, USA, Oxford University Press, 1979, 427 p., (22.5 x 15 cm), 114 black & white illustr., approx. 240 references, glossary, 2 indexes, English, ISBN 0-19-502451-6.

A basic guide divided into 3 sections dealing with short-term phenomena (monocyclic processes of infections, and their relationship with the environment); seasonal processes (polycyclic processes in time and space, populations, crop loss assessment); and the applied aspects of epidemiology (plant disease management). Suitable as a preparatory student text book and reference work for plant pathologists.

Available from most bookshops, price unknown.

A029 Plant pathology, principles and practice.

D.G. Jones, Milton Keynes, UK; Philadelphia, USA, Open University Press, 1987, 191 p., (24 x 17 cm), 79 black & white illustr., approx. 180 references, glossary, index, English, ISBN 0-335-15157-4.

A student's introduction to plant pathology including causes of plant diseases, diagnosis, infection and colonization, physiological responses of plants, disease resistance, pathological techniques, epidemiology and disease management. The second part of the book is a compendium of 40 worldwide examples of fungal, bacterial and viral diseases.

Available from most bookshops, price unknown.

A030 The pathology of tropical food legumes: disease resistance in crop improvement.

D.J. Allen, New York, USA, Wiley & Sons, 1983, 413 p., (24 x 16 cm), 42 black & white illustr., approx. 2250 references, index, English, ISBN 0-471-10232-6.

Details diseases of tropical food legumes, and the management of these diseases. Special attention is given to the possibilities of breeding for resistant plants. Chapters deal with the diseases of groundnut, soya bean, Phaseolus bean, cowpea, pigeon pea, and chickpea.

Available from most bookshops, price unknown.

A032 A literature guide for the identification of plant pathogenic fungi.

A.Y. Rossman, M.E. Palm & L.J. Spielman, Minnesota, USA, APS Press, 1987, 252 p., approx. 2000 references, 2 indexes, English, ISBN 0-89054-80-2.

Literature references on some 600 genera of plant pathogenic fungi, to facilitate their identification. Recommended addition for library collections on the subject.

Available from APS (see I004) for US \$ 30.00, including postage.

A033 Laboratory exercises in plant pathology: an instructional kit.

A.B.A.M. Baudoin (ed.), 1988, Teacher's Manual; 196 p., (28 x 21 cm), 12 illustr., Students Exercises; loose-leaf, 213 p., (28 x 21 cm), 30 illustr., 87 exercises, ISBN 0-89054-086-1.

Includes a teacher's manual and student exercises for introductory plant pathology courses. Exercises include use and care of the light microscope, recognition and terminology of disease symptoms, isolation of fungi and bacteria, Koch's postulates, plant disease diagnosis in practice, characteristics and structures of fungi, bacterial pathogens, virus identification, study of plant-parasitic nematodes, and abiotic diseases and disorders. Suitable for undergraduate and graduate college students and

instructors in the USA, and for plant protection courses in other geographical regions.

Available from APS (see I004) for US \$ 128.00 outside the USA, including postage.

A034 Plant pathologist's pocketbook.

A. Johnston & C. Booth, Wallingford, UK, CAB International, 1983, 2nd ed., 440 p., (18 x 12 cm), black & white illustr., references, glossary, index, English, ISBN 0-85198-517-3.

Valuable coverage of all aspects of plant pathology. General introductions include information on fungal, bacterial, viral and microplasma-like diseases, nutritional disorders, air pollution, forecasting, crop loss assessment, chemical control, cultural control, biological control, quarantine, nematode pests, insect and arthropod pests, and weeds. Chapters also list plant diseases by region and country, and provide select bibliographies of aspects of plant pathology, mycological techniques, experimental design, laboratory techniques, presentation of results, and important addresses.

Available from CAB International (see I006) for £ 7.30 outside the UK and USA.

A035 Diseases of tropical food crops.

H. Maraite & J.A. Meyer (eds.), 1979, 316 p., (24 x 16 cm), 53 black & white illustr., references, English and French text.

The proceedings of an International Symposium held at UCL, Belgium in 1978. It presents some 30 papers on fungal, bacterial and viral diseases of tropical food crops, mainly root, tubers and grain legumes.

Available from Université Catholique de Louvain, Laboratoire de Phytopathologie, Place Croix du Sud 3, B-1348 Louvain-la-Neuve, Belgium, price unknown.

A036 Diseases of tropical and subtropical vegetables and other plants.

A.A. Cook, New York, USA; London, UK, Hafner Press, 1978, 381 p., (24 x 16 cm), 100 black & white illustr., references, index, English, ISBN 0-02-843080-8.

Organized according to host plant, the handbook provides descriptions of the major fungal, bacterial and viral diseases of tropical vegetables. Symptoms of diseased plants, descriptions of the causal disease seen

through a microscope, importance of the disease, and general remarks on control methods are included.

Available from most bookshops, price unknown.

A037 Diseases of tropical and subtropical field, fibre and oil plants.

A.A. Cook, New York, USA; London, UK, Macmillan Publishers, 1981, 450 p., (24 x 16 cm), 122 black & white illustr., references, index, English, ISBN 0-02-949300-5.

Organized according to host plant, the handbook provides descriptions of the major fungal, bacterial and viral diseases of field, fibre and oil plants. Symptoms of diseased plants, descriptions of the causal organism seen through a microscope, importance of the disease, and general remarks on control methods are included.

Available from most bookshops, price unknown.

A038 Dictionary of tropical American crops and their diseases.

F.L. Wellman, New York, USA; London, UK, Scarecrow Press, 1977, 495 p., (22 x 15 cm), 2 black & white illustr., 34 references, index, English, ISBN 0-8108-1071-9.

Provides an extensive list of tropical American crops, with a short description of each, and all their major fungal diseases. English, Spanish and Portuguese common names of host plants are given, together with a characterization of each disease and notes on its distribution.

Available from most bookshops, price unknown.

A039 Tropical plant diseases.

H. David Thurston, 1984, 208 p., (27.5 x 21 cm), 70 black & white illustr., references, index, English, ISBN 0-89054-063-2.

Covers 14 important tropical crop groups. A brief introduction to each specific crop or group of crops is followed by a discussion of their major diseases, and references for identification and control of pathogens. The differences between climates, soils, and farming systems are described, as well as social, political and economic factors relating to tropical crops and those grown in temperate regions. A chapter is included on international agencies concerned with tropical plant diseases.

Available from APS (see 1004) for US \$ 20.00.

A040 Multilingual compendium of plant diseases: fungi and bacteria (vol. 1); viruses and nematodes (vol. 2).

P.R. Miller & H.L. Pollard, Minnesota, USA, APS Press, 1976 (vol. 1), 1977 (vol. 2), 457 p. and 434 p. respectively, (27 x 21 cm), 325 and 229 coloured photographs respectively, references, indexes, English, Spanish, French, ISBN 0-89054-018-7 and 0-89054-020-9.

These 2 volumes provide names in 22 languages and descriptions of worldwide fungal, bacterial, viral diseases and nematode pests in 4 languages.

Available from APS (see I004) for US \$ 50.00 (vol. 2), including postage.

A042 Bacterial and fungal diseases of plants in the tropics.

G.F. Weber, Gainesville, USA, University of Florida Press, 1973, 673 p., (24 x 16 cm), 210 black & white illustr., references, indexes, English, ISBN 0-8130-0320-2.

Organized according to 96 host plants, the handbook lists fungal and bacterial diseases associated with these hosts. Detailed symptoms of the major diseases are provided, with descriptions of the causal organism and its characteristics in laboratory cultures and under a microscope.

Available from most bookshops, price unknown.

A043 Phytopathogenic bacteria: selections from 'The Prokaryotes'.

M.P. Starr (ed.), New York, USA; Berlin, Federal Republic of Germany; Tokyo, Japan, Springer-Verlag, 1983, 148 p., (25.5 x 19 cm), 10 black & white illustr., references, 2 indexes, English, ISBN 0-387-90880-3.

Selected excision from the book 'The Prokaryotes: a handbook on habitats, isolation, and identification of bacteria', (M.P. Starr et al., 1981), dealing with plant-pathogenic bacteria. It includes practical techniques, methods and directions for field and laboratory procedures, as well as descriptions of the major plant pathogenic genera of bacteria.

Available from most bookshops, price unknown.

A044 Bacteria as plant pathogens.

E. Billing, UK, Van Nostrand Reinhold, 1987, Aspects of Microbiology no. 14, 79 p., (22 x 14 cm), 12 black & white illustr., 114 references, glossary, 2 indexes, English, ISBN 0-278-00010-X.

A comprehensive introduction to plant pathogenic bacteria, host-pathogen relations, virulence factors, pathogen invasion and plant

responses, genetics, epidemiology and disease control. Suitable for undergraduate students and scientists.

Available from most bookshops, price unknown.

A045 Laboratory guide for identification of plant pathogenic bacteria.

N.W. Schaad (ed.), 1988, 2nd ed., 164 p., (28 x 21.5 cm), 30 coloured plates, English, ISBN 0-89054-078-0.

Laboratory guide providing identification schemes, frequently used and new tests, and descriptions of plant pathogenic bacteria. Suitable for researchers, students, teachers and extension personnel.

Available from APS Press (see I004) for US \$ 34.00 outside the USA, including postage.

A046 Guide to plant pathogenic bacteria.

J.F. Bradbury, Wallingford, UK, CAB International, 1986, 332 p., (24 x 19 cm), 63 references, index, English, ISBN 085198-5572.

Provides an alphabetical list of bacteria thought to be pathogenic to plants, and a host plant-pathogen index. Synonyms, references, a description of symptoms and life cycle, propagation and distribution are given under each name.

Available from CAB International (see I006), price unknown.

A047 Virology of flowering plants.

W.A. Stevens, Glasgow and London, UK, 1983, Tertiary Level Biology, 183 p., (20 x 15 cm), 84 black & white illustr., approx. 220 references, index, English, ISBN 0-216-91357-8.

A general introduction to the virology of flowering plants. Chapters deal with symptoms of plant virus infections, transmission, structure, replication, control and techniques for the study of plant viruses.

Available from most bookshops, price unknown.

A048 Virus diseases of important food crops in tropical Africa.

H.W. Rossel & G. Thottappilly, 1985, 61 p., (22 x 15 cm), English.

Information about the geographical distribution, symptoms, identification and control of the most prevalent virus diseases of some of the continent's principal staple food crops. Suitable for extension workers and agricultural students in Africa.

Available from International Institute of Tropical Agriculture (see H042) for US \$ 5.00 (HDC and LDC), excluding postage and handling; add \$ 12.00 for airmail and \$ 7.00 for surface mail.

A049 Fichier maladies a virus.

H.U. Fischer, 1980, (28 x 21 cm), approx. 100 coloured illustr., index, French.

Consists of a series of instruction cards, each dealing with a virus disease or group of diseases in field crops. A total of 56 diseases in 30 crops are described. Host plants, symptoms, distribution within Morocco, ways of transmission, importance, and possible preventive and control measures are given. Symptoms are illustrated with coloured photographs of diseased plant material. Suitable for farmers, extension workers, pest control operators and agricultural students in Morocco.

Available from Ministère de l'Agriculture et de la Reforme Agraire, Direction de la Recherche Agronomique, Phytiairie, Rabat, Morocco, price unknown.

A050 Nematodes of tropical crops.

J.E. Peachey (ed.), CAB Bureau of Helminthology, 1969, Technical Communication no. 40, 355 p., (23 x 16 cm), 68 black & white illustr., references, English (with paragraph titles in French and Spanish).

Provides general introductions to tropical nematology (sampling, identification, quarantine) and deals with nematode pests of coconut, banana, sugarcane, pineapple, citrus, coffee, tea, cocoa and rice. Nematode control, application of nematicides and soil fumigants, extension and training are also included.

Available from CAB International (see I006) for £ 15.00 overseas and US \$ 26.00 for the Americas, including postage.

A052 Identification of root-knot nematodes (*Meloidogyne* species).

S. Jepson, 1987, 265 p., black & white illustr., English, ISBN 0-85198-556-4.

A complete guide to practical identification of root-knot nematodes, including techniques for recognizing symptoms, collection and processing of material, describing and assessing morphological characters, descriptions and morphological comparisons of more than 50 species, and keys for identification. Suitable for scientists, agricultural students, plant protection officers and extension workers.

Available from CAB International (see I006), price unknown.

A053 Chemical control of plant nematodes.

J.E. Peachy & M.R. Chapman, 1966-1969, 4 supplements, (24 x 18 cm), English.

No additional information available.

Available from CAB International (see I006) for £ 9.00 overseas and US \$ 14.75 for the Americas, including postage.

A054 CIH descriptions of plant parasitic nematodes.

CAB Institute of Parasitology, 1972-1985, 8 sets of loose-leaf folders, (30 x 21 cm), English.

Series describing over 100 plant-parasitic nematodes of economic importance, each set containing 15 descriptions. Information is provided on aspects of their biology, life history, and control. Suitable for researchers, plant protection officers and extension workers.

Available through CAB International (see I006) for £ 9.45 per set overseas, or £ 55.00 for complete set, and US \$ 16.50 or US \$ 95.00 for the Americas, including postage.

A055 Pest slugs and snails: biology and control.

Dora Godan, Berlin, Federal Republic of Germany, Springer-Verlag, 1983, 445 p., (24.5 x 17 cm), 125 black & white and 47 coloured illustr., approx. 1600 references, bibliography, index, English (also available in German), ISBN 3-540-11894-2.

A worldwide overview of molluscs as pests or vectors is presented, with chapters on biology, damage caused by molluscs, and control methods (chemical, mechanical, and biological control). Suitable for agricultural students and scientists.

Available from most bookshops, price unknown.

A056 Weed science in the tropics: principles and practices.

I.O. Akobundu, Chichester, UK, John Wiley, 1987, 470 p., glossary, English.

Provides concepts, principles and practices of weed science in the tropics, and contains detailed information on weed control.

Available from most bookshops, price unknown.

A057 Important weeds of the tropics and subtropics.

E. Sauerborn & J. Sauerborn, Universitat Hohenheim, Federal Republic of Germany, Institut für Pflanzenproduktion in den Tropen und Subtropen, 1988, 264 p., approx. 150 black & white illustr., English, ISBN 3-924333-55-6.

Describes some 300 species of weeds, including details about their distribution, habitat, morphology, synonyms and local names.

Available from Jozef Margraff Verlag (see I079) for approx. US \$ 25.00.

A058 The biology of weeds.

T.A. Hill, London, UK, Edward Arnold, 1977, Studies in Biology no. 79, 64 p., (22 x 14 cm), black & white illustr., references, English, ISBN 0-7131-2637-X.

A comprehensive and easy-to-read introduction to weeds and their biology. Suitable for student textbook.

Available from most bookshops, price unknown.

A059 Le désherbage des cultures sous les tropiques.

J. Deuse & E.M. Lavabre, Paris, France, G. P. Maisonneuve et Larose, 1979, Techniques Agricoles et Productions Tropicales XXVIII, 312 p., (24 x 16 cm), 40 black & white illustr. and 50 coloured photographs, 90 references, glossary, appendices, index, French, ISBN 2-7068-0756-3.

Deals with weed control in the tropics, including an introduction to weeds in general, weed control (mechanical, cultural, biological and chemical), use of herbicides, herbicide application equipment, and weed control in specific crops (rice, maize, sorghum, millet, other cereals, root and tuber crops, peanuts, soya beans, fibre crops, legumes, tobacco, and several fruit plantation crops). Special attention is given to those groups of weeds that are difficult to control.

Available from most bookshops, price unknown.

A060 The world's worst weeds: distribution and biology.

L.G. Holm et al., 1977, 609 p., (28 x 22 cm), 220 black & white illustr., approx. 1150 references, glossary, 2 indexes, English, ISBN 0-8248-0295-0.

Useful basic handbook which compiles information about the 20 most destructive weeds of the world, and another 56 major weed species. Methods of propagation, life history, and world distribution per crop is given for each species, illustrated with line drawings and maps. Sixteen of

the world's most important crops are also discussed in terms of major weeds known to infest them.

Available from EWC (see I019) for US \$ 35.00, excluding postage.

A062 Fundamentals of pesticides: a self-instruction guide.

G.W. Ware, Fresno, USA, Thompson Publications, 1986, 2nd rev. ed., 274 p., (23 x 15 cm), 36 references, glossary, index, English, ISBN 0-913702-35-8.

A self-instruction guide including a general introduction to pesticide chemistry and formulation, and detailed discussions of the chemical groups of insecticides such as herbicides, fungicides, bactericides, nematocides, rodenticides, plant growth regulators, and defoliants. The guide is comprised of 15 units, each concluding with progress checks in the form of questions. Although oriented on situations in North America, it is also useful for other geographical regions.

Available from most bookshops, price unknown.

A063 The pesticide manual: a world compendium.

C.R. Worthing & S.B. Walker (eds.), Thornton Heath, UK, British Crop Protection Council, 1987, 8th ed., 1081 p., (24 x 18 cm) 39 references, 5 indexes, appendices, English, ISBN 0-948404-01-9.

A comprehensive worldwide reference guide to some 550 pesticides and their characteristics. Each pesticide is listed under its common name, giving chemical structure, nomenclature, physical and chemical properties, principal uses, toxicological data, formulations and analysis methods.

Available from most bookshops, price unknown.

A064 Tropical pest management pesticide index.

Tropical Development Research Institute, 1984, 194 p., (21 x 14 cm), 26 references, English, ISBN 0-85135-128-X.

A supplement to the journal 'Tropical pest management,' intended as a quick reference list for pesticides. Trade names, common names, principal use, and major manufacturers of pesticides currently used in the tropics and subtropics are provided. References indicate further toxicological information.

Available from ODNRI (see I039) for £ 6.00, quoting order code MSC24.

A065 The agrochemicals handbook.

D. Harley & H. Kidd, 1987, 2nd rev. ed., (5 updates to be published 1988-1990), 1300 p., 29 references, index, English, ISBN 0-85186-416-3.

Contains comprehensive data and information on a wide variety of active components of agricultural chemical products used in crop protection and pest control.

Available from Royal Society of Chemistry, Book Sales Dept.
Distribution Centre, Blackhorse Rd., Letchworth, Herts SG6 1HN, UK,
for £ 194.00 outside UK.

A066 Chemicals for crop improvement and pest management.

M.B. Green, G.S. Hartley & T.F. West, New York, USA; Oxford, UK,
Pergamon Press, 1987, 3rd ed., 370 p., (23 x 14.5 cm), approx. 150
references, 2 indexes, glossary, English, ISBN 0-08-030249-1.

Provides a general introduction to pesticides, including their use in agriculture, and the industrial and economic aspects of pesticide production. Groups of pesticides are discussed, as well as their formulation and application, pest resistance, and safety of pesticides.

Available from most bookshops, price unknown.

A067 Pesticide application: principles and practice.

P.T. Haskell (ed.), Oxford, UK, Clarendon Press and Oxford University Press, 1985, 494 p., (24 x 16 cm), 65 black & white illustr., references, index, English, ISBN 0-19-854542-8.

A detailed discussion of all aspects of pesticide application, both theoretical and practical. Chapters deal with chemistry and formulation, meteorology, biological considerations, ground and air applications, field experimentation, economics and environmental aspects, safe use of pesticides, pest and disease control in field and plantation crops, forests, control of vectors and migrant pests, and control of vertebrates, molluscs, plant nematodes, plant diseases and weeds. Suitable for students and research workers.

Available from most bookshops, price unknown.

A068 Pesticide application methods.

G.A. Matthews, London, UK, Longman Group, 1979, 334 p.,
(24 x 16 cm), approx. 200 black & white illustr., approx. 450 references,
index, English, ISBN 0-582-46054-9.

Practical and technical information on pesticide application, illustrated with numerous photographs and drawings. Following an introduction on chemical control, chapters deal with formulations, droplets, nozzles, hand-operated sprayers, power-operated hydraulic sprayers, air-carrier sprayers, controlled droplet application, fogging, dust application, aerial application, injection and fumigation, maintenance of equipment, safety precautions, and the selection of equipment. Suitable for field workers and pest control operators.

Available from most bookshops, price unknown.

A069 Manual on surveillance and early-warning techniques for plant-pest and diseases.

J. Schafer, 1982, 228 p., (22 x 20 cm), English.

Presents standardized procedures for use in an efficient plant protection service, in the form of guidelines for a surveillance and early-warning system. The coding system for reporting is described, followed by detailed descriptions of all pests (insects, weeds, rodents, birds, nematodes) and diseases encountered, and advice for their control. Suitable for extension workers and pest control operators.

Available from GTZ (see I024), price unknown.

A070 Crop loss assessment and pest management.

Paul S. Teng, 1987, 270 p., (27.5 x 21 cm), 40 black & white illustr., English.

Addresses the 'problem-definition' aspect of pest management by collating methods known as crop loss assessment, which differ from the 'problem-solving' concept of IPM. Crop loss assessment consists of knowledge and instruments for identification and practice of pest management, both of which are fundamental to sound protection. Suitable for pest control operators, agricultural students and scientists in developing countries.

Available from APS Press (see I004) for US \$ 35.00

A072 Crop loss assessment methods.

L. Chiarappa (ed.), Rome, Italy, FAO, 1971, 3 supplements; 1973, 1977 and 1981, 267 loose-leaf p., (26 x 21 cm), black & white illustr., references, glossary in supplement 3, English, ISBN for supplement 3: 0-85198-487-8.

Manual on the evaluation and prevention of losses by pests, diseases and weeds. After a general introduction, measurement of crop losses is described including planning and performance of field experiments,

sampling surveys, techniques and apparatus, and examples of loss evaluation methods based on experiments described in the literature. The latter accounts for one third of the manual.

Complete set available from FAO (see I020); or CAB International (see I006) for £ 27.95 outside UK and USA.

A073 Wörterbuch der landwirtschaft (dictionary of agriculture).

G. Haensch & G. Haberkamp, Munich, Federal Republic of Germany, Verlagsunion Agrar/B.L.V. Verlagsgesellschaft mbH, 1987, 5th rev. ed., 1264 p., (23 x 15 cm), multilingual, with indexes in German, English, French, Spanish, Italian, Russian and Latin, ISBN 3-405-12810-2.

Dictionary providing translations of more than 11,000 agricultural terms in 6 languages. Sections on plant protection, plant diseases, pests and weeds include 964 terms.

Available from most bookshops, price unknown.

A074 Spanish-English-Spanish lexicon of entomological and related terms.

M. Greiff, Wallingford, UK, CAB International, 1985, 250 p., (24.5 x 18 cm), 33 references, 2 indexes, Spanish, English, ISBN 0-85198-5602.

A bilingual dictionary providing entomological terms with their Spanish and English translation, and lists of arthropods indexed on scientific names and Spanish common names. Suitable for American plant protection workers in the tropics.

Available from CAB International (see I006) for £ 18.00 outside UK and USA.

A075 Entomology: a guide to information sources.

P. Gilbert & C.J. Hamilton, London, UK, Mansell Publishing, 1983, 237 p., (24 x 16 cm), references, index, English, ISBN 0-7201-1680-5.

A comprehensive guide to facilitate systematic searching for information on aspects of entomology. References on selected topics are provided (including history of entomology, and naming and identification of insects), addresses for specimens and collections, lists of journals, books and review articles on specific topics, guidelines for searching and locating literature, and addresses of entomological organizations. Suitable for entomological research workers.

Available from most bookshops, price unknown.

A076 Animal identification: a reference guide; insects (vol. 3).

D. Hollis, New York, USA, John Wiley, 1980, 160 p., (25 x 16 cm),
approx. 4500 references, index, English, ISBN 0-481-27767-3.

A compilation of references to the principal publications aiding identification of insect species. References are organized by order, within which are separate sections on biogeographical regions, superfamily and family headings. All group names are indexed. Suitable for scientists and taxonomical specialists in plant protection service with access to a major scientific library.

Available from most bookshops, price unknown.

Section B: Field manuals, pocket guides, and brochures

B001 Helpful insects, spiders and pathogens: friends of the rice farmer.

B.M. Shepard, A.T. Barrion & J.A. Litsinger, 1987, 136 p., (17 x 10 cm), 166 coloured and black & white illustr., index, English, ISBN 971-104-162-6.

Easy-to-read pocket guide giving short descriptions of 25 predators, 40 parasites and 7 diseases which attack insect pests in rice, including their life cycle and the species they attack. It is a useful supplement to the IRRI-guide, 'Field problems of tropical rice' (see B010). Coloured photographs aid identification of beneficial species, thereby helping prevent unnecessary chemical treatments. Suitable for farmers, pest control operators and agricultural students in Tropical Asia.

Available from IRRI (see H048) for US \$ 4.30 (HDC) and US \$ 1.30 (LDC); add \$ 3.00 for airmail or \$ 1.00 for surface mail.

B002 Illustrated guide to integrated pest management in rice in Tropical Asia.

W.H. Reissig et al., 1986, 411 p., (28 x 215 cm), over 1000 black & white illustr., list of terms, English, ISBN 971-104-120-0.

Systematically covers all aspects of pest management in rice, explaining each topic step-by-step with line drawings. Chapters deal with the rice plant, about 40 species of insect pest, 16 kinds of diseases, 15 weed species, rats, cultural control, resistant varieties, biological control, pesticides, integration of control methods, and the implementation of IPM strategies. Suitable for farmers, extension workers, pest control operators and agricultural students in Tropical Asia.

Available from IRRI (see H048) for US \$ 16.25 (HDC) or US \$ 6.50 (LDC); add \$ 20.00 for airmail or \$ 2.25 for surface mail.

B003 The principal insect pests of rice in West Africa and their control.

J. Brenière, 1983, 2nd ed., 87 p., (20.5 x 14.5 cm). 61 coloured and black & white illustr., English (also available in French).

Provides identification keys based on damage to rice crops, eggs, and caterpillars. Descriptions are given of some 30 insect pests, their distribution, biology and damage, natural enemies, cultural and chemical control. Suitable for extension workers, pest control operators and agricultural students in West Africa.

Available from WARDA (see H075), price unknown.

B004 Main rice diseases in West Africa.

J.L. Notteghem & P. Baudin, 1981, 33 p., (21 x 14.5 cm), 23 coloured illustr., 13 references, English.

Describes some 15 fungal, bacterial and viral diseases in West African rice, their importance, causes, and control methods (resistant varieties, cultural measures, chemical control). Symptoms are shown in coloured photographs. Suitable for extension workers, pest control operators and agricultural students in West Africa.

Available from WARDA (see H075), price unknown.

B005 The leaf and plant hoppers of rice.

B.C. Misra, 1980, 182 p., (23 x 15 cm), 24 black & white and 33 coloured illustr., 35 references, English.

Revision of a thesis on Indian leaf and plant hoppers of rice, giving identification keys to the families and 8 major pest species. Each species is described extensively, with data on biology and life cycle, symptoms of attack, and seasonal history. Cultural, chemical and biological control measures are also included. Suitable for extension workers, pest control operators, agricultural students and scientists in India.

Available from Sri S.C. Mohapatra, Entomology Dept., Central Rice Research Institute, Cuttack 753006, India, price unknown.

B006 Manual de los principales insectos plaga del arroz en Piura.

Julio Villareal Palacios, 1985, 55 p., (21 x 15 cm), 16 black & white illustr., 38 references, Spanish.

Brochure describing 15 important insect pests of rice, their damage, and life cycle. Sampling methods and procedures are explained, and control thresholds are provided for each group of pests, together with notes on cultural practices, biological and chemical control methods. Suitable for farmers, and extension workers in Peru.

Available from CIPCA (Centro de Investigacion y Promocion del Campesinado), Av. Independencia s/n - Castilla, Piura, Apdo 305, Peru, price unknown.

B007 Le riz pluvial.

M. Jacquo & B. Courtois, 1983, Le Technicien d'Agriculture Tropical no.1, 134 p., (17 x 12 cm), 52 black & white illustr., 9 references, list of terms, French, ISBN2-7068-0841-1.

An introduction to all major aspects of upland rice growing. Descriptions of the major pests, diseases and weeds are included, with comments on cultural and chemical control methods. Suitable for farmers, extension workers and agricultural students in Africa.

Available from Agence de Coopération Culturelle et Technique, 13, quai André-Citroen, 75015 Paris, France, for FF 38.00, excluding postage.

B008 Integrated pest management: rice (pocket reference manual).

Philippine-German Crop Protection Programme, 1986, 136 p., (18 x 10 cm), 88 coloured illustr., 2 references, English, ISBN 971-91057-0-4.

A comprehensive introduction to IPM in rice in the Philippines. It is divided into 3 sections dealing with; principles of IPM; damage characteristics, life cycle, yield losses and pest management recommendations (cultural methods, biological control, chemical control, field sampling for economic threshold levels, resistant varieties) for 13 insect pests, 10 diseases, weeds and rats; and a more detailed description of IPM prevention and control measures in rice with photographs of 16 beneficial insects. Growth stages of rice, detailed chemical control recommendations, economic threshold levels and resistant rice varieties are also included. Suitable for farmers, and extension workers in the Philippines.

Available from Philippine-German Crop Protection Programme, Bureau of Plant Industry, Ministry of Agriculture and Food, San Andres, Malate, Manila, Philippines, price unknown.

B009 Weeding of paddies in West Africa and catalogue of the main weeds.

IRAT Crops Protection Division, 1978, 96 p., (21 x 15 cm), English (also available in French).

A synopsis of notes for rice growers, providing important data on proper herbicide treatment and descriptions of weeds noxious to rice in West Africa. Suitable for farmers, and extension workers in West Africa.

Available from WARDA (see H075), price unknown.

B010 Field problems of tropical rice.

IRRI, 1983 (rev. ed.), 172 p., (18 x 10 cm), 160 coloured illustr., index, English, ISBN 971-104-080-8. Also available in: French, ISBN 971-104-087-5; Spanish, ISBN 971-104-086-7; Vietnamese, ISBN 971-104-085-9; Cebuano, ISBN 971-104-088-3; Filipino, ISBN 971-104-084-0; Warai, ISBN 971-104-089-1; Pampango, ISBN 971-1040127-8; Ilokano, ISBN 971-104-129-4; Bengali, no ISBN;

Punjabi, ISBN 971-104-136-7; Hiligaynon, ISBN 971-104-134-0; Bikol, ISBN 971-104-128-6; Nepali, ISBN 971-104-156-1; Tamil, ISBN 971-104-153-7; Thai, ISBN 974-07-5425-2.

Colour plates help rice workers identify common production problems such as insects, diseases, weeds and problem soils. As well as focusing on problems in Asia, this revision also identifies common problems of Africa and Latin America. The publication is designed to facilitate low-cost translation and joint-publication by agricultural programmes, international agencies, and publishers in developing nations. Suitable for farmers, and extension workers in the tropics.

Available from IRRI (see H048) for US \$ 5.00 (HDC) or US \$ 2.00 (LDC); add \$ 4.00 for airmail or \$ 1.00 for surface mail.

B012 Major weeds of rice in South and South-East Asia.

K. Moody, 1981, 86 p., (18 x 11 cm), coloured illustr., list of terms, English and Urdu text, ISBN 971-104-025-5.

Includes colour plates and descriptions of the most widespread weeds in rice in South and South-East Asia, based on available literature and a survey of weed scientists. Weed species are listed alphabetically by family, and by scientific name within each family. A minimum of botanical terms is used. Suitable for extension workers and agricultural students in Asia.

Available from IRRI (see H048) for US \$ 5.50 (HDC) or US \$ 2.20 (LDC); add \$ 4.00 for airmail or \$ 1.00 for surface mail.

B013 Manual for testing insecticides on rice.

E.A. Heinrichs et al., 1981, 131 p., (23 x 18 cm), coloured illustr., English, ISBN 971-104-024-7.

Describes methods regularly used by the IRRI to evaluate pesticides, most previously unpublished. Insecticides play a major role in rice pest management, and their evaluation is promoted to encourage safer and more effective use of chemicals by farmers in an integrated approach to insect management. Suitable for extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 13.75 (HDC) or US \$ 5.50 (LDC); add \$ 10.00 for airmail or \$ 1.25 for surface mail.

B014 A farmer's primer on growing rice.

B.S. Vergara, 1979, 221 p., (23 x 15 cm), approx. 200 black and white illustr., English, ISBN 971-104-051-4. Also available in: French, ISBN 971-104-090-5US; Hiligaynon, ISBN 971-104-091-3; Ilokano, ISBN 971-104-092-1; Philipino, ISBN 971-104-093-X; Cebuano, ISBN 971-104-118-9; Pampango, ISBN 971-104-094-8; Warai, ISBN 971-104-154-5; Spanish, ISBN 971-104-125-1; Bikol, ISBN 971-104-132-4; Kiswahili, ISBN 971-104-135-9; Creole, ISBN 971-104-142-1; Northern Warai, ISBN 971-104-154-5; Maguidanao, ISBN 971-104-155-3; Pangasinan. ISBN 971-104-152-9.

Written to help rice farmers and technicians understand how improved rice varieties and farm technology increase production. Agricultural practices are explained, including why seeds are incubated and fertilizer is applied, and how and when fertilizer should be incorporated. Suitable for farmers, extension workers and agricultural students.

Available from IRRI (see H048) for US \$ 6.00 (HDC) or US \$ 2.40 (LDC); add \$ 11.00 for airmail or \$ 1.25 for surface mail.

B015 Pest control in rice.

Centre for Overseas Pest Research, 1986, 2nd ed., PANS Manual no.3, 295 p., (21 x 15 cm), black & white illustr., references, check lists, index, English.

A complete description of weeds, diseases and pests of rice (including nematodes, molluscs, crustacea, birds, rodents, insects, mites, and storage pests). Distribution, symptoms, life cycles, propagation or transmission and control methods (mainly cultural and chemical control) are given. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 3.00, including postage and handling.

B016 Integrated pest management for rice.

University of California, 1983, 94 p., (28 x 21 cm), 150 coloured and 34 black & white illustr., 18 references, list of terms, English, ISBN 0-931876-61-3.

Deals with all stages of rice cultivation in the USA and the management of weeds, invertebrate pests, diseases, abiotic disorders and vertebrate pests. Over 50 diseases and pests are described. Identification, monitoring, control action guidelines, prevention (including natural control), cultural methods and chemical control are also included. Growth stages, sampling methods and sampling information sheets are given. Suitable for farmers,

extension workers, pest control operators and agricultural students in California, USA.

Available from ANR Publications (see I003) for US \$ 17.00.

B019 Field problems of rice in Latin America.

R.L. Cheaney & P.R. Jennings, 1975, 91 p., (16 x 12 cm), 147 coloured illustr., English (also available in Spanish).

Pocket guide for identification of problems in rice. It includes the most important pests and diseases, and problems caused by nutritional deficiencies and toxicities. Suitable for farmers, extension workers, pest control operators and agricultural students in Latin America.

Available from CIAT (see H019), price unknown.

B020 Manual penyakit merah virus.

C.Y. Moi et al., 1985, 28 p., (19 x 26 cm), 9 coloured and 34 black & white illustr., Malay.

An illustrated field guide describing tungro symptoms, the vector involved (green leaf hoppers), and various techniques used in detecting tungro (iodine-starch test, latex flocculation test, mobile nursery, transmission test and viruliferous insect testing). Suitable for extension workers and pest control operators in Malaysia.

Available from Dept. of Agriculture, Wisma Tani, Jalan Mahameru, Kuala Lumpur 01-02, W. Malaysia, free of charge.

B022 Tungro disease of rice and its control.

S. Mukhopadhyay, 1983, 19 p., (20.5 x 13.5 cm), black & white illustr., Bengali.

Brochure dealing with tungro virus and its main vector, the green leaf hopper of rice. Typical symptoms and methods for identifying the disease are given. Several aspects of the virus-vector-plant relationship are described, and cultural practices, resistant varieties and integrated control practices are included. Suitable for farmers, extension workers, pest control operators and agricultural students in West Bengal, India.

Available from Communication Centre, Brothan Chandra P.O. Krishi Visna Vidyalaya 741246, West Bengal, India, for Rp 0.50.

B023 Guide on IPM for rice.

IPM Technical Team, 24 p., (23 x 17.5 cm), 20 black & white and coloured illustr., Cebuano.

Brochure on IPM in rice describing some 10 major insect pests of rice, and 10 diseases (fungal, bacterial and viral). Several control methods are discussed, such as host plant resistance, cultural practices, fertilizer and water management, and the use of natural enemies. Suitable for farmers and extension workers in Central Visayas, Philippines.

Available from Central Visayas Technopack project, c/o CIRRD, Research Management Centre, DA-7 Compound, M. Velis St., Cebu City, Philippines. Free of charge for farmers and extension workers, otherwise PF 50.00; add PF 15.00 for postage.

B024 Manejo integrado de plagas: libro de evaluacion y decision.

CIAT, 1987, 34 p., (28 x 22 cm), 12 black & white illustr., Spanish.

Field manual on IPM in rice divided into 2 parts: evaluation and assessment of pest levels and damage, including blank forms for the results of sampling procedures which change with each growth stage of rice plants; and decisions for crop protection measures once pest levels have been assessed, including tables for each growth stage to provide decision levels for pest densities requiring control action. The second section also lists major pest species, their natural enemies, chemical and non-chemical control measures, insecticides with information on toxicology and characteristics, and the side effects of pesticides on beneficial insects. Suitable for pest control operators and extension workers in tropical America who have been instructed on the manual's use.

Available from CIAT (see H019), free of charge for Latin American research and extension workers.

B025 Integrated rice pest management training course: a manual of performance objectives.

G.B. Aquino, D.R. Minnick & E.A. Heinrichs (eds.), 1985, 372 p., (27.5 x 21.5 cm), 15 coloured illustr., English.

A training manual of the IRRI's course on IPM in rice, containing course objectives and an overview of the training process. The objectives of each course element are listed, including the most important information trainees should have assimilated. Although intended as a teacher and

trainee guide for this particular course, the manual is a framework for all aspects of IPM in rice.

Available from the IRRI (see H048), price unknown.

B027 Rice diseases.

S.H. Ou, 1985, 2nd ed., 391 p., (25 x 19 cm), 108 black & white illustr. and 8 coloured plates, references, English, ISBN 0-85198-545-9.

An up-to-date review of available information concerning rice diseases caused by fungi, bacteria, viruses, mycoplasma-like organisms, nematodes, and non-parasitic factors. Suitable for research workers and agricultural students.

Available from CAB International (see I006) for £ 41.80 overseas or US \$ 70.00 for the Americas, including postage.

B028 Pests of rice and their natural enemies in Peninsular Malaysia.

G. van Vreden & A.L. Ahmadzabidi (eds.), 1986, 230 p., (24.5 x 17 cm), 336 black & white illustr. and coloured photographs, approx. 180 references, glossary, 2 indexes, English, ISBN 90-220-0890-8.

Provides a general introduction to rice cultivation in Peninsular Malaysia, the insect fauna of rice fields, crop losses, ecology of natural systems and agro-ecosystems, and pest outbreaks. Following chapters describe crop protection methods, rice pests, storage insects, predators, parasites and pathogens of rice pests, and other insects in the rice ecosystem. The occurrence, recognition, biology, and economic importance of each organism is given. Suitable for plant protection officers, pest control operators, agricultural students and extension workers in Malaysia and nearby regions.

Available from PUDOC Sales Dept., P.O. Box 4, Wageningen, The Netherlands, for Dfl. 50.00 or US \$ 20.00.

B029 Panduan bergambar bagi penyakit-penyakit bakteria pada padi.

Jabatan Pertanian, 1986, Risalah Pertanian Bilangan 9a, 34 p., (21 x 15 cm), 30 black & white and coloured illustr., Bahasa Malay.

Guide to bacterial diseases of rice including the 2 major diseases, bacterial leaf blight (*Xanthomonas oryzae*) and bacterial leaf streak (*X. translucens* f. sp. *oryzicola*). Symptoms are shown in coloured photographs, distribution maps are given and the life cycle is illustrated. Factors affecting disease intensity, alternative weed hosts, weeds and control measures (resistant varieties, destruction of weeds, the use of healthy seed,

appropriate cultivation practices and field hygiene) are mentioned. Suitable for farmers, pest control operators and extension workers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

B030 Panduan bergambar bagi penyakit-penyakit kulat pada padi.

C. Yew Moi & N. Ibrahim, 1986, Risalah Pertanian Bilangan 9c, 86 p., (21 x 15 cm), 89 black & white and coloured illustr., Bahasa Malay.

Guide to the fungal diseases of rice in Malaysia, including rice blast (*Pyricularia oryzae*), sheath blight (*Rhizoctonia solani*, or *Corticium sasakii*), brown spot (*Drechslera oryzae*), false smut (*Ustilaginoidea virens*), ear blighting (*Cercospora oryzae*), and bakanae disease or foot rot (*Gibberella fujikuroi*). The distribution, symptoms, causal organism, life cycle, factors stimulating disease severity, alternative host plants (weeds), and control methods (including resistant varieties, chemical control, cultural practices) of each disease are described (see B029 and B032). Suitable for farmers, pest control operators and extension workers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

B032 Panduan bergambar bagi penyakit-penyakit virus pada padi.

Jabatan Pertanian, 1987, Risalah Pertanian Bilangan 9d, 78 p., (22 x 15 cm), 78 black & white and coloured illustr., Bahasa Malay.

Guide to the viral diseases of rice in Malaysia, including tungro virus, grassy stunt virus, rice ragged stunt, and yellow dwarf virus. The distribution, symptoms, economic importance, insect vectors, vector transmission of the virus, and weed host plants are given for each viral disease. Detailed descriptions of virus control methods, such as vector control, removal of diseased plants and weed hosts, and field hygiene, are also provided (see B030). Suitable for farmers, pest control operators and extension workers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

- B033 Penyakit merah: sejenis penyakit virus padi yang amat merbahaya.**
Jabatan Pertanian, 1983, 6 p., (30 x 21 cm), 20 coloured photographs,
Bahasa Malay and Arabic text.

Leaflet about the tungro virus in rice in Malaysia, outlining symptoms, virus transmission through its vector (green rice leaf hoppers: *Nephotettix virescens*), and cultural and mechanical control of the vector (see B030). Suitable for farmers, and extension workers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

- B034 Manual penyakit merah virus.**
Jabatan Pertanian, 1985, 30 p., (26 x 19 cm), 50 black & white and coloured illustr., Bahasa Malay.

Guide to identification methods and techniques for tungro virus in rice. Techniques for identification of the virus in plant material and seed, and transmission by the vector are discussed and illustrated. Suitable for plant protection officers and extension workers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

- B035 Kawalan perosak tanaman secara bersepadu.**
Jabatan Pertanian, 1983, Bingkisan Pertanian Bil. 27d, 6 p., (22 x 10 cm), 10 coloured photographs, Bahasa Malay.

Leaflet providing general information about IPM in rice in Malaysia and project organization. Suitable for a wide readership in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

- B036 Reconnaissance des principaux foreurs des tiges du riz, du maïs et de la canne à sucre en Côte d'Ivoire.**
M. Trau, 1981, Initiations-Documentations Techniques no.48, 23 p., (24 x 15 cm), 32 black & white illustr., 33 references, French, ISBN 2-7099-0599-X.

Separate keys to the eggs, larvae and adults of 14 Lepidopteran and Dipteran stem-boring pests of rice, maize and sugarcane are given,

illustrated at each stage. Short descriptions and biological information are provided about each species and stage in its life cycle. Suitable for extension workers, pest control operators and agricultural students in the Ivory Coast.

Available from Service des Publications de L'Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM), 70-74 route d'Aulnay, 93140 Bondy, France, price unknown.

B040 Desordenes nutricionales de la yuca (Manihot esculenta Crantz).

C.J. Asher, D.C. Edwards & R.H. Howeler, 1980, 48 p., (24 x 18 cm), 26 coloured illustr., Spanish, ISBN 84-89206-03-1.

Discusses optimum conditions for cassava production and the nutrient requirements. Suitable for farmers, extension workers and agricultural students.

Available from CIAT (see H019) for US \$ 10.00 (HDC), US \$ 5.00 within CIAT, US \$ 5.50 within Colombia, or US \$ 6.00 for other developing countries.

B041 Field problems in cassava.

J.C. Lozano et al., 1981, 2nd ed., 192 p., (17.5 x 11.5 cm), 180 coloured illustr., English (also available in Spanish), ISBN 84-85206-08-2.

Designed to identify field problems in cassava, this manual discusses important diseases, pests and nutritional problems that diminish cassava yields. Simple identification keys are provided, together with descriptions of the diseases and notes on symptoms and control measures (see B044). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 20.00 (HDC), US \$ 7.00 within CIAT, US \$ 9.00 within Colombia, US \$ 10.00 in the Americas, or US \$ 12.00 for other developing countries.

B042 Yuca: control integrado de plagas.

J.A. Reyes (compiler), 1983, 362 p., (23 x 17 cm), Spanish.

Reference book for CIAT training courses on integrated control of cassava pests. Contains chapters on the principles of integrated control, crop losses due to insect and mite damage, descriptions and biology, the use of resistant varieties, biological control and integrated control.

Suitable for extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 18.00 (HDC), US \$ 7.00 within CIAT, US \$ 8.50 within Colombia, US \$ 10.00 in the Americas, or US \$ 12.00 for other developing countries.

B043 Diseases of cassava (*Manihot esculenta* Crantz).

J.C. Lozano & R.H. Booter, 1976, Series DE-5, 46 p., (24 x 17 cm), 17 black & white illustr., approx. 120 references, English.

Reprint of an article in PANS Vol. 20, No.1, March 1974. Bacterial diseases, viruses, and fungal diseases (leaf-, stem-, and root-rot) of cassava are described in as far as causes, symptoms, geographic distribution and control measures are known. The article concludes that little is still known of the diseases which attack and reduce cassava yield. Suitable for extension workers, pest control operators and scientists.

Available from CIAT (see H019), price unknown.

B044 Problemas en cultivos de la yuca (*Manihot exculenta*).

J.C. Lozano et al., 1976, Series GS-16, 127 p., (18 x 11 cm), 106 coloured illustr., Spanish.

Guide showing symptoms of 20 diseases, 14 insect pests, 12 nutritional deficiencies and toxicities, and damage resulting from different herbicide applications, by means of coloured photographs. General notes on cultural practices and other preventive measures are given, as well as keys to diseases and pests in cassava (see B041). Suitable for farmers, extension workers, pest control operators and agricultural students in Colombia.

Available from CIAT (see H019), price unknown.

B045 Field guide for identification and control of cassava pests and diseases.

K. Leuschner, E. Terry & T Akinlosotu, 1980, Manual Series no.3, 19 p., English.

No additional information available.

Available from IITA (see H042), price unknown.

B046 Biological control of cassava mealybug and green spider mites.

IITA, Africa-wide Biological Control Project Information Series no.16, 25 p., (23 x 10 cm), 24 coloured illustr., English.

Brochure giving a general description of IITA's project on biological control of cassava mealybug and green spider mites. In this way, the background and different aspects of a large scale, successful biological control project are described. A poster of the same project is also available (see D008). Suitable for extension workers and agricultural students in Africa.

Available from IITA (see H042), price unknown.

B047 Bohol technoguide on cassava.

Technical Team on Cassava, 1983, 40 p., (15 x 22.5 cm), 12 black & white and coloured illustr., English (also available in Cebuano, 1985).

Handbook dealing with insect and mite pests, fungal, and bacterial diseases of cassava. Advice is also given about cultural measures (crop rotation, sanitation, healthy stock) and chemical control measures. Suitable for farmers, extension workers and agricultural students in the Bohol Province of the Philippines.

Available from Central Visayas Technopack Project, c/o Consortium of Integrated Regional Research in Development (CIRRD), Research Management Centre (RMC), DA-7 Compound, M. Velis St., Cebu City, Philippines, for PF 20.00.

B048 Methods of weed control in cassava.

J.D. Doll & W. Piedrahita, 1978, 12 p., (16 x 22.5 cm), English (also available in Spanish).

Describes CIAT experiments which demonstrate that weeds cause significant yield reductions in cassava. The critical period for weed control is defined. Suitable for extension workers, pest control operators and agricultural students in Colombia.

Available from CIAT (see H019) for US \$ 1.50 within CIAT, or US \$ 2.00 in other countries.

B049 Cassava pests and their control.

A. Bellotti & A. van Schoonhoven, 1978, 73 p., (17 x 24 cm), 60 coloured illustr., English.

Discusses host plants, pest distribution, mites and insects attacking the crop, and economic damage. An integrated cassava pest management programme is recommended and described. Suitable for farmers, extension workers and pest control operators.

Available from CIAT (see H019) for US \$ 17.00, US \$ 5.50 within CIAT.

US \$ 7.00 within Colombia, US \$ 8.50 in the Americas, or US \$ 9.00 for other developing countries.

B050 Improve your cassava crop.

A. Bustamante, 11 p., (22 x 14 cm), 12 black & white illustr., English (also available in Spanish).

Easy-to-read brochure dealing with soil preparation, organic fertilizer use, selection of seed stock, and methods of planting cassava. Insect and disease control are discussed, and directions given for making a pesticide duster. Suitable for farmers (particularly small-scale farmers) and extension workers.

Available from World Neighbors (see I056) for US \$ 1.00, including air postage, quoting item no. 59 and the language required. A 20% discount is given for orders of 10 or more copies.

B052 The potato: major diseases and nematodes.

CIP, 1977, 68 p., coloured illustr., English (also available in French).

Pocket guide describing 9 important viral, 16 fungal and 3 bacterial diseases, and 3 nematode pests of potato, accompanied by coloured illustrations of their symptoms. Remarks are included on cultural practices for prevention (especially crop rotation) and control methods. Suitable for farmers and extension workers.

Available from CIP (see H024) for US \$ 2.50.

B053 La pomme de terre; maladies et nématodes.

CIP, 1979, 67 p., (17.5 x 10 cm), 50 coloured illustr., French.

French version of B052.

Available from CIP (see H024), price unknown.

B054 Major potato diseases, insects and nematodes.

CIP, 1982, 95 p., English (also available in Spanish).

Field manual giving descriptions and colour photographs of symptoms caused by 50 diseases, insects and nematode pests. Suitable for farmers and extension workers.

Available from CIP (see H024) for US \$ 5.00.

- B055 Compendio de enfermedades de la papa.**
W.J. Hooker (ed.), 1980, 166 p., Spanish.

Spanish version of the 'Compendium of potato diseases' issued by APS (see B064). Suitable for extension workers and pest control operators.

Available from CIP (see H024) for US \$ 10.00.

- B056 Vocabulario de enfermedades y plagas de la papa.**
M. Crosby, 1981, 22 p., Spanish.

Compilation of potato disease terminology, scientific Latin names, and English and Spanish terms. Suitable for extension workers.

Available from CIP (see H024) for US \$ 1.00.

- B057 Technical information bulletin (TIB)**
Boletinos de Información Técnica
Centro Internacional de la Papa (CIP)
(boletinos de información técnica).

Number of pages varies, both English and Spanish versions.

This bulletin provides information on specific topics of potato production and research, to support transfer of technology between scientists and farmers. The following issues are of interest (both English and Spanish titles are given):

- 2 Transmission of potato viruses by aphids.
Raman, K.V., 1985, 23 pp.
(Spa.): Transmisión de virus de papa por áfidos).
- 3 Potato tuber moth.
Raman, K.V., 1980, 14 pp.
(Spa.): La Polilla de la papa.
- 4 Late blight of potato: *Phytophthora infestans*
Henfling J.W., 1979, 13 pp.
(Spa.): El tizón tardío de la papa: *Phytophthora infestans*, 1980, 16 pp.
- 8 Parasitic nematodes of potatoes
Jatala, P., 1981, 17 pp.
(Spa.): Nematodos parásitos de la papa.
- 9 Potato cyst nematodes; *Globodera* spp.
Franco, J., 1981, 21 pp.
(Spa.): Nematodos del quiste de la papa; *Globodera* spp.),
- 13 Bacterial wilt of potato; *Pseudomonas solanacearum*
Martin, C., 1981, 15 pp.
(Spa.): La marchitez bacteriana de la papa: *Pseudomonas solanacearum*.

17 Early blight of potato: *Alternaria solani*.

Zachmaann, R., 1982, 14 pp.

(Spa.): El Tizón temprano de la papa: *Alternaria solani*.

19 Virus diseases of potato.

Hooker, W.J., 1982, 17 pp.

(Spa.): Enfermedades virosas de la papa.

Aimed at plant protection officers, extension workers and pest control operators.

Available through CIP, see H024, for US \$ 1.00 per bulletin.

B058 Amigos, enemigos y plantas: la salud de la planta (metodos para proteger la salud de nuestras plantas).

1981, 16 p., (21 x 16 cm), 9 black & white illustr., Spanish.

Brochure describing the life cycle of 8 important potato pests, illustrated by line drawings. Some natural enemies of insect pests are included, and simple agricultural practices such as mixed cropping and the use of plant extracts as insecticides and repellants are recommended. Suitable for farmers, particularly small-scale farmers in Peru.

Available from Instituto de Estudios Andinos, Jr. Torre Torre 365, Cerrito de Libertad, Apartado Postal 289, Huancayo, Peru, price unknown.

B059 Evaluation of technology for integrated control of potato tuber moth in field and storage.

K.V. Ramon & R.H. Booth, CIP, 1983, Technology Evaluation Series no.10, 18 p., English.

Suitable for extension workers and pest control operators.

Available from CIP (see H024) for US \$ 1.00.

B060 Evaluacion de tecnologia para control integrado de la polilla de la papa en campos y almacenes.

K.V. Ramon & R.H. Booth, 1986, Series de Evaluacion de Tecnologia no.12, 30 p., Spanish.

Suitable for extension workers and pest control operators.

Available from CIP (see H024) for US \$ 1.00.

B061 Investigaciones nematológicas en programas latino-americanos de papa (2 vols.).

J. Franco & H. Rincon, 1985, 189 p., Spanish.

Suitable for extension workers and agricultural students in Latin America.

Available from CIP (see H024) for US \$ 6.00.

B062 Potato diseases.

National Institute of Agricultural Botany and the Potato Marketing Board, 1985, 2nd ed., 43 p., (21 x 13 cm), 75 coloured illustr., English.

Pocket guide describing 20 important diseases, 15 pests, and disorders affecting potatoes in the UK by means of photographs. Short descriptions of symptoms and conditions are given, as well as remarks on variety, cultural and chemical control. Although oriented at farmers and extension workers in the UK, the information may also be relevant to other geographical regions.

Available from Potato Marketing Board, Research and Development, Broad Field House, 4 Between Towns Rd., Oxford OX4 3NA, UK; or National Institute of Agricultural Botany, Potato Section, Huntington Rd., Cambridge CB3 0LE, UK, price unknown.

B063 Control integrado de plagas de papa.

Luis Valencia, CIP, 1986, 203 p., (22.5 x 17 cm), 44 black & white and 40 coloured illustr., 200 references, index, Spanish.

Collection of 20 articles used in the 1986 course on integrated pest control for potatoes, by the International Centre for Potato Research in Colombia. The articles deal with chemical and biological methods of pest control, descriptions of important groups of pests, and current practices in Colombia concerning integrated pest control in potatoes. Suitable for extension workers, pest control operators and agricultural students in Colombia and Latin America.

Available from CIP (see H024), price unknown.

B064 Compendium of potato diseases.

W.J. Hooker (ed.), 1981, 125 p., (28 x 21.5 cm), approx. 225 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-027-6.

One of a series of compendia, which describes major diseases of the potato. Following a general introduction to the crop, chapters deal with fungal

diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases (see B055 for Spanish version). Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B065 Integrated pest management for potatoes in the Western United States.

University of California, 1986, 146 p., (27.5 x 21 cm), more than 200 black & white and coloured illustr., approx. 50 references, list of terms, English.

Comprehensive, practical information on pest and disease management. Chapters deal with growth requirements of potatoes, management of pests, diseases, weeds and nematodes, and physiological disorders. Damage symptoms, life cycle, importance and control measures are also described, accompanied by illustrations. Suitable for extension workers and pest control operators in the USA, although the methods may be relevant to other geographical regions.

Available from ANR publications (see I003) for US \$ 17.00, excluding postage and handling.

B066 El nematodo dorado de la papa.

A. Valenzuela, E. Dagnino & T. Hoefter, 1979, 17 p., (21 x 16 cm), 6 black & white and coloured illustr., 9 references, Spanish.

Brochure dealing with the potato cyst-nematode, *Globodera* (Heterodera) *rostochiensis*. After a short introduction, the life cycle, distribution, host-parasite relationship, and dispersion are described. Sampling methods are provided, as well as several control options (cultural and chemical control, the use of resistant varieties). Suitable for extension workers and pest control operators in Chile.

Available from Ministerio de Agricultura, Servicio Agrícola y Ganadero, División de Protección Agrícola, Santiago, Chile, price unknown.

B067 Proyecto control y exclusión: nematodo dorado de la papa.

SAG, 4 p., (21 x 17 cm), 5 coloured illustr., Spanish.

Leaflet describing the main characteristics, importance and control of the potato cyst-nematode, *Globodera rostochiensis* (see B066).

A crop rotation scheme is provided. Suitable for farmers in Chile.

Available from Ministerio de Agricultura, Servicio Agrícola y Ganadero (SAG), División de Protección Agrícola, Santiago, Chile, price unknown.

B068 Defensa sus papas del nematodo dorado: proyecto control nematodo dorado.

SAG, 7 p., (21 x 18.5 cm), 17 coloured illustr., Spanish.

Leaflet describing problems caused by the often unseen potato cyst-nematode, to create awareness of a potentially dangerous pest (see B066 and B067). Suitable for farmers in Chile.

Available from Ministerio de Agricultura, Servicio Agrícola y Ganadero (SAG), División de Protección Agrícola, Santiago, Chile, price unknown.

B069 Manual de enfermedades virosas de la papa.

L. Salazar, 1982, 111 p., Spanish.

A manual on virus diseases of the potato.

Available from CIP (see H024), price unknown.

B070 Importance, biology and control of the potato moth in Morocco.

J.M.T. Thal, 1982, Schriftenreihe der GTZ no.131, 144 p., 19 illustr., German, English and French text, ISBN 3-88085-139-5.

Deals with the potato moth, a worldwide pest of potatoes, tomatoes and tobacco.

Available from GTZ (see I024) for DM 23.00, quoting order code 0131-SR.

B072 Pest control in tropical root crops.

Centre for Overseas Pest Research, PANS Manual no.4, (21 x 15 cm), black & white illustr., references, check lists, index, English.

A complete description of weeds, diseases, nematodes, insect and mite pests of tropical root crops. Distribution, symptoms, life cycles, propagation or transmission, and control methods (mainly cultural and chemical control) are given. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 3.25.

B073 Tuber and root crops production manual.

IITA, 1982, 244 p., (28 x 22 cm), English (also available in French).

Written for IITA's tuber and root crops course, this handbook gives information on various aspects of growing cassava, sweet potato, yam and coco-yams in the humid and sub-humid tropics of Africa. It emphasizes the importance of tuber and root crops in Africa. The origin, botany, soils, agronomy, pathology, entomology, breeding, harvesting and post harvesting technology of each crop are described. Suitable for extension workers in humid and sub-humid tropics in Africa.

Available from IITA (see H042), free of charge.

B074 Compendium of sweet potato diseases.

C.A. Clark & J.W. Moyer, 1988, 75 p., (28 x 21.5 cm), approx. 125 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-089-6.

One of a series of compendia, which describes major diseases of the sweet potato. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for \$ 25.00 outside USA, including postage.

B075 How to control sweet potato weevil: a practical IPM approach.

N.S. Talekar, 1988, International Cooperator's Guide, 6 p., (26 x 20.5 cm), 7 black & white and coloured illustr., English.

Brochure providing information on the problems of sweet potato weevils, including the damage they cause, their biology and behaviour. Sources of weevil infestation are described, and elements of an IPM strategy for weevil control are provided. Cultural control (such as crop rotation, field hygiene, and destruction of alternative host plants), the use of weevil-free cuttings, and sex pheromone traps are recommended. Suitable for farmers, and extension workers in Taiwan and South-East Asia.

Available from the AVRDC (see H006), price unknown, quoting publication no. 88-292.

B080 Maize diseases, a guide for field identification.

C. De León, 1984, 3rd ed., 116 p., (18 x 10 cm), 90 coloured illustr., English (also available in Spanish and French).

This pocket guide gives diagnostic keys and descriptions of some 50 fungal, bacterial and viral diseases in maize. Short notes and illustrations are included on distribution, importance, symptoms and damage. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIMMYT (see H023) for US \$ 7.50 (HDC), or US \$ 5.50 (LDC).

B081 Guía de control integrado de plagas en maíz y sorgo.

D. Alvaro Sequeira et al., 1979, 44 p., (21 x 13.5 cm), 17 black & white illustr., appendices, Spanish.

This pocket guide introduces several agricultural practices which can be used as part of an IPM system, then briefly describes 16 pest species of maize and sorghum. Notes on their importance, damage they cause, and control are included. Appendices give more information on available insecticides, their toxicity, and safety precautions. Suitable for farmers, extension workers and pest control operators in Nicaragua.

Available from Instituto Nicaragüense de Tecnología Agropecuaria (INTA), Proyecto de Control Integrado de Plagas, Managua, Nicaragua, price unknown.

B082 Insect pests of maize: a guide for field identification.

C. Alejandro Ortega, CIMMYT, 1987, 106 p., (18 x 10 cm), 96 coloured illustr., 19 references, index, English (also available in Spanish and French), ISBN 968-6127-07-0.

Approximately 70 species or genera of insect pests of maize are shown in coloured photographs, and the nature of their damage, life cycle and geographic distribution is described. A simplified key identifies the pest according to the growth stage of the maize plant and the position of the pest organisms on the plant. An introduction to insect pests, beneficial insects in maize, and pest control (economic thresholds) is also included. Suitable for farmers, pest control operators and scientists in the tropics and subtropics.

Available from CIMMYT (see H023) for US \$ 7.50 (HDC), or US \$ 5.50 (LDC).

B083 Le mais.

G. Rouanet, 1984, *Le Technicien d'Agriculture Tropical* no. 2, 142 p., (17 x 12 cm), 46 black & white illustr., 10 references, glossary, French, ISBN 2-7068-0871-3.

Comprehensive handbook for maize-growing in Africa. The major pests and diseases are dealt with, and remarks on cultural and chemical control measures are included. Suitable for farmers, extension workers and agricultural students in Africa.

Available from Editions Maisonneuve et Larose, 15 Rue Victor-Cousin, 75005 Paris, France; or Agence de Coopération Culturelle et Technique, 13 Quai André-Citroën, 75015 Paris, France, for FF 35.00, excluding postage and handling.

B084 Maize production manual (vols. 1 and 2).

IITA, 1982, 218 and 201 p., (28 x 22 cm), English and French text.

A maize training manual for the IITA's course for the humid and sub-humid tropics in Africa. Volume 1 covers history, importance in Africa, botany, agronomy, weed biology, mechanization and breeding. Volume 2 deals with seed production, pathology, entomology, nematology, harvesting and storage. Suitable for extension workers in Africa.

Available from IITA (see H042), free of charge.

B085 Plagaz del maiz.

A. Lagunes, R. Dominguez & Y.J.C. Rodriguez, 1985, 100 p., (28 x 21 cm), 19 references, index, Spanish.

A field guide describing the major insect pests which attack the roots, foliage, stem, flowers and ears of the maize plant, and control measures for maize pests. Suitable for farmers, extension workers, pest control operators and agricultural students in Mexico.

Available from Angel Fogunéz Tejeda, Centro de Entomología, Colegio de Postgraduados, 56230, Chapingo, Mexico, for US \$ 4.00 (HDC).

B086 Integrated pest management: corn, a pocket reference manual.

Philippine-German Crop Protection Programme, 1987, 109 p., (18 x 10 cm), 46 coloured illustr., English, ISBN 971-91057-1-2.

A comprehensive introduction to IPM for corn in the Philippines. Symptoms or damage characteristics, alternative hosts, affected growth stages, and pest management recommendations (cultural methods,

biological control, pest monitoring, economic threshold levels, chemical control and resistant varieties) are described for 10 insect pests, 10 diseases, weeds, and rodents. Physiological disorders are illustrated and described, and a separate section details several IPM prevention and control recommendations, especially biological pest control. A diagnostic guide for corn diseases in the Philippines is provided, as well as growth stages for corn. Suitable for farmers and extension workers in the Philippines.

Available from Philippine-German Plant Protection Programme, Bureau of Plant Industry, Ministry of Agricultural and Food, San Andres, Malate, Manila, Philippines, price unknown.

B087 The corn borer: a threat to corn production.

B. Morallo-Rejesus & P. Savier, 1987.

Leaflet giving an IPM scheme for the Asian corn borer, the most destructive insect pest of corn. The strategy involves integration of early planting with either properly timed application of chemicals, microbial insecticides based on control action thresholds (CAT), the inundative release of an egg parasite, or the release of predatory earwig at whorl stage, in combination with a detasseling technique and application of 1 or more chemicals. Suitable for large and small scale farmers, extension workers and pest control operators in the Philippines.

Available from Circulation Manager, Philippine Assoc. Entomologists Inc., c/o Dept. of Entomology, Univ. of the Philippines Los Banos College, Laguna 3720, Philippines, price unknown.

B088 Compendium of corn diseases.

M.C. Shurtleff (ed.), 1980, 2nd ed., 105 p., (28 x 21.5 cm), approx. 200 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-029-2.

One of a series of compendia, which describes the major diseases of maize. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see 1004) for US \$ 25.00 outside USA, including postage.

B089 Be your own corn doctor.

K.C. Berger, 4 p., (28 x 21 cm), 28 coloured illustr., English (also available in Spanish and French).

Brochure showing 'danger signs' in leaves, stalks, roots and ears of maize plants by means of colour illustrations. The emphasis is on nutritional deficiencies. Suitable for farmers and extension workers.

Available from World Neighbors (see I056) for US \$ 2.00, including air postage, quoting item no. 99. A 20 % discount is given for orders of 10 or more copies.

B090 Maiz.

INTA, 1983, *Tecnicas de Cultivo* no. 17, 20 p., (21 x 20 cm), black & white illustr., Spanish.

Brochure dealing with maize production, including a chapter on insect pests of maize. Short descriptions of pests, their biology, damage and importance are provided. General remarks are given on chemical control, economic injury levels, cultural control and sampling to assess population densities. Suitable for farmers, and extension workers in Argentina.

Available from Instituto Nacional de Tecnologia Agropecuaria (INTA), Chile 460, 1098 Capital Federal, Argentina, free of charge.

B092 Maize diseases: a reference source for seed technologists.

D.C. McGee, 1988, 150 p., (28 x 21.5 cm), 52 photographs, references, index. English, ISBN 0-89054-090-X.

Provides information on all 150 fungal, bacterial, myco- and spiroplasmal, and viral diseases of maize. The names, symptoms, importance, distribution, host plants, variability, and control of each disease is described, as well as aspects of pathogen transmission in relation to seed. Suitable for research workers in the USA, but also of relevance to extension workers and scientists in other regions.

Available from APS Press (see I004) for US \$ 32.00 outside the USA, including postage.

B093 Maize.

Ciba-Geigy Agrochemicals Technical Monograph. 1979, 105 p., (29 x 21 cm), 120 black & white and coloured illustr., references, English.

A general introduction to maize; its botany and origin, agronomy of the crop, weed problems, maize pests and diseases worldwide, harvesting, and

use. A supplement on Ciba-Geigy's chemical control recommendations is included. Suitable for plant protection officers, agricultural students and extension workers.

Available from Ciba-Geigy Ltd., Basle, Switzerland, price unknown.

B095 Sorghum insect identification handbook.

L. Teetes et al., ICRISAT, 1983, Information Bulletin no.12, 124 p., (18 x 10 cm), 60 coloured illustr., English (also available in Spanish and French).

Describes the common insect and mite pests of sorghum which attack the roots, foliage, stem or head, including their distribution, symptoms, and biology. A number of important natural enemies are also described, as well as pests of stored sorghum grains. Notes on cultural control methods, economic threshold levels (if known) and chemical control methods are given for each pest. Suitable for extension workers, pest control operators and agricultural students.

Available from ICRISAT (see H038) for US \$ 8.10 (HDC), or US \$ 2.70 (LDC); add approx. \$ 2.70 for postage.

B096 Manuel para la identificacion de las plagas insectiles del sorgo.

CIMMYT, 1983, 124 p., Spanish.

Manual for identification of insect pests of sorghum.

Available from CIMMYT (see H023), price unknown.

B097 Sorghum diseases in West Africa: an illustrated text.

N. Zummo, 1984, 32 p., (28 x 21 cm), 50 coloured illustr., 35 references, English.

Handbook describing the major fungal, viral and bacterial diseases in sorghum seedlings, roots, stalks, foliage and inflorescences, including their importance and control measures. Parasitic weeds and phytotoxic reactions to pesticide application are also dealt with. Photographs of diseased plant material accompany the descriptions. Suitable for farmers, extension workers and agricultural students in West Africa.

Available from Regional Food Crop Protection Project, USAID, B.P.49, Dakar, Senegal, price unknown, quoting RFCPP no. 625-0928.

B098 Compendium of sorghum diseases.

R.A. Frederiksen (ed.), 1986, 82 p., (28 x 21.5 cm), approx. 160 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-069-1.

One of a series of compendia, which describes the major diseases of sorghum. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B099 Manual d'identification des maladies du sorgho et du mil.

R.J. Williams, R.A. Frederiksen & J.C. Girard, ICRISAT, 1978, Bulletin d'Information no. 2, 88 p., (18 x 10 cm), 59 coloured illustr., French (also available in English and Spanish).

A pocket guide briefly describing diseases caused by fungi, viruses and bacteria, which uses coloured photographs to illustrate symptoms. Information on the life cycle is given, and keys aid identification of the diseases in sorghum and millet. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from ICRISAT (see H038), price unknown.

B100 Principaux ennemis du mil au Niger et leur control.

1984, 27 p., (23 x 17.5 cm), 27 black & white illustr., references, French.

Brochure describing the 15 most important insect pests of millet, each shown in black and white photographs. The importance, biology, and some control methods are included in a description of each species. Suitable for extension workers, pest control operators and agricultural students in Niger.

Available from Projet de Protection de Végétaux, Ministère du Développement Rural, Direction des Services Agricoles, Service de Protection des Végétaux, Niamey, Niger, price unknown.

B101 Insect pests of millet in Nigeria.

O. Ajayi, 1986, Samaru Miscellaneous Paper 97, 10 p., (28 x 21 cm), English.

Brochure summarizing available knowledge about insect pests in Nigerian millet, their biology, importance and possible control measures (cultural, biological, natural, and chemical control). Suitable for extension workers, pest control operators and agricultural students in Nigeria.

Available from Publication Office, Institute for Agricultural Research, Samaru, Zaria, Nigeria, price unknown.

B102 Field manual of common wheat diseases and pests.

CYMMIT Staff, 1985, 3rd ed., 120 p., (18 x 10 cm), 110 coloured illustr., glossary, English (also available in Spanish and French).

Guide to common wheat diseases and pests, designed for use in the field. A simple diagnostic key, photographs of diseased and pest-infested plants, and a glossary of pathology-related terms are included as aids to identification. Suitable for farmers, extension workers and pest control operators.

Available from CYMMIT (see H023) for US \$ 7.50 (HDC), or US \$ 5.50 (LDC).

B103 Wheat diseases and pests: a guide for field identification.

J.M. Prescott et al., 1986, 3rd ed., 135 p., (18 x 10 cm), 106 coloured illustr., list of terms, English (also available in Spanish).

Field guide to common wheat diseases and pests, mineral deficiencies and stresses. A simple diagnostic key, photographs of diseased and pest-infested plants, and a glossary of pathology-related terms are included as aids to identification. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIMMYT (see H023) for US \$ 10.00 (HDC), or US \$ 4.00 (LDC).

B104 Field manual to major insect pests and diseases of wheat and barley.

A.H. Kamel, 1984, ICARDA Information Bulletin IBU-1, 93 p., Arabic.

No additional information available.

Available from ICARDA (see H034), price unknown.

B105 Introduction to the major insect pests of wheat and barley in the Middle East and North Africa.

ICARDA, 1982, Technical & Educational Manual no.9, 112 p., English, Arabic summary.

Used in Northern Africa and the Middle East.

Available from ICARDA (see H034), price unknown.

B106 Wheat.

Ernst Hafliger (ed.), 1980, Documenta Ciba-Geigy Technical Monograph, 95 p., (30 x 21 cm), 110 coloured and black & white illustr., references, English.

Deals with the origin, genetics and breeding, and cultivation of wheat. General information is included on weeds and their chemical control, diseases in wheat, principal pests, harvesting and storage. A supplement on Ciba Geigy's chemical control recommendations is provided. Suitable for extension workers and agricultural students.

Available from Ciba-Geigy Ltd., Basle, Switzerland, price unknown.

B107 Common diseases of small grain cereals: a guide to identification.

F.J. Zillinsky, 1983, 150 p., (28 x 21.5 cm), 350 coloured illustr., 7 references, list of terms, English (also available in Spanish).

A general introduction to the identification of common fungal, bacterial and viral diseases of grain cereals. Symptoms are shown in coloured photographs, accompanied by short descriptions of the diseases, their biology, importance, and general remarks on control methods. Suitable for extension workers, pest control operators and agricultural students.

Available from CIMMYT (see H023) for US \$ 20.00 (HDC) or US \$ 12.00 (LDC), excluding postage and handling.

B108 Compendium of wheat diseases.

M.V. Wiese, 1987, 2nd ed., 112 p., (28 x 21.5 cm), approx. 200 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-076-4.

One of a series of compendia, which describes the major diseases of wheat. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers. pest

control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B109 Compendium of barley diseases.

D.E. Mathre (ed.), 1982, 78 p., (28 x 21.5 cm), approx. 180 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-047-0.

One of a series of compendia, which describes the major diseases of barley. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B115 Grain legume entomology.

IITA, 1977, 48 p., (23 x 17 cm), English, French summary.

Written for IITA's legume training courses, this handbook covers general classification and insect control with detail about calculation of insecticide dosages. The emphasis is on cowpea pests, pest status, identifying damage, biology, assessment and control methods. Suitable for extension workers and pest control operators in Africa.

Available from IITA (see H042), free of charge.

B116 Pest control in tropical grain legumes.

Centre for Overseas Pest Research, approx. 250 p., (21 x 15 cm), more than 100 black & white illustr., references, index, English.

One of a series of detailed manuals about pest control in specific crops. The general agronomy of the crop, weeds and their control, diseases, nematodes, invertebrate and vertebrate pests, and insect pests are dealt with. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 5.25.

B117 Grain legume pathology.

IITA, 1976, 91 p., (21 x 17 cm), English, French summary.

Written for IITA's grain legume course, this handbook concentrates on the diseases of cowpea, soya bean, lima bean and the French bean. It also discusses screening for bacterial, fungal and viral diseases of cowpea. Suitable for extension workers, pest control operators and research workers in Africa.

Available from IITA (see H042), free of charge.

B118 An introduction to major pests of food legume crops in West Asia.

ICARDA, 1979, ICARDA Technical/Educational Manual no. 4, 93 p., English, Arabic summary.

Suitable for farmers, and extension workers in West Asia.

Available from ICARDA (see H034), price unknown.

B119 Important legume diseases of West Asia and North Africa.

ICARDA, 1978, ICARDA Technical/Educational Manual no. 5, 82 p., English, Arabic summary.

Suitable for extension workers in North Africa and Asia.

Available from ICARDA (see H034), price unknown.

B120 Handbook of insect pests, diseases & weeds of field legumes.

NCPC.

No additional information available.

Available from NCPC (see I037), price unknown.

B122 Integrated pest management of legumes, soybean, mungbean and peanut.

NCPC.

No additional information available.

Available from NCPC (see I037), price unknown.

B123 Field guide to the major insect pests of faba bean in the Nile Valley.

C. Cardona et al., 1984, ICARDA Information Bulletin IBU-2, 60 p., English.

Suitable for farmers, and extension workers in Northern Africa.

Available from ICARDA (see H034), price unknown.

B124 Field manual of common faba bean diseases in the Nile Valley.

C.C. Bernier et al., 1984, ICARDA Information Bulletin IBU-3, 41 p., English.

Suitable for farmers, and extension workers in Northern Africa.

Available from ICARDA (see H034), price unknown.

B125 Compendium of bean diseases.

APS Press, 1988 (in preparation), approx. 100 p., (28 x 21.5 cm), coloured and black & white illustr., references, glossary, index, English.

One of a series of compendia, which describes the major diseases of bean. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B126 The preservation of beans (cowpeas) with neem oil.

La Direction de la Protection des Végétaux (Togo/GTZ), Technical Leaflet Plant Protection, 26 p., (21 x 15 cm), 22 black & white illustr., English.

Brochure describing the extraction of neem oil from seeds, and the use of this oil to protect stored beans against stored-product pests (Bruchidac). This whole process is illustrated step-by-step (see D009). Suitable for farmers (particularly small scale farmers), and extension workers in the Togolese Republic, Africa.

Available from Plant Protection Directorate, B.P. 1263, Lomé-Cacaveli, Togolese Republic, price unknown.

B127 Field problems of beans in Latin America.

C. Cardona et al., 1982, 184 p., (17 x 24 cm), 145 coloured illustr., English (also available in Spanish).

Describes diseases and pests attacking beans (*Phaseolus vulgaris*), including notes on clean seed production and chemical control measures. Nutritional disorders due to toxicity or deficiency of chemical elements are also discussed. Symptoms and damage are shown in coloured photographs. Suitable for farmers, and extension workers in Latin America.

Available from CIAT (see H019) for US \$ 20.00, US \$ 8.50 (LDC), US \$ 8.50 within CIAT, US \$ 13.00 in the Americas, or US \$ 15.50 for other countries.

B128 Les insectes nuisibles et les maladies du niébé.

S.R. Singh & D.J. Allen, 1979, IITA Manual no. 2, 113 p., (17 x 10 cm), 70 coloured illustr., 66 references, French (also available in English), ISBN 978-131.

Pocket guide providing short descriptions of insect pests, fungal, viral and bacterial disease, parasitic weeds and nutritional deficiencies of cowpeas. Each description is accompanied by a coloured photograph. Short notes are given on distribution and importance, symptoms and control options. Suitable for farmers, and extension workers in Africa.

Available from IITA (see H042), price unknown.

B129 Guia de control integrado de plagas en frijol.

D. Alvaro Sequeira et al., 1978, 26 p., (21 x 13.5 cm), 14 black & white illustr., Spanish.

Guide describing the most important insect pests of beans. Notes on their importance, damage, possible cultural control practices, and biological and chemical control methods are given. Safety precautions for pesticide applications are briefly described. Suitable for farmers, extension workers and pest control operators in Nicaragua.

Available from Instituto Nicaragüense de Tecnología Agropecuaria, Proyecto Control Integrado de Plagas, Managua, Nicaragua, price unknown.

B130 Soybean production training manual.

IITA, English (also available in French).

Basic reference manual for the IITA's soya bean production course for the humid and sub-humid tropics. Nutritive quality, botany, physiology, agronomy, pathology, entomology, breeding, nematology, harvesting and storage are dealt with. Suitable for extension workers in humid and sub-humid tropics.

Available from IITA (see H042), free of charge.

B132 Compendium of soybean diseases.

J.B. Sinclair (ed.), 1982, 2nd ed., 104 p., (28 x 21.5 cm), approx. 220 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-043-8.

One of a series of compendia, which describes the major diseases of soya bean. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B133 Manejo integrado de plagas en soja.

H.G. Bimboni, 1982, 7 p., (28 x 21 cm), 1 reference, Spanish.

Reprint of an article in the journal 'Revista de la AAS' (January 1982). It provides technical information on the history of pest control in Argentina, especially the extensive use of pesticides in the 1950's and 1960's. Information is given on IPM in soya beans, biological control, economic injury levels, and the results of this experimental IPM system. Suitable for agricultural students, pest control operators and extension workers in Argentina.

Available from Estacion Experimental Agricola del INTA, Ruta no.9 Rm 170, (2930) San Pedro, Prov. Bs. As., Argentina, free of charge.

- B134 Diagnosis of some wilt-like disorders of chickpea (*Cicer arietinum* L.).**
Y.L. Nene, M.P. Haware & M.V. Reddy, 1978, ICRISAT Information Bulletin no. 3, 44 p., (18 x 10 cm), 37 coloured illustr., English (also available in Spanish).

Pocket guide describing characteristic symptoms of some important chickpea diseases such as wilt, collar rot, root rot, dry root rot, stem rot, stunt, mosaic and root-knot. Other chickpea disorders, such as iron chlorosis, the effects of salinity and frost injury are also discussed. A list of chickpea diseases observed in India and a number of other countries is provided. Suitable for farmers, extension workers and pest control operators.

Available from ICRISAT (see H038) for US \$ 3.00 (HDC) or US \$ 1.00 (LDC), quoting IBE 003. The Spanish edition is available for US \$ 2.10 (HDC) or US \$ 0.70 (LDC), quoting IBS 003.

- B135 Cowpea pests and diseases.**
S.R. Singh & D.J. Allen, 1979, 113 p., (18 x 10 cm), English (also available in French and Spanish).

Field guide to aid identification of cowpea pests and diseases worldwide, with an emphasis on tropical Africa. Laboratory diagnostic features are included, as well as notes on collection, preparation of disease and pest specimens, non-parasitic diseases and current chemicals. Suitable for farmers, extension workers and research workers in Tropical Africa.

Available from IITA (see H042) for US \$ 4.00.

- B136 Cowpea production training manual.**
IITA, 1982, 198 p., (28 x 22 cm), English (also available in French).

A basic reference manual for IITA's cowpea training course for the humid and sub-humid tropics. History, origin, importance, distribution, botany, physiology, agronomy, pathology, entomology, and breeding are included, as well as seed production and distribution. Suitable for extension workers in the humid and sub-humid tropics.

Available from IITA (see H042), free of charge.

- B137 Compendium of pea diseases.**
D.J. Hagedorn (ed.), 1984, 57 p., (28 x 21.5 cm), approx. 140 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-060-8.

One of a series of compendia, which describes the major diseases of pea. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B138 Pest control in groundnuts.

Centre for Overseas Pest Research, 2nd ed., PANS Manual no.2, approx. 250 p., (21 x 15 cm), black & white illustr., references, index, English.

One of a series of detailed manuals about pest control in specific crops. The general agronomy of the crop, weeds, diseases, nematodes, invertebrate and vertebrate pests, and insect pests are dealt with. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 2.15.

B139 Rust disease of groundnut.

P. Subrahmanyam & D. McDonald, 1983, ICRISAT Information Bulletin no. 13, 15 p., (24 x 20 cm), 10 black & white and coloured illustr., 38 references, English.

Well-illustrated overview of rust disease of groundnuts, its symptoms, taxonomy of the fungus, disease cycle, and several strategies of disease management. The control measures described involve cultural measures, chemical control, resistant varieties and integrated control. Suitable for farmers and extension workers.

Available from ICRISAT (see H038) for US \$ 1.50 (HDC) or US \$ 0.50 (LDC); add \$ 1.75 for postage and handling.

B140 Early and late leaf spots of groundnut.

D. McDonald et al., 1985, ICRISAT Information Bulletin no. 21, 19 p., (24 x 20 cm), 13 black & white and coloured illustr., 56 references, English.

Provides sufficient information for extension workers to evolve leaf spot control measures suited to local disease situations. Disease symptoms, morphology and taxonomy of the causal fungus are described, and the disease cycle is outlined. An integrated approach to disease management

is advocated, and the effectiveness of chemical and cultural measures are assessed. Suitable for extension workers and pest control operators.

Available from ICRISEA I (see 11038), price unknown.

11142 Compendium of peanut diseases.

D. M. Porter et al. (eds), 1984, 73 p., (28 x 21.5 cm), approx. 240 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-055-1.

One of a series of compendia, which describes the major diseases of peanut. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and virus-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see 1004) for US \$ 25.00 outside USA, including postage.

11143 Pest management in stored groundnuts.

K. M. Dick, 1987, ICRISEA I Information Bulletin no. 72, 28 p., (18 x 10 cm), 46 references, English, ISBN 92-9066-124-0.

No additional information available.

Available from ICRISEA I (see 11038) for US \$ 7.00 (1100) or US \$ 8.40 (1100), quoting order code 111022.

11145 Identifying diseases of vegetables.

A. A. MacNab, A. F. Skerf & J. E. Springer, 1981, 62 p., (28 x 21 cm), 54 coloured illustr., English.

The symptoms and life cycles of fungal, bacterial and viral diseases of 20 vegetable crops are briefly described. Suitable for farmers, and extension workers in the USA.

Available from Pennsylvania State University, College of Agriculture, University Park, Pennsylvania, USA, price unknown.

11146 Les principaux ennemis des cultures maraichères au Sénégal.

P. F. Collingwood, J. Bourdousche & M. Defranco, 1984, 2nd ed., 95 p., (18.5 x 11 cm), 57 coloured illustr., index, French.

The most important insect pests and fungal and viral diseases of 10 major vegetables are shown in coloured photographs, accompanied by short descriptions, damage symptoms and notes on chemical control measures. Tables list the major and minor pests and diseases for each vegetable crop, and important features of recommended pesticides. A series of posters provides a summary of the information (see D032). Suitable for farmers, extension workers and agricultural students in Senegal.

Available from Centre pour le Développement de l'Horticulture, B.P. 154, Dakar, Sénégal, price unknown.

B147 Les nematodes parasites des cultures maraîchères: introduction aux nematodes phytoparasites.

J.C. Prot, ORSTOM, 28 p., (25 x 19 cm), 13 black & white and 22 coloured illustr., French (also available in English).

A general introduction to nematology, including morphology, biology, reproduction, and relationship to host plants and the environment. Special attention is paid to the Meloidogynae in Senegal vegetables, their development, symptoms, and control methods. Suitable for extension workers, pest control operators and agricultural students.

Available from the USAID Regional Food Crop Protection Project 625.0928, Dakar, B.P.49, Sénégal, price unknown.

B148 Utilisation des pesticides pour la protection des cultures maraîchères.
48 p., (18 x 11 cm), 95 black & white illustr., French.

The appropriate use of pesticides is explained, with short comments concerning different groups and formulations of pesticides, safety precautions and protective clothing, preparation of pesticides for application, and application apparatus and techniques. Suitable for farmers, and small scale farmers in Senegal.

Available from Centre pour le Développement de l'Horticulture (CDH), Dakar, B.P. 154, Sénégal, price unknown.

B149 Treatment of cabbage and gboma against pests with neem seed extract.
Direction de la Protection des Végétaux, Technical Leaflet Plant Protection, 21 p., (21 x 15 cm), 18 black & white illustr., English (also available in French).

Brochure explaining the extraction of neem oil, and its use against insect pests of cabbage and gboma (a local Solanacea). Suitable for farmers, and small scale farmers and extension workers in Togo, Africa.

Available from La Direction de la Protection des Végétaux, B.P. 1263, Lomé-Cacaveli, Togo, Africa, price unknown.

B150 Integrated pest management for cole crops and lettuce.

University of California, 1985, 112 p., (27 x 21 cm), 190 black & white and coloured illustr., list of terms, English.

Handbook oriented at cole crops and lettuce in the USA. Detailed descriptions of the crop's growth requirements, weeds, diseases, vertebrate and invertebrate pests, nutritional deficiencies, and integrated control measures are given. Suitable for extension workers and pest control operators in the USA, although the methods could be adapted for other regions.

Available from ANR Publications (see I003) for US \$ 17.00, excluding postage and handling.

B152 Integrated pest management for tomatoes.

University of California, 1985, 2nd ed., 104 p., (27 x 21 cm), approx. 200 black & white and coloured illustr., list of terms, English.

Provides detailed descriptions of pests, weeds, diseases and abiotic disorders of tomato. Cultural practices and biological and chemical control measures, oriented at the USA, are recommended for each category. Suitable for extension workers and pest control operators in the USA, although the methods could be adapted for other regions.

Available from ANR Publications (see I003) for US \$ 17.00, excluding postage and handling.

B153 Jardins et vergers d'Afrique.

H. Dupriez & P. de Leener, 1987, 354 p., (27 x 21 cm), 740 black & white illustr., 38 references, index, list of terms, French (available in English during 1988), ISBN 2-87105-005-8.

Comprehensive handbook on gardens and orchards in Africa. Chapters provide detail on pests and diseases, cultural control practices, the use of plant-derived pesticides, mechanical means of control and prevention, and biological and chemical control methods. Suitable for farmers and extension workers.

Available from Terres et Vie, rue Laurent Delvaux 13, 1400 Nivelles, Belgium, for US \$ 18.00 or FF 117.00, excluding postage and handling. Also available from CTA (see I012) or ENDA (see I076).

B154 La mouche du haricot.

J.F. Lays & A. Autrique, 1987, 20 p., (30 x 21 cm), 35 black & white illustr., French.

Brochure providing simple and practical information on bean flies (*Ophiomyia* spp.), including recognition of the pest, damage symptoms, life cycle and control measures. Cultural control measures are given, together with detailed information on chemical control and safety precautions. Suitable for women farmers, small scale farmers and extension workers in Burundi, Africa.

Available from Institut des Sciences Agronomiques du Burundi (ISABU), Service de Prévulgarisation, Division de la Défense des Végétaux, B.P. 755, Bujimbura, Burundi, price unknown.

B155 Guide de cultures vivrières et potagères.

Gouvernement de Maurice, 1983, rev. ed., 139 p., (25 x 15 cm), 10 black & white illustr., French.

Provides practical information on small scale vegetable gardening in Mauritius. Condensed information about soil and climate requirements, cultural practices, seeding dates and practices, fertilization, irrigation, and weed, pest and disease control is given for each crop. Control recommendations are based solely on pesticides. Suitable for farmers, and extension workers in Mauritius.

Available from Agricultural Services, Ministry of Agriculture, Fisheries and Natural Resources, Reduit, Mauritius, for US \$ 1.00, excluding postage and handling.

B156 Pest control in tropical onions.

Centre for Overseas Pest Research, 1986, PANS Manual no. 7, (21 x 15 cm), black & white illustr., references, index, English.

One of a series of detailed manuals on pest control in specific tropical crops. The general agronomy of the crop, weeds and their control, diseases, nematodes, invertebrate and vertebrate pests, and insect pests are dealt with. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 5.00, quoting order code PANS7.

B157 Pest control in tropical tomatoes.

Centre for Overseas Pest Research, 1983, PANS Manual no. 6, (21 x 15 cm), black & white illustr., references, index, English.

One of a series of detailed manuals on pest control in specific tropical crops. The general agronomy of the crop, weeds and their control, diseases, nematodes, invertebrate and vertebrate pests, and insect pests are dealt with. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 5.50, quoting order code PANS6.

B158 Horticultural crops protection handbook.

NHRS, 1984, 169 p., (13 x 9 cm), English.

No additional information available.

Available from National Horticultural Research Station Thika, Nairobi, Kenya, price unknown.

B159 La protection des principales espèces maraîchères du Sénégal.

E.F. Collingwood, L. Bourdouxhe & M. Defrancq, 1981, 26 p., French.

Brochure dealing with the protection of major vegetables against pests and diseases in Senegal.

Available from Centre pour le Développement de l'Horticulture (CDH), Cambérène, Dakar, Sénégal, price unknown.

B160 Cotton pests in the Philippines.

H. Schmutterer, 1978, Schriftenreihe der GTZ no. 64, 110 p., 47 black & white illustr., English, ISBN 3-88085-064-X.

A survey of the most important cotton pests is followed by a description of the plant parts most frequently attacked. The main section describes the pests, damage symptoms, distribution, life cycle, natural enemies and relevant control measures. Suitable for farmers, and extension workers in the Philippines.

Available from GTZ (see I024) for DM 21.00, excluding postage and handling.

B162 Plagas e enfermedades de algodón en Centro America.

H. Schmutterer, 1977, Schriftenreihe der GTZ no. 39, 104 p., 50 coloured illustr., Spanish.

An advisory brochure about integrated control of cotton pests in Central America. Suitable for farmers, extension workers and pest control operators.

Available from GTZ (see I024) for DM 22.00.

B163 Le cotonnier en Afrique tropicales.

G. Sément, 1986, Le Technicien no.5, 133 p., (17 x 22 cm), 31 black & white illustr., 3 references, list of terms, French, ISBN 2-7068-0922-1.

A general introduction to cotton production in tropical Africa, with a chapter on crop protection. The major pests and diseases are described, together with general remarks on control. Suitable for farmers, extension workers and agricultural students in Africa.

Available from Agence de Coopération Culturelle et Technique, 13 quai André-Citroen, 75015 Paris, France; or CTA (see I012), price unknown.

B164 Manual d'identification des insectes nuisibles du cotonnier.

ICI, 36 p., (15 x 21 cm), 55 coloured illustr., French.

A field guide describing the different stages, symptoms, damage, and life cycles of 16 of the most important cotton pests in Africa, using a simple key system. Concluding notes suggest pesticides which could be used to control these insect pests. Suitable for farmers, extension workers and pest control operators in Africa.

Available from ICI Plant Protection Division, Fernhurst, Haslemere, Surrey GU27 3JE, UK, price unknown.

B165 Cotton pest control in Zambia.

W. Bruinsma, 1985, 37 p., (20.5 x 15 cm), 6 references, English.

Brochure dealing with chemical control of cotton pests in Zambia. An identification key to the major cotton insect pests is given, together with brief biological information. Subsequent sections deal with the different groups of insecticides, their formulations and spraying techniques. Suitable for extension workers, pest control operators and agricultural students in Zambia.

Available from Lint Company of Zambia, Cotton Development Division, Zimco House, Cairo Rd., Lusaka, Zambia, price unknown.

B166 Cotton pests of Kenya.

G.R. Rens, 1977, 27 p., (29.5 x 20.5 cm), 21 coloured illustr., list of terms, English.

Handbook describing some 30 insect pests of cotton, divided into leaf-sucking, fruit-sucking and leaf-eating pests, bollworms and minor pests. Information is provided on the importance, distribution, life history, symptoms, damage, factors affecting prevalence (especially naturally

occurring enemies), and chemical control of the major pests. Suitable for extension workers, pest control operators and agricultural students in Kenya.

Available from Entomological Section, National Agricultural Laboratories, P.O. Box 14733, Nairobi, Kenya, price unknown.

- B167 Integrated pest management for cotton in the western region of the USA.**
University of California, 1984, 144 p., (28 x 21 cm), approx. 200 black & white and coloured illustr., approx. 40 references, list of terms, English, ISBN 0-931876-67-2.

One of a series of useful IPM guides. Chapters deal with general cotton growth requirements, which can be affected by various vertebrates, insects and mites, nematodes, diseases and weeds. Descriptions of pests and diseases are given, with notes on their development, life cycle, damage and integrated control measures. Suitable for farmers, extension workers and pest control operators in South-West USA, although the handbook may provide valuable suggestions for IPM in cotton in other regions.

Available from ANR Publications (see I003) for US \$ 17.00, excluding postage and handling.

- B168 Maladies et ravageurs du cotonnier en Afrique au Sud de Sahara.**
J. Cauquil, 1986, 92 p., (21 x 12 cm), 105 coloured illustr., index, list of terms, French.

Field guide using photographs of cotton insect pests, diseased plants and the damage caused to aid identification. Notes are included on life cycles, symptoms, importance and chemical control measures. Some phytotoxic reactions to pesticides, nutritional deficiencies and natural enemies of the pests are also described and illustrated. Suitable for farmers, and extension workers in Africa, south of the Sahara.

Available from IRCT (see H047) for FF 40.00, excluding postage and handling.

- B169 Maladies et ravageurs du cotonnier en Centrafrique: expression des dégâts et moyens de lutte.**
J. Cauquil & P. Vincens, French.

Suitable for extension workers in Central Africa.

Available from IRCT (see H047) for FF 40.00, excluding postage and handling.

B170 IPM for cotton whitefly.

A.N. Rai, 7 p., (21 x 24 cm), 1 coloured illustr., English.

Brochure describing the damage caused by the whitefly (*Bemisia tabaci*) and its life history. Simple guidelines for cultural practices and pest surveillance are provided, as well as descriptions of natural enemies and recommendations for chemical control. Suitable for farmers, extension workers and pest control operators in India.

Available from Directorate of Plant Protection, Quarantine & Storage, Ministry of Agriculture, N.H. 4 Faridabad (Haryana), India, price unknown.

B172 Compendium of cotton diseases.

G.M. Watkins (ed.), 1981, 87 p., (28 x 21.5 cm), approx. 110 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-031-4.

One of a series of compendia, which describes the major diseases of cotton. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B173 Programa para control de insectos y acaros en algodon.

J. Barral & L. Zago, 1983, 49 p., Spanish.

Brochure dealing with the control of insect and mite pests in cotton. Information is provided on the major pests, biological control, use of pesticides, economic injury levels, cultural control (seeding dates, resistant varieties, destruction of stubble), the use of pheromones, and sampling population densities. Suitable for farmers, pest control operators and extension workers in Argentina.

Available from Instituto Nacional de Tecnologia Agropecuaria (INTA), Chile 460, 1098 Capital Federal, Argentina, free charge.

B174 Pests of West Indian sea island cotton.

ODNRI, 1980.



No additional information available.

Available from ODNRI (see I039) for £ 10.90, including postage, quoting order code MSC14.

B180 Pest control in bananas.

Centre for Overseas Pest Research, 3rd ed., PANS Manual no. 1, (21 x 15 cm), black & white illustr., references, index, English.

Handbook detailing the growth requirements, major weeds, diseases, vertebrate and invertebrate pests of bananas. Control methods such as cultural practices, resistant varieties and chemical control are also provided. Suitable for extension workers and pest control operators.

Available from ODNRI (see I039) for £ 1.65, including postage and handling.

B181 Le bananier plantain.

H. Tezenas de Montzel, 1985, *Le Technicien d'Agriculture Tropicale* no. 3, 144 p., (17 x 12 cm), 77 black & white and coloured illustr., 16 references, list of terms, French, ISBN 2-7068-0882-9.

A comprehensive overview of banana growing, including some information on nutritional deficiencies, cultural practices, chemical control methods, and a chapter on the most important diseases and pests. Suitable for farmers and extension workers.

Available from Editions Maissonneuve et Larose, 15, rue Victor-Cousin, 75005 Paris, France; Agence de coopération Culturelle et Technique, 13 quai André-Citroën, F75015 Paris, France; or CTA (see I012) for FF 46.00, including postage and handling.

B182 Integrated pest management for citrus.

University of California, 1984, 144 p., (28 x 21 cm), approx. 150 black & white and approx. 50 coloured illustr., list of terms, English, ISBN 0-931876-65-6.

Well-illustrated handbook describing the general approach to pest and disease prevention and management in citrus. Subsequent chapters detail vertebrate and invertebrate pests, diseases, nematodes and weeds of citrus. Although primarily oriented on the USA, approaches may be relevant to other regions. Suitable for farmers, extension workers and pest control operators.

Available from ANR Publications (see I003) for US \$ 17.00, excluding postage and handling.

B183 Compendium of citrus diseases.

APS Press, 1988 (in preparation), approx. 100 p., (28 x 21.5 cm), coloured and black & white illustr., references, glossary, index, English.

One of a series of compendia, which describes the major diseases of citrus. Following a general introduction to the crop, chapters deal with fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B184 The dieback of mandarin oranges in Darjeeling district.

S. Mukhopadhyay, 1985, 12 p., (25 x 17.5 cm), coloured illustr., English.

Brochure describing the important pests and diseases of mandarin oranges in Darjeeling district of West Bengal. The major pests include trunkborer, fruit flies, mealybugs, scale insects, aphids, and leaf-miners; the important diseases are powdery mildew, gummosis, anthracnose, root rot, tristeza virus and greening. Suitable for farmers, extension workers, pest control operators and agricultural students in India.

Available from Prof. S. Mukhopadhyay, Dept. of Plant Pathology, Faculty of Agriculture, Brdhan Chandra, Krishi Visua Vidyalaya, Kalyani 741235, West Bengal, India, price unknown. A copy of the request should also be sent to the Secretary, Dept. of Development and Planning (Hall Istairs), Government of West Bengal, P.O. XDL Darjeeling, West Bengal.

B185 Management of mandarin orchards.

1985, 4 p., Nepalese.

Leaflet describing the management of mandarin orchards. Cultural practices, including fertilizers, seedlings, buddings, pest and disease control, are presented as a package of activities. Suitable for farmers in West Bengal.

Available from Citrus Dieback Research Station, Kunchanijungha Kothi, Upper Cert Rd., Kalinpong, Df. Darjeeling, West Bengal, India, price unknown.

B186 Integrated pest management for almonds.

University of California, 1985, 155 p., (28 x 21 cm), approx. 200 black & white and coloured illustr., list of terms, English, ISBN 0-931876-73-7.

Provides practical information on insect, vertebrate and mite pests, and the diseases, nematodes and weeds which affect almonds, their recognition, importance and control options (cultural, biological, chemical). Suitable for farmers, extension workers and pest control operators in California, USA, although it may also be relevant to other regions.

Available from ANR Publications (see I003) for US \$ 17.00.

B187 Integrated control of mango pests.

R. Moahmood & A. I. Mohyuddin, 1986, 11 p., English, Urdu summary.

Brochure describing IPM of mango pests (fruit flies, scale insects and mango mealybug). Avoidance of broad-spectrum pesticides gives natural control of scale insects, and the use of traps for fruit fly and mealybugs which are controlled by cultural practices provides better opportunities for natural enemies. Suitable for farmers, extension workers and pest control operators in Pakistan.

Available from CAB Institute of Biological Control, Pakistan Station, Murrec Rd., P.O.Box 8, Rawalpindi, Pakistan, free of charge.

B188 Cebu technoguide on mango.

Mango Technical Team, 1984, 90 p., (15 x 22.5 cm), 26 black & white and coloured illustr., English (will also be available in Cebuano).

General introduction to the production and management of mango. A chapter on crop protection deals with the major pests and diseases and advises on cultural practices, sanitation and chemical control. Suitable for farmers, extension workers and agricultural operators in the Province of Cebu, Philippines.

Available from Central Visayas Technopack Project.. c/o Consortium of Integrated Regional Research in Development (CIRRD), Research Management Centre, DA-7 Compound, M. Velis St., Cebu City, Philippines. Free of charge for farmers and extension workers, otherwise PF 50.00; add PF 15.00 for postage.

B189 Integrated pest management for walnuts.

University of California, 1987, 2nd ed., 96 p., (28 x 21 cm), approx. 200 black & white and coloured illustr., list of terms, English, ISBN 0-931876-50-8.

Handbook covering all aspects of diseases and pest management in walnuts. With the help of illustrations, chapters describe pests, diseases,

weeds, nematodes, and symptoms, and suggest suitable control options. Suitable for farmers, extension workers and pest control operators in California, USA, although the methods may be relevant to other regions.

Available from ANR Publications (see I003) for US \$ 17.00, excluding postage and handling.

B190 Guide pratique de lutte contre les criquets ravageurs au Brésil.

J.F. Duranton et al., 1987, 169 p., (24 x 17 cm), 57 black & white illustr., 364 references, French (also available in Portuguese), ISBN 2-87614-005-5.

A general introduction to locust pests in Brazil, including the different species, their distribution and importance. Sampling procedures and detailed information on chemical control methods and techniques are included, as well as notes on non-chemical control methods. Suitable for extension workers and pest control operators in Brazil.

Available from FAO, AGP-P/CIRAP, (see I020); or PRIFAS, Dept. GERDAT (see I044), price unknown.

B192 Guide pratique d'identification des acridiens du Sahel.

J. Mestre, 1987.

Field manual to identify locusts and grasshoppers of the Sahel. Suitable for extension workers, scientists and pest control operators in the Sahel region, Africa.

Available from PRIFAS, Dept. GERDAT (see I044), price unknown.

B193 Guide pratique d'identification des acridiens du Nordeste du Brésil.

M. Lecoq, 1988 (in preparation).

Field manual to identify grasshoppers in North-East Brazil. Suitable for extension workers, scientists and pest control operators in Brazil.

Available from PRIFAS, Dept. GERDAT (see I044), price unknown.

B194 Manuel de prospection acridienne en zone tropicale sèche (tome 1: de la théorie; tome 2: a la pratique).

J.F. Duranton et al., 1982, 695 & 801 p., (17 x 14 cm), more than 600 black & white and coloured illustr., 730 references, index, French, ISBN 2-11-084471-X.

The first volume deals with the theory of locust and grasshopper control in Africa. Chapters detail the taxonomy, morphology, anatomy, physiology, biology, ecology, ethology, population dynamics, polymorphism, important pest species, and the organization of pest surveillance and pest control. The second volume covers organization of a surveillance service in greater detail, including sampling, identifying pest locust species, describing and recording environmental conditions, processing of research data, and extension work. Suitable for extension workers, pest control operators and agricultural students in Africa.

Available from PRIFAS, Dept. GERDAT (see I044) for FF 250.00; add FF 40.00 for postage in France, FF 70.00 for all other countries.

B195 Manuel pratique d'identification des principaux acridiens du Sahel.

M. Launois, 1978, 303 p., (18 x 13 cm), approx. 600 black & white illustr., 3 references, index, list of terms, French (also available in English).

A guide, with pictorial identification keys, to more than 100 locust species in the Sahel region. Suitable for extension workers, pest control operators and agricultural students in the Sahel region, Africa.

Available from PRIFAS, Dept. GERDAT (see I044), price unknown.

B196 Guide antiacridien du Sahel.

J.F. Duranton et al., 1987, 343 p., (24 x 16 cm), 170 black & white illustr., 200 references, index, French, ISBN 2-11-084853-7.

Provides practical information combined and condensed from the earlier book 'Manuel de prospection acridiens en zone tropicale sèche' (see B194). Following a general introduction to locusts and grasshoppers, chapters deal with the solitary and gregarious phases, monitoring and sampling, identification of the species, and aspects of locust and grasshopper control. Suitable for extension workers and pest control operators in the Sahel region, Africa.

Available from PRIFAS, Dept. GERDAT (see I044) for FF 90.00; add FF 30.00 for postage in France, FF 60.00 for all other countries.

B197 Catalogue iconographique des principaux acridiens du Sahel.

M.H. Launois-Luong & M. Launois, 1987, 94 p., (24 x 16 cm), 80 black & white illustr., index, French, ISBN 2-11-084854-5.

This handbook is an extract from the 'Guide antiacridien du Sahel' (see B196). The characteristics of 70 pest grasshopper species in the Sahel (male and female) are described for identification purposes, accompanied by

detailed drawings. Suitable for extension workers and pest control operators in the Sahel region, Africa.

Available from PRIFAS, Dept. GEKDAT (see I044) for FF 40.0; add FF 20.00 for postage in France, FF 40.00 for all other countries.

B198 Grasshoppers and locusts: a handbook of general acridology (vol. 2).
ODNRI, 1977.

Deals with the behaviour, ecology, biography and population dynamics of grasshoppers and locusts. Suitable for researchers and pest control operators.

Available from ODNRI (see I039) for £ 18.00, including postage, quoting order code B5.

B199 Locust and grasshopper agricultural manual.
ODNRI, 1982.

No additional information available.

Available from ODNRI (see I039) for £ 53.00, including postage, quoting order code B9.

B200 Locusts and grasshoppers of economic importance in Thailand.
ODNRI, 1979.

No additional information available.

Available from ODNRI (see I039) for £ 17.05, including postage, quoting order code ALM14.

B202 Hoppers of some Sahelian grasshoppers: a guide to their identification.
ODNRI, in preparation.

A colour identification guide to the immature stages of grasshoppers in the Sahel region, Africa.

Available from ODNRI (see I039), price unknown, quoting order code OB6.

B203 Locust handbook.

A. Steedman (ed.), 1988, 2nd ed., 187 p., (30 x 21 cm), 152 black & white illustr. and 4 coloured plates, 7 references, index, English, ISBN 0-85954-232-7.

Compiles basic information on locusts, their distribution, damage, life cycle and behaviour, seasonal movements and swarming. Some 20 African and South-East Asian locust species are described in detail, and methods for locust control (including a chapter on natural control) are dealt with. Suitable for plant protection officers, pest control operators and extension workers engaged in locust control in Africa.

Available from ODNRI (see I039) for £ 24.00, including postage and handling.

B204 The desert locust pocket book.
ODNRI, 1978.

No additional information available.

Available from ODNRI (see I039) for £ 3.60, including postage, quoting order code B7.

B205 Desert locust forecasting manual (2 vols.).
ODNRI, 1981.

No additional information available.

Available from ODNRI (see I039) for £ 98.00, including postage, quoting order code MSC15.

B206 Incubation and hopper development periods of the desert locust: maps.
ODNRI, 1973.

A series of maps providing information on the desert locust, its incubation and hopper development periods, meteorological stations and a topographic guide. Six sets of maps are currently available: West Africa (MAP1); North Africa (MAP2); North-East Africa (MAP3); East Africa (MAP4); Near-East (MAP5); and South-West Africa (MAP6). A guide to the use of the maps is also available (MAP7). Suitable for research workers, plant protection officers and locust control operators in Africa and the Near East.

Available from ODNRI (see I039) for £ 19.70 per set, quoting the map number, £ 1.10 for the map guide, or £ 81.00 for the total set of 156 maps plus guide (MAP10).

B207 Collection acridologie operationelle.
CILSS-DFPV/CIRAD-PRIFAS, 1988, French.

A series of practical information and field manuals on locust and grasshopper control in Africa including the following publications: *Les criquets du Sahel* (see B208) – an identification guide, illustrated with coloured photographs of 41 Sahelian locusts; *La surveillance des Sauteriaux du Sahel* – a field manual on monitoring and sampling grasshopper populations; *Oedaleus senegalensis* (sauteriaux ravageur du Sahel) – instruction on the recognition, biology, seasonal migrations, population dynamics, economic importance and control methods for this most important grasshopper pest of the Sahel, suitable for pest control operators and extension staff; *La lutte chimique contre les criquets du Sahel* – basic manual on all aspects of chemical control of Sahelian locust species, including information on control thresholds, available pesticides, calculation of dosages, and application methods; *Vade-mecum des principaux criquets ravageurs du Sahel* – overview of the most important locusts and grasshoppers of economic importance in the Sahel, with emphasis on their recognition.

Available from PRIFAS-CIRAD (see I044); or DFPV, Département de Formation en Protection des Végétaux, B.P. 12625, Niamey, Niger, price unknown.

B208 *Les criquets du Sahel.*

M. Lecoq, 1988, Collection Acridologie Opérationnelle no. 1, 130 p., (18 x 10 cm), approx. 100 coloured photographs and illustr., index, French, ISBN 2-87614-010-1.

An illustrated pocket guide to 41 Sahelian locusts with short notes on major identification characteristics, which is one of a series of practical publications on locust and grasshopper control in Africa (see B207). Pictorial symbols provide information on the life cycle, preferred habitat, food plants, colouration and economic importance.

Available from PRIFAS-CIRAD (see I044); or DFPV, Département de Formation en Protection des Végétaux, B.P. 12625, Niamey, Niger, price unknown.

B209 *Helicopters in grasshopper control.*

E. Dorow, 1978, Schriftenreihe der GTZ no. 59, 66 p., 13 illustr., German, English and French text, ISBN 3-88085-047-X.

Describes the use of helicopters for grasshopper control in Northern Nigeria. Suitable for extension workers and plant protection officers in Nigeria.

Available from GTZ (see I024) for DM 15.20, quoting order code 0059-SR.

B210 An extension guide to rat control with special reference to the Cordillera, Philippines.

The Montanosa Research & Development Center Inc., 1987, 50 p., (23 x 15 cm), 20 black & white illustr., 9 references, English, ISBN 971-8554-07-6.

Focuses on rat control as a community-oriented holistic approach. Basic information about rat species, their characteristics, biology and ecology is provided, and the approaches to rat control, and the advantages and disadvantages of physical, mechanical and chemical methods are detailed. Accompanies a series of 3 posters on rat control. Suitable for extension workers, teachers and pest control operators.

Available from SIBAT (see I087), price unknown.

B211 Rodent pests and their control.

N. Weis, 1981, GTZ Special Issue, 200 p., (26 x 21 cm), 70 black & white and coloured illustr., 50 references, English.

Destructive rodent species, their biology, and preservation instructions for collectors are first described, together with guidelines for planning a campaign and evaluating its results. Later chapters present methods for controlling rodent pests in built-up areas and open country, and advise on use of, and resistance to, rodenticides. The correct application of bait and construction of bait containers is illustrated, and the use of proven appraisal methods in sugarcane, rice and maize is demonstrated. Accident prevention and first aid measures are also discussed. The rodent pest situation in various countries is assessed. Suitable for extension workers.

Available from GTZ (see I024), price unknown.

B212 Rat control.

Malaysia Crop Protection Branch, 1986, Bahasa Malay.

This stencil focuses on rat control methods, emphasizing community strategies and group efforts to achieve economic gain, and is part of a multi-media campaign. Suitable for farmers, extension workers, pest control operators, agricultural students and agricultural communities in Malaysia.

Available from the Secretary, National IPM Committee, Crop Protection, Dept. of Agriculture, Jalan Gallagher, Kuala Lumpur, Malaysia, price unknown.

B213 Rodent pests: their biology and control in Bangladesh.

H. Posamentia & A. van Elsen, 1984, 116 p., (22 x 14 cm), 40 black & white illustr., 46 references, glossary, index, English (will also be available in Bengali).

Deals with rodent pests in Bangladesh. Practical information is provided on their biology, ecology and behaviour, damage to field crops, techniques for rodent studies, the major rodent pests of Bangladesh, control principles, and chemical control including the use of baits, fumigation procedures, and integrated rodent pest management. Suitable for plant protection officers and extension workers in Bangladesh.

Available from Bangladesh-German Plant Protection Programme, Khamar Bari, Farmgate, Dhaka, Bangladesh; or Plant Protection Division, Dept. of Agricultural Extension, Dhaka, Bangladesh, price unknown.

B214 Rahsia: menghapus tikus dengan berkesan.

Jabatan Pertanian, 6 p., (30 x 21 cm), 6 coloured illustr., Bahasa Malay.

Easy-to-read leaflet on rodent control which aims to create awareness and stimulate rat control measures. A simple scheme for placing poisoned baits during the rice growing season is given. Suitable for farmers, and rural communities in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia, (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

B215 Masalah tikus?

Jabatan Pertanian, 4 p., (14.5 x 22 cm), Bahasa Malay.

Easy-to-read leaflet suggesting general rat control methods, such as removal of crop remainders, hygiene in and around houses, and the use of poisoned baits. General procedures for baiting and applying rodenticides are briefly described. Suitable for farmers, and rural communities in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia, (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

B216 Peperangan dengan tikus.

Jabatan Pertanian, 6 p., (30 x 15 cm), 6 black & white illustr., Bahasa Malay.

Easy-to-read leaflet on rodent control which aims to inform the reader about the seriousness of rodent damage, and motivate participation in rat control campaigns. Moral and religious arguments are used to motivate readers. Suitable for general readership, rural communities, and farmers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia, (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

B220 Field guide to important arable weeds of Zambia.

R. Vernon, 1983, 151 p., (18 x 10 cm), 103 coloured illustr., index. English.

Pocket guide for the identification of arable weeds in Zambia, excluding pasture weeds, perennial crops and rice. Latin and local names, recognition characteristics, and information about similar weeds are given, together with notes on distribution and importance, local use, and cultural and chemical control of some 80 weeds. A short introduction to weed seedlings is also provided. Suitable for farmers, and extension workers in Zambia.

Available from Mount Makul Central Research Station, Dept. of Agriculture, Chilanga, Zambia, price unknown.

B221 Weed handbook of Western Polynesia.

W.A. Whistler, 1983, GTZ Schriftenreihe no. 157, 143 p., (21 x 14.5 cm), 91 coloured illustr., 22 references, index, glossary. English.
ISBN 3-88085-227-8.

Describes 80 of the most common weeds in Western Polynesia, with notes on their importance and an identification key to the genera. Separate chapters deal with the cultural, biological and chemical control of weeds, and weed problems in specified crops. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from GTZ (see 1024) for DM 41.00.

B222 Plantas daninhas em pomar de macieira: ocorrência, descrição e control.

M. Lesso & J.P.H.J. Ducrequot, 1983, EMPASC Boletim Técnico no. 21, 24 p., (21.5 x 15 cm), 18 black & white illustr., 12 references. Portuguese.

Brochure briefly describing some 20 weeds of apple orchards in Brazil, and their chemical control. The effectiveness of several herbicides against these weeds is tabulated. Suitable for extension workers and agricultural students in Brazil.

Available from Empresa Catarinense de Pesquisa Agropecuária S.A. (EMPASC), Estrada General do Itacorubi s/no-, Caixa Postal D20, 88000 Florianopolis, SC Brazil, price unknown.

B223 Striga identification and control handbook.

K.V. Romaiah et al., 1983, Information Bulletin no.15, 56 p., (18 x 10 cm), 34 coloured illustr., English (also available in French).

Describes the most important 25 species of this parasitic weed, using a key for the 7 major species. The biology and symptoms of attack are given, illustrated by coloured photographs. Notes on control methods including resistant varieties, hand-pulling, rotation, herbicides, and biological control are included. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from ICRISAT (see H038) for US \$ 4.20 (HDC) or US \$ 1.40 (LDC); add approx. \$ 1.70 for postage.

B224 Malezas tropicales y subtropicales: tropical and subtropical weeds: mauvaises herbes tropicales et subtropicales.

Ciba-Geigy, 83 p., (21 x 15 cm), 110 coloured illustr., Spanish, English and French text.

Some 70 broad-leaf weeds, 35 grassy weeds and 7 cyperaceas are illustrated in coloured photographs, accompanied by their Latin, Spanish, English and French common names. Suitable for farmers, extension workers and agricultural students.

Available from Ciba-Geigy S.A., Division A.C., Basle, Switzerland, price unknown.

B225 Tropical weeds: malezas tropicales.

J. Cardenas et al., 1986, 341 p., coloured illustr., English and Spanish text.

Weed identification handbook describing nearly 300 weeds, accompanied by full page colour photographs. Scientific and common names are listed. Suitable for extension workers in the tropics.

Available from COMALFI (see H031) for US \$ 20.00.

B226 Quelques adventices banales des cultures de l'Afrique Occidentale et la lutte contre celles-là: some common crop weeds of West Africa and their control.

P.J. Terry, USAID, 1983, 132 p., (18 x 10 cm), 88 black & white and coloured illustr., 17 references, index, list of terms, French and English text.

Some 45 weed species are illustrated in coloured photographs and line drawings, accompanied by detailed descriptions of the plant parts. Weed control in groundnut, tree crops, cotton, maize, cassava, bullrush millet, rice and sorghum are dealt with separately. The susceptibility of weeds to herbicides and cultivation is tabulated comprehensively. Suitable for farmers, extension workers, pest control operators and agricultural students in West Africa.

Available from USA Agency for International Development (USAID), Regional Food Crop Protection Project 625-0928, Dakar B.P.49, Sénégal, price unknown.

B227 Contributions à la biologie, à la propagation et à la lutte contre les adventices au Maroc.

R. Link & M. Mouch, 1984, Schriftenreihe der GTZ no. 146, 160 p., French, ISBN 3-88085-193.

Deals with the biology, spread and control of weeds in Morocco. Suitable for extension workers and agricultural students in Morocco.

Available from GTZ (see I024) for DM 20.50.

B228 Common weeds from Iran, Turkey, the Near East and North Africa.

F. Bischof, 1979, Schriftenreihe der GTZ no. 49, 234 p., 204 coloured illustr., English, ISBN 3-88085-061-5.

Weed identification handbook for the Near East, Iran, Turkey and North Africa which aims to increase the information on weed recognition and control available to indigenous experts in developing countries. Suitable for extension workers in Northern Africa and the Near East.

Available from GTZ (see I024) for DM 56.00.

B229 Curso basico sobre control de malezas en la Republica Dominicana.

G. Jurgens, Schriftenreihe der GTZ no. 23, Spanish, ISBN 3-88085-010-0.

Combines papers presented at a basic weed control course held in the Dominican Republic in 1975. As well as general information, papers deal with weed control in maize and sorghum, rice, legumes, vegetables, sugarcane and cocoa. Suitable for farmers, and extension workers in the Dominican Republic.

Available from GTZ (see I024) for DM 5.00.

B230 Field guide to common weeds of IITA and their control.

Akobundi et al., 1983, 50 p., (22 x 14 cm), illustr., English.

Botanical descriptions of 35 common weeds at the International Institute of Tropical Agriculture are given, accompanied by photographs. Control measures are described, as well as the methodology used to calculate herbicide dosages. Suitable for extension workers and pest control operators in Africa.

Available from IITA (see H042), free of charge.

B232 Manejo y control de malezas en el tropico.

J. Doll, 1979, 114 p., (20.5 x 16 cm), Spanish.

Aims to acquaint the agronomist with weed control and management (tropical weeds common in crops, plant interference, herbicides), and aid in the development of agricultural production programmes. Suitable for extension workers, agricultural students and scientists.

Available from CIAT (see H019) for US \$ 3.50 within CIAT, US \$ 5.00 within Colombia, US \$ 6.50 for the Americas, or US \$ 7.00 for other countries.

B233 Guía práctica para el control de malezas en potreros.

J. Doll & P. Argel, 1984, 30 p., (22 x 16 cm), Spanish.

Weed control is presented as an important step in a pasture development plan. The factors which favour weed invasion are considered, as well as weed control methods, herbicide selection and necessary precautions. Suitable for farmers and extension workers.

Available from CIAT (see H019) for US \$ 1.50 within CIAT, or US \$ 2.00 for other countries, including postage and handling.

B234 Panduan bergambar bagi rumpai disawah padi.

Norlia Rajali, 1986, 148 p., (15 x 21 cm), 129 black & white illustr., Malay.

Pocket guide dealing with losses due to weeds, classification of paddy weeds, weed control techniques, herbicide action, and integrated weed control. Brief information on grasses, sedges and broad leafed weeds is also provided. Suitable for extension workers and pest control operators.

Available from Dept. of Agriculture, Wisma Tani, Jalan Mahameni, Kuala Lumpur 01-02, Malaysia, free of charge.

B235 Adventices tropicales: flore aux stades plantule et adulte de 123 espèces Africaines ou pantropicales.

H. Merlier & J. Montegut, 1988, 490 p., (24 x 16 cm), black & white and coloured illustr., French.

Field manual describing the ecology, characteristics and propagation of 123 African and pantropical weeds. Identification keys are provided for the seedling stages. Suitable for farmers, and extension workers in Africa and the tropics.

Available from PRIFAS, Dept. GERDAT, Adventices Tropicales (see I044), for FF 250.00, including postage.

B236 Saccharum spontaneum, una nueva maleza para el continente Americano.

G. von Lindeman & R. de la Cruz, 6 p., (23 x 13 cm), 11 coloured illustr., Spanish.

Leaflet dealing with a new weed, *Saccharum spontaneum*, which was accidentally introduced into Central America. Characteristics of *Saccharum*, its economic importance, distribution, reproduction and control measures are described. Suitable for farmers, and extension workers in Panama and Central America.

Available from Proyecto Manejo Integrado de Plagas (MIP), CATIE (see H012), price unknown.

B237 West African weeds.

G.W. Ivens, K. Moody & J.K. Egunjobi, 1978, 225 p., (21 x 14 cm), 104 black & white illustr., 18 references, glossary, index, English, ISBN 0-19-575284-8.

Provides detailed descriptions and line drawings of 120 West African weeds, with notes on their propagation, distribution, and crops in which they cause problems. Suitable for plant protection officers, agricultural students and extension workers in West Africa.

Available from Oxford University Press Nigeria, Oxford House, Iddo Gate, P.M.B. 5095, Ibadan, Nigeria, or from most bookshops, price unknown.

B238 Manual de identificação e controle de plantas daninhas: plantio direto e convencional.

H. Lorenzi, 1984, 236 p., (23 x 11 cm), approx. 200 coloured photographs, list of terms, index, Portuguese.

Field manual providing notes on some 100 weeds in Brazil, accompanied by photographs of the seedling and flowering stage. The effect of 80 herbicides against each weed species is evaluated in tables. Includes an extensive glossary of the recommended herbicides. Suitable for plant protection officers, agricultural students and extension workers in Brazil.

Available from Centro de Tecnologia COPERSUCAR, Av. Brasil 800, 13.460 Nova Odessa, Sao Paulo, Brazil, price unknown.

B239 Tropical weed seeds I & II: semillas de malezas I & II.

J. Dol et al., 1973 & 1974, 8 p., 48 full colour photographs, trilingual index (including Portuguese), English and Spanish text.

Leaflets include magnified photographs of the seeds of 48 weed species with common names given in English, Spanish and Portuguese, together with a short introduction.

Available from IPPC (see I032), free of charge.

B240 Field manual for weed control research.

L.C. Burrill, J. Cardenas & E. Locatelli, 1976, 60 p., (28 x 20 cm), illustr., appendices, English (also available in Spanish).

Compilation of practical information about field research into weed control. Sections cover planning, execution and evaluation of weed control field research, and presentation of results, including descriptions of laying out plots and types of field trails. Lists of measures, equivalents and conversions are provided. Suitable for weed scientists, agricultural students and plant protection officers.

Available from IPPC (see I032) for US \$ 5.00, including surface mail.

B242 Control de malezas en la República Dominicana.

J.E. Bautista, R. Hansen del Orbe & G. Jürgens, 1973, Schriftenreihe der GTZ no. 10, 40 p., Spanish.

Describes 100 major weeds of the Dominican Republic, including details on distribution, importance and control methods. Tables provide information on herbicide use in cereals, legumes, vegetables, cotton, sugarcane, orchards and pastures. Suitable for pest control operators, extension workers and farmers in the Dominican Republic.

Available from GTZ (see I024) for DM 10.00, quoting order code 00010-SR.

B243 Weeds of North Yemen (Yemen Arabic Republic).

A. Shaukat et al., 1983, Schriftenreihe der GTZ no. 93, 412 p., English, ISBN 3-88085-195-6.

No additional information available.

Available from GTZ (see I024) for DM 45.00, quoting order code 0093-SR.

B245 Protection of stored products against insects and fungi.

AGROMISA, Agrodoc 18, 47 p., (21 x 14 cm), 8 black & white illustr., 4 references, English.

Brochure introducing protection measures for stored products. Following short descriptions of the major insect and rat pests, and diseases found in storage conditions, the application of insecticides in the storage of several food products is described. Rodent control measures are also suggested. Suitable for farmers and extension workers.

Available from Agromisa (see I002); or TOOL (see I050) for Dfl. 5.00.

B246 Small farm grain storage: preparing grain for storage (vol. 1); enemies of stored grains (vol. 2); storage methods (vol. 3).

C. Lindblad & L. Druben, 1977, 203 p., 169 p. and 147 p. respectively, (28 x 21 cm), 50 black & white illustr., references, English.

Set of handbooks covering all aspects of grain storage. Volume 2 comprehensively deals with the pests encountered in storage, and basic methods of protection. Technical information on silo construction and hygiene is provided, together with practical advice on pest control, with and without pesticides. Suitable for farmers and extension workers.

Available from VITA (see I054); or TOOL (see I050) for Dfl. 17.00 per volume, excluding postage.

B247 Tables de détermination des principaux ravageurs des denrées entreposées dans les pays chauds.

H. Weidner & G. Rack, 1984, Schriftenreihe der GTZ no.129, 160 p., 100 black & white illustr. and 23 coloured plates, French, ISBN 3-88085-185-9.

Identification guide for pests of stored products, with illustrations to facilitate identification (including the larval stage). Instructions are also given for establishing an insect pest collection. Suitable for extension workers and pest control operators in the tropics.

Available from GTZ (see I024) for DM 30.00, quoting order code 0129-SR.

B248 Post harvest problems.

GTZ, 1980, 291 p., (21 x 15 cm), 70 black & white illustr., English.

Summary of reports presented at a OAU/GTZ seminar held in Africa. The major sources of storage losses are attributed to insufficient knowledge of hygienic measures, storage methods and use of storage pesticides, as well as lack of management. Suitable for extension workers, pest control operators, agricultural students and scientists in Africa.

Available from GTZ (see I024), price unknown.

B249 Le stockage des produits vivriers et semenciers: dégâts, pertes et moyens de stockage (vol. 1); lutte contre les ravageurs: hygiène de stockage (vol. 2).

J. Appert, 1985, Le Technicien d'Agriculture Tropical no. 4, 113 p. and 106 p. respectively, (17 x 22 cm), 45 black & white illustr., 6 references, list of terms, French, ISBN 2-7068-0881-0 and 92-9028-075-1.

General information on all aspects of food product storage and protection against insect pests and rodents is given in the 2 volumes. Suitable for farmers, extension workers and pest control operators in Africa.

Available from Agence de Coopération Culturelle et Technique, 13 quai André-Citroën, 75015 Paris, France; or CTA (see I012), price unknown.

B250 Principaux insectes déprédateurs de stocks.

DEGESCH, 1977, 24 p., (15 x 11 cm), 24 coloured illustr., French (also available in German).

Describes 24 insect and mite pests of stored products, their life cycle, distribution, and damage caused, accompanied by colour illustrations of each adult. Latin, French, English, Spanish and German common names are given. Some of the pesticides used to protect stored products are also mentioned. An accompanying poster is available (see D012). Suitable for extension workers, pest control operators and agricultural students.

Available from DEGESCH GmbH., 32-40 Weismüllerstrasse, D-6000 Frankfurt am Main 1, Federal Republic of Germany, price unknown.

B252 A guide to the greater grain borer (*Prostephanus truncatus* horn): a pest of stored produce.

4 p., (30 x 21 cm), 3 black & white illustr., 4 references, English.

Leaflet on the distribution, recognition, life cycle and control of the greater grain borer, a recently-introduced pest of storage products in Tanzania.

Surveillance and chemical control measures are recommended. Suitable for extension workers and pest control operators in Tanzania.

Available from ODNRI, Storage Dept. (see I039). price unknown.

B253 Dumuzi maelekezo information.

G.E. Key & R.A.S. Mungereza, 1986, 24 p., (21 x 14 cm), 7 black & white illustr., Swahili and English text.

Brochure about Dumuzi, the greater grain borer (*Prostephanus truncatus*), a major pest of farm-stored maize in Tanzania. Distribution, biology, damage and pesticide control are described. Suitable for farmers, extension workers and pest control operators in Tanzania.

Available from District Agricultural Development Office, Tabora, Tanzania; or ODNRI (see I039), price unknown.

B254 Safe grain storage in underground pits.

S. Birhane & W. Kuhne, 1987, Crop Protection Circular no.1, 6 p., (22.5 x 14 cm), 1 black & white line drawing, English.

Brochure describing a simple grain storage method. The adverse effects of fungi in stored grain are dealt with, and instructions on how to build an effective underground pit are provided. Insect control using chemical pesticides and local plant materials is recommended. Suitable for small scale farmers in Ethiopia.

Available from Alemaya University of Agriculture, P.O. Box 138, Dire Dawa, Alemaya, Ethiopia, price unknown.

B255 Mixing insecticide powders with grain for storage.

P. Golob, 1977, Rural Technology Guide no. 3.

No additional information available.

Available from ODNRI (see I039) for £ 0.60, including postage, quoting order code RTG3.

B256 Postharvest grain loss assessment methods.

K. Harris & C. Lindblad, 193 p., English.

Defines and examines post-harvest grain loss problems, presenting criteria for fact-gathering, sampling and loss management.

Available from VITA Publication Service (see I054) for US \$ 12.00 surface mail, or US \$ 16.25 airmail outside the USA.

- B258 The use of plants and minerals as traditional protectants of stored products.**
ODNRI, 1980.

No additional information available.

Available from ODNRI (see I039) for £ 3.20, including postage, quoting order code G138.

- B259 Assessment of farm level grain losses after harvest.**
ODNRI, 1986.

No additional information available.

Available from ODNRI (see I039) for £ 6.00, including postage, quoting order code G191.

- B260 Food storage manual.**
FAO, 1983, 2nd ed.

No additional information available.

Available from FAO Bookshop (see I020), free of charge.

- B262 Insects and arachnids of tropical stored products: their biology and identification (a training manual).**
ODNRI, 1985.

No additional information available.

Available from ODNRI (see I039) for £ 10.00, including postage, quoting order code MSC21.

- B263 Principles of potato storage.**
R.H. Booth & R.L. Shaw, 1981, 105 p., English, ISBN 92-9060-028-4.

Provides information on socio-economic factors, and biological and engineering aspects of potato storage. Suitable for scientists, plant protection officers and extension workers.

Available from CIP (see H024) for US \$ 5.00.

- B264 Potato storage for developing countries.**
R.H. Booth, R.L. Shaw & L.J. Harmsworth, 1981, 24 p., English, ISBN 92-9060-029-2.

This brochure is a condensed version of 'Principles of potato storage' (see B263).

Available from CIP (see H024) for US \$ 1.00.

B265 Introduction to potato storage.

R.L. Shaw & R.H. Booth, 1981, 10 p., English (also available in Spanish, 1986), ISBN 92-9060-031-4.

Extracted elements of the brochure 'Potato storage in developing countries' (see B264).

Available from CIP (see H024) for US \$ 1.00.

B266 The storage of tropical agricultural products.

Agromisa, 1982, Agrodok 31, 79 p., (20.5 x 15 cm), 29 black & white illustr., 14 references, English.

An easy-to-read, comprehensive introduction to the principles and methods of storage of tropical agricultural products. Temperature and humidity requirements in general are dealt with, as well as storage aspects for specific products (cereals, sowing-seed, root crops and oil-containing products), drying, and traditional and new storage methods. Illustrated instructions are also included for building storage pits and silos. Suitable for farmers and extension workers.

Available from Agromisa (see I002); or Tool (see I050) for Dfl. 5.00, excluding postage.

B267 Manual on improved farm and village level grain storage methods.

D. Dichter, 1978, GTZ Sonderpublikation SP49, 243 p., English.

No additional information available.

Available from GTZ (see I024) for DM 18.00, quoting order code R39/1139.

B270 Natural crop protection: based on local farm resources in the tropics and subtropics.

G. Stoll, 1987, 2nd ed., 188 p., (21 x 15 cm), 96 black & white illustr., 170 references, index, English (also available in Spanish, German and French), ISBN 3-924333-43-2.

Following an introduction to the principles of preventive crop protection, insect pests of rice, maize, legumes, vegetables, fruits and stored products

are described. Host plants, distribution, life cycle, damage pattern and possible control measures are discussed. The main part of the book then describes crop and storage protection methods, including the use of insecticidal plants, ashes and other substances, baits and traps. Suitable for large and small scale farmers, and extension workers in the tropics.

Available from Verlag Josef Margraff (see I079) for US \$ 15.00 or DM 25.00, excluding postage and handling; or from most bookshops.

B271 Formulating pyrethrum.

Pyrethrum Bureau, 1987, 3rd ed., 56 p., (25 x 22 cm), coloured illustr., appendices, English.

Describes pyrethrum, its biological, physical and chemical properties, formulated products, and the formulation theory. Appendices include information for the standard value required, proper formulation, and cured pyrethrum formulation. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from Pyrethrum Bureau, P.O.Box 420, Nakuru, Kenya, free of charge apart from postage and handling.

B272 Neem: production and potential.

Philippine-German Crop Protection Programme, 1986, 12 p., (22 x 15 cm), 7 coloured illustr., 11 references, English.

Brochure describing the neem tree, its characteristics, and various uses, particularly as an insect repellent, anti-feedant and insecticide. Methods of extraction are briefly described, as well as its use for crop protection and protection of stored beans. Suitable for large and small scale farmers, extension workers and pest control operators in the Philippines.

Available from GTZ Project Administration Service, P.O. Box 1021 MCPO, Makati, Metro Manila, 3117, Philippines, free of charge in the Philippines; price unknown for other countries.

B273 Extractos acuosos y polvos vegetales con propiedades insecticidas.

A. Lagunes, C. Arenas & C. Rodriguez, 1984, 203 p., (27 x 21 cm), 63 references, index, Spanish.

Deals with the use of plants or plant-derived substances for crop protection and insect control. An extensive alphabetical list of plant species with toxic effects against arthropods is provided, which indicates the toxicity, type of preparation, and the target pest species against which they can be used. The geographical distribution of the plant species and

pest arthropods are included. Suitable for large and small scale farmers, extension workers, pest control operators and agricultural students in Mexico.

Available from Dr. Angel Lagunes Tejeda, Centro de Entomologia, Colegio de Postgraduados, 56230 Chapingo, Mexico for US \$ 5.00, excluding postage and handling.

B274 Manejo de insecticidas piretroides.

A. Lagunes Tejeda, 1984, 2nd ed., 29 p., (21 x 14 cm), 93 references, Spanish.

Brochure introducing the main characteristics of pyrethroids. Sections deal with the history of pyrethroids, pest resurgence after pesticide applications, and resistance against pyrethroids. Suitable for extension workers, pest control operators and agricultural students in Mexico.

Available from Angel Lagunes Tejeda, Centro de Entomologia, Colegio de Postgraduados, 56230 Chapingo, Mexico, for US \$ 8.00, excluding postage and handling.

B275 Natural methods for treatment of pests and diseases in crops.

INADES-Formation, 35 p., (21 x 15 cm), 13 black & white illustr., 2 references, English.

Brochure describing natural methods used in crop and storage protection, such as plants that repel or kill insects, the use of soap and other substances, traps, and baits. Examples are taken from the book 'Natural crop protection, based on local farm resources in the tropics and subtropics' (see B270). Local methods employed by Cameroon farmers are also described. Suitable for large and small scale farmers and extension workers in Cameroon.

Available from INADES-Formation (see I030) for F CFA 200.00, excluding postage and handling.

B280 Guidelines for the safe handling of pesticides during their formulation, packing, storage and transport.

GIFAP, (21 x 12 cm), coloured illustr., list of terms, English (also available in Spanish).

Brochure providing practical guidelines for safety precautions and accident prevention in the formulation, packing, storage and transport of pesticides. Each stage is clearly illustrated. An accompanying series of slides is also available (see C127). Suitable for extension workers, pest

control operators, plant protection officers, pesticide formulators, packers, and shopkeepers.

Available from GIFAP (see I023) for BF 150.00 if less than 35 copies are ordered, quoting GSHBE (GSHBS for the Spanish version).

B281 Guidelines for the safe and effective use of pesticides.

GIFAP, 1983, 58 p., (21 x 12 cm), 50 coloured illustr., list of terms, English (also available in Spanish, French and Portuguese).

Clearly-illustrated, useful brochure dealing with all stages of pesticide use, from initial selection of a pesticide to application in the field. Guidelines are given for safety precautions, avoidance of risks, and handling in case of accidents at each stage. First aid in cases of pesticide poisoning is briefly described. An accompanying pictorial poster (see D020) and series of slides (see C126) are also available. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from GIFAP (see I023) for BF 150.00 if less than 35 copies are ordered, quoting GSUBE (GSUBS for the Spanish version, GSUBF for the French version, or GSUBP for the Portuguese version).

B282 Guidelines for emergency measures in cases of pesticide poisoning.

GIFAP, (21 x 12 cm), coloured illustr., English (also available in Spanish and French).

Useful brochure from the GIFAP series which provides simple and comprehensive information on handling in cases of pesticide poisoning. An accompanying pictorial poster (see D022) and series of slides (see C125) are also available. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from GIFAP (see I023) for BF 150.00 if less than 35 copies are ordered, quoting GEMBE (GEMBS for the Spanish version, or GEMBF for the French version).

B283 Guidelines for quality control of pesticides.

GIFAP, (21 x 12 cm), 30 coloured illustr., 9 references, English (also available in Spanish).

Brochure intended as a guide for agrochemical industries, national authorities, international organizations, and managers and workers in the chemical pesticide industry, so that high standards and uniform quality control procedures can be achieved. Suitable for pest control operators,

plant protection officers, pesticide formulators and staff of pesticide industries.

Available from GIFAP (see I023) for BF 150.00, quoting GQCBE (GQCBS for the Spanish version).

B284 Guidelines for the avoidance, limitation and disposal of pesticide waste on the farm.

GIFAP, 1987, (21 x 12 cm), coloured illustr., English (also available in Spanish).

Clearly-illustrated brochure from the GIFAP series providing practical information on pesticide waste management for farmers. Guidelines for safe removal of pesticide packing materials and cleaning of application equipment are given, to help reduce environmental pollution and health risks. An accompanying series of slides is also available (see C124). Suitable for farmers, extension workers and pest control operators.

Available from GIFAP (see I023) for BF 150.00 if less than 35 copies are ordered, quoting GWDBE (GWDBS for the Spanish version).

B285 Guidelines for the safe transport of pesticides.

GIFAP, 1987, (21 x 12 cm), coloured illustr., English (also available in Spanish).

Clearly-illustrated brochure providing practical information on all aspects of pesticide transportation. Safety precautions, preventative measures and emergency procedures in case of accidents are given. An accompanying series of slides is also available (see C123). Suitable for extension workers, pest control operators, plant protection officers and agrochemical shopkeepers.

Available from GIFAP (see I023) for BF 150.00 if less than 35 copies are ordered, quoting GSTBE (GSTBS for the Spanish version).

B286 Guidelines for warehousing and storage.

GIFAP, 1988, (21 x 12 cm), coloured illustr., English (other languages are in preparation).

A new brochure in the GIFAP series of guidelines.

Available from GIFAP (see I023) for BF150.00, quoting GWSBE.

B287 Prevencao de acidentes no uso de agrotóxicos.

Fundacentro, Série Técnica no. 01, 8 p., (22 x 12 cm), black & white illustr., Portuguese.

Leaflet on the prevention of accidents when using agropesticides, which is part of a series of extension materials for farmers and agricultural workers about general safety precautions and prevention of accidents. Suitable for farmers, and extension workers in Brazil.

Available from FUNDACENTRO, Caixa Postal 11.484, CEP 05499, Sao Paulo (SP), Brazil, price unknown.

B288 Prevencao de acidentes em depósitos de agrotóxicos e de lixo tóxico.

Fundacentro, Série Técnica no. 05, 8 p., (22 x 12 cm), 27 black & white illustr., Portuguese.

Leaflet on safe storage methods for pesticides, and safe and proper disposal of pesticide packing material and empty containers. Suitable for large scale farmers, pest control operators, plant protection officers and extension workers in Brazil.

Available from FUNDACENTRO, Caixa Postal 11.484, CEP 05499, Sao Paulo (SP), Brazil, price unknown.

B289 Seguranca no uso de equipamentos costais para aplicacao de agrotóxicos.

Fundacentro, Série Técnica no. 07, 8 p., (22 x 12 cm), illustr., Portuguese.

Leaflet on the safe and proper use of pesticide application equipment. Suitable for pest control operators, plant protection officers and extension workers in Brazil.

Available from FUNDACENTRO, Caixa Postal 11.484, CEP 05499, Sao Paulo (SP), Brazil, price unknown.

B290 Manual de seguranca no uso de agrotóxicos.

C.E. Meirelles et al., 1987, 2nd ed., 40 p., (28 x 21 cm), 98 black & white illustr., 8 references, Portuguese.

One of a series of manuals which deal with the prevention of accidents by farmers and farm workers in Brazil. This manual is concerned with all aspects of safe and proper agropesticide use. Chapters discuss safety recommendations and guidelines for the transportation, storage, and application of pesticides. Symptoms of pesticide poisoning and first aid guidelines are given. Suitable for farmers, extension workers and pest control operators in Brazil.

Available from FUNDACENTRO, Caixa Postal 11.484, CEP 05499, Sao Paulo (SP), Brazil, price unknown.

B292 Safe handling and application of agropesticides: a safety guide for pesticide retail distributors and shopkeepers.

ARSAP/ASCAP, 1984, 14 p., (21 x 23 cm), coloured illustr.. English.

Brochure which can be used as a flip-chart in shops and other public places, showing all aspects of safe handling and application of pesticides. The illustrations are adapted from the GIFAP brochure 'Guidelines for the safe and effective use of pesticides' (see B281). Suitable for farmers, pesticide retail distributors, shop keepers, and extension workers in South-East Asia.

Available from Agricultural Requisites Scheme for Asia and the Pacific (ARSAP); or Economic and Social Commission for Asia and the Pacific (ESCAP), UN Building, Rajadamnern Ave., Bangkok 10200, Thailand, price unknown.

B293 Toxicology and safe handling of pesticides.

Philippine-German Crop Protection Programme, 1987, 56 p., (22 x 15 cm), 19 black & white illustr., 3 references, appendices, English.

Brochure dealing with all major aspects of safe pesticide use. Information is provided on toxicology and hazards of pesticides, formulations, pesticide labels, purchase, storage and application of pesticides, calibration of sprayers, pesticide calculations, maintenance of application equipment, residues, and disposal of pesticide solutions and containers. Appendices recommend first aid and treatment regimes in case of pesticide poisoning. Suitable for farmers, pest control operators, plant protection officers and extension workers in the Philippines.

Available from Philippine-German Crop Protection Programme. Bureau of Plant Industry, Ministry of Agriculture, San Andres, Malate Manila, Philippines, price unknown.

B294 Plaguicidas y salud.

Grupo Ambiental Habitat, 1986, 34 p., (21 x 14 cm), coloured illustr., Spanish.

Brochure in comic strip format about farm workers applying pesticides, which is intended to show the dangers of working without safety precautions. Questions for group discussions are provided at the end of the booklet. Suitable for farmers, field workers and pest control operators in the Dominican Republic.

Available from Grupo Ambiental Habitat, Centro de Documentacion Ambiental. Av. Independencia no. 208, Apartado Postal 21886, Santo Domingo, Dominican Republic, price unknown.

B295 Proper handling and use of pesticides.

H. Burgstaller & I.W. Guddoura (eds.), 33 p., illustr., English (also available in Arabic).

Booklet of useful information about safe, proper handling and use of pesticides. Suitable for farmers, extension workers and pesticide dealers in Sudan.

Available from the Sudanese-German Plant Protection Programme, P.O. Box 8192, El Amarat, Khartoum, Sudan, price unknown.

B296 Pesticide protection: a training manual for health personnel.

J.E. Davies, 1977, 52 p., English (also available in Spanish).

No additional information available.

Available from Dr. J.E. Davies, Dept. of Epidemiology, University of Miami, School of Medicine, P.O. Box 016069, Miami, FL 33101, USA, price unknown.

B297 A manual for the safe and efficient use of pesticides.

DPI, Rural Development Series Handbook no. 18.

No additional information available.

Available from Dept. of Primary Industry, Publications Section, P.O. Box 417, Konedobu, Papua New Guinea, for K 1.50, excluding postage.

B298 Pesticide residue problems in the Third World: a contribution of GTZ-residue laboratory in Darmstadt and its foreign activities.

GTZ, 1979, Schriftenreihe der GTZ no. 82, 64 p., English (also available in German, French and Spanish), ISBN 3-88085-074-7.

No additional information available.

Available from GTZ (see 1024) for DM 14.50, quoting order code 0082-SR (0063-SR for the German version, 0095-SR for the Spanish version, or 0096-SR for the French version).

B299 ARSAP agropesticide index 1984.

ARSAP/ESCAP, 1984, 44 p., (19 x 13 cm), 3 references, English.

An index of agropesticides used in selected countries in South-East Asia, which are listed alphabetically according to both common names and

trade names. The chemical group, field of usage, and other trade or common names are given for each pesticide. Suitable for plant protection officers, pest control operators and extension workers in South-East Asia.

Available from the ARSAP/FADINAP Project, Economic and Social Commission for Asia and the Pacific (ESCAP); or Agricultural Requisites Scheme for Asia and the Pacific (ARSAP), UN Building, Rajadamnern Ave., Bangkok 10200, Thailand, price unknown.

B300 Pest control safe for bees: a manual and directory for the tropics and subtropics

M. Adey, P. Walker & P.T. Walker, 1986, 225 p., (25 x 17.5 cm), 121 black & white illustr., 16 references, indexes, English, ISBN 0-86098-184-3.

This handbook is divided into a manual and a directory. The manual gives general information on bee-keeping and pest control methods which are safe for bees. The directory is a comprehensive pest control manual for 85 important crops and their major insect pests. Cultural measures are recommended and chemical control methods are mentioned, if they are not harmful to bees. Suitable for farmers, extension workers, pest control operators and agricultural students in the tropics and subtropics.

Available from International Bee Research Association, Hill House, Gerrards Cross, Bucks SL9 0NR, UK, price unknown.

B302 Pesticide handbook: a guide to the safe and efficient use of crop protection chemicals available in the Pacific Islands served by the South Pacific Commission.

I.D. Firman, 1981, 102 p., (21 x 14 cm), 1 black & white illust., indexes, list of terms, English.

Brochure giving a general introduction to pesticides, toxicity, and their safe use. Notes are included about the use, restrictions, possible side effects, trade names, and common names of all pesticides available in the Pacific Islands. Suitable for farmers, extension workers, pest control operators and agricultural students in the Pacific Islands.

Available from South Pacific Commission, Noumea, New Caledonia, price unknown.

B303 Temas selectos de manejo de insecticidas agricolas (vols. 1 & 2).

A. Lagunes Tejeda, 1986, 106 p. & 81 p. respectively, (23 x 17 cm), references, index, Spanish.

Compilation of papers used in pesticide courses in the 'Colegio de

Postgraduados' in Mexico. Chapters include information on the toxicity of pesticides, chemical and commercial nomenclature for pesticides, analysis of pesticide use, and dosages. Suitable for agricultural students and scientists in Mexico.

Available from Angel Lagunes Tejeda, Centro de Entomologia, Colegio de Postgraduados, 56230 Chapingo, Mexico, price unknown.

B304 Manual des matériels de traitement des cultures: pulverisateurs pour cultures basses et pulverisateurs et atomiseurs pour vignes et vergers.

A. Afrass & L. Mosich, 1980, 72 p., (21 x 15 cm), black & white illustr., French (also available in English).

Provides a general description of application equipment used in Morocco. Details of different sprayers are provided, including maintenance instructions for spraying equipment. Attention is also given to calculation of application volumes, dosages and concentrations. Suitable for extension workers and pest control operators in Morocco.

Available from GTZ (see I024) for DM 19.00.

B305 Crop protection equipment manual: field sprayers and sprayers and atomizers for vineyards and orchards.

A. Afrass & L. Mosich, 1983, 65 p., black & white illustr., English, ISBN 3-88085-203-0.

The English version of B304.

Available from GTZ (see I024) for DM 16.00, quoting order code R38/1187.

B306 A handbook for non-motorized hydraulic energy sprayers.

ODNRI, 1979.

No additional information available.

Available from ODNRI (see I039) for £ 2.45, including postage, quoting order code MSC12.

B307 Mistblowers.

ODNRI, 1980.

No additional information available.

Available from ODNRI (see I039) for £ 4.45, including postage, quoting order code MSC13.

B308 Pesticide application equipment.
ODNRI, 1975.

A reprint from PANS (1975), 21(4) with supplement.

Available from ODNRI (see I039) for £ 0.50, including postage, quoting order code MSC25.

B309 Procedures for the comparative evaluation of knapsack sprayers.
ODNRI, in preparation.

No additional information available.

Available from ODNRI (see I039), quoting order code MSC31.

B310 Knapsack sprayers: use, maintenance, accessories.

F. Fraser & L.C. Burrill, 1979, 31 p., (28 x 20 cm), 75 illustr., English.

Manual describing functions and details for constructing a variety of multi-nozzle booms for use in conjunction with manually operated hydraulic sprayers. Sprayer operation, maintenance, and calibration are also discussed. Suitable for pest control operators, plant protection officers and extension workers.

Available from IPPC (see I032) for US \$ 3.00, including surface mail.

B312 Lever-operated knapsack sprayers: a practical scrutiny and assessment of features, components, and operation – implications for purchasers, users and manufacturers.

H. G. Fisher & A.E. Deutsch, 1985, 32 p., (28 x 20 cm), illustr., English.

An evaluation of nearly 40 internationally used, manually operated knapsack sprayers. A practical assessment of their components and features is given. Suitable for purchasers, manufacturers, pest control operators and extension workers.

Available from IPPC (see I032) for US \$ 5.00 when sent separately by airmail; US \$ 4.00 if included with other publications by surface mail.

B313 The application of pesticides: assessment techniques for spray pattern analysis.

H.H. Coutts, 1984, 43 p., coloured photographs, English,
ISBN 3-88085-239-1.

No additional information available.

Available from GTZ (see I024) for DM 13.00, quoting order code R19/1096.

- B315 Kentucky integrated crop management manual for field crops.**
1987, 143 p., (28 x 21 cm), coloured and black & white illustr., English.

Deals with standard sampling procedures for estimating pest numbers, weed densities and disease intensities in alfalfa, corn, small grains, soya beans, grain sorghum and tobacco. Descriptions of pests and diseases, symptoms, sampling procedures, necessary equipment, beneficial insects, growth stages for each crop, economic threshold tables and information on soil analysis are included. Suitable for extension workers and pest control operators in Kentucky, USA, although methods may also be relevant for Central and Latin America.

Available from University of Kentucky, College of Agriculture, Cooperative Extension Service, Lexington, Kentucky, USA, price unknown.

- B316 La defense des cultures en Afrique du Nord: en considérant particulièrement le Tunisie et le Maroc.**

GTZ, 1976, Schriftenreihe der GTZ no. 36, 272 p., (21 x 15 cm), 362 coloured illustr., index, French.

Handbook divided into 7 sections on fruit trees, sugar beet, cucurbitaceae, cereals and maize, legumes, olives, and solanaceae. Each section describes the fungal, viral and bacterial diseases per crop, as well as the nematode, mite and insect pests. Information is given on symptoms, damage, biology, and cultural practices and chemical control methods. Suitable for extension workers, pest control operators and agricultural students in North Africa.

Available from GTZ (see I024) for DM 41.20.

- B317 Enfermedades y plagas de lupino en el Peru.**
Frey et al., 1983, Schriftenreihe der GTZ no. 142, 80 p., Spanish, ISBN 3-88085-188-3.

Handbook on the control of diseases and pests of lupine in Peru, which is a result of cooperation between German and Peruvian scientists. Symptoms, damage, causal organisms, and prevention and control methods are described. Suitable for extension workers in Peru.

Available from GTZ (see I024), price unknown.

B318 Leaflets of the NBCRC.

Various authors, Thai National Biological Control Research Centre, (27.5 x 21 cm), Thai. Recent relevant publications include: *Biological control*, 14 p.; *Insects are coming*, 7 p.; *Preparation of natural enemy specimens for identification*, 12 p.; *Biological control of aquatic weeds*, 21 p.; *Insects of importance in aquatic weed biological control in Thailand*, 13 p.; *Principles of pest management*, 26 p.; *Sugarcane insect pest management*, 26 p.; *Biological control of weeds*, 20 p.; *Insect pests of mango in Thailand*, 19 p.; *Insect pests of logan in Thailand*, 12 p.; *Approaches to biological control of the giant sensitive plant*, 11 p.; *Waterhyacinth weevil*, 8 p.; *Biological control of weeds with plant pathogens*, 11 p.; *The importance of African giant snail in agriculture and public health*, 6 p.

A series of general extension leaflets. Suitable for farmers, extension workers, pest control operators, agricultural students and researchers.

Available from NBCRC (see H053), free of charge.

B319 Brazilian guide of IPM.

G.R. Fischer, 1988 (in preparation), 20 p., Portuguese, English summary.

Provides an index of IPM disposal until 1987 in Brazil.

Available from Aprema-sc, P.O.Box 947, 89200, Joinville, Sc, Brazil, for US \$ 20.00; add approx. \$ 2.50 for postage.

B320 Integrated pest management for alfalfa hay.

University of California, 1986, 2nd ed., 96 p., (27.5 x 21 cm), over 200 black & white and coloured illustr., approx. 50 references, list of terms, English, ISBN 0-9318776-46-X.

A complete set of guidelines for all aspects of IPM for alfalfa hay. Chapters deal with the weeds, diseases and pests of alfalfa, their biology, importance, recognition, and management control strategies. Suitable for farmers, extension workers and pest control operators in California, USA, although the methods may be relevant to other geographical regions.

Available from ANR Publications (see I003) for US \$ 17.00.

B322 Compendium of alfalfa diseases.

J.H. Graham et al., 1979, 65 p., (28 x 21.5 cm), approx. 130 coloured and black & white illustr., references, glossary, index, English, ISBN 0-89054-026-8.

One of a series of compendia, which describes the major diseases of alfalfa. Following a general introduction to the crop, fungal diseases, bacterial and bacteria-like diseases, viral and viral-like diseases, nematode parasites, nutritional deficiencies, toxicities and other abiotic diseases, insect pests, and the control of diseases are described. Suitable for farmers, pest control operators, agricultural students and extension workers in the USA, although it may also be relevant to other geographical regions.

Available from APS Press (see I004) for US \$ 25.00 outside USA, including postage.

B323 La lutte contre les nématodes dans le bassin arachidier Sénégalais.

G. Germani, P. Baujard & M. Luc, 1985, 16 p., (25 x 19 cm), 18 coloured illustr., 19 references, French, ISBN 2-7099-0753-4.

Brochure providing a general introduction to nematode pests of groundnuts in Senegal, their importance in causing crop losses, and chemical control of nematodes. Results of experiments are included to stress the importance of nematode control. Suitable for extension workers in Senegal.

Available from Centre ORSTOM de Dakar, B.P. 1386 Dakar, Sénégal, price unknown.

B324 Principaux ennemis des cultures de la région des grands lacs d'Afrique Centrale.

A. Autrique, 1981 (rev. ed., 1989), 144 p. (18.5 x 11 cm), 129 coloured illustr., index, French.

Provides descriptions and photographs of the major insect pests and fungal, bacterial and viral diseases of 20 crops in Central Africa. Notes on the life cycle, symptoms, damage, and cultural and chemical control measures are included. Precautions for safe handling of pesticides are also given. Suitable for farmers, and extension workers in Central Africa.

Available from Institut des Sciences Agronomiques du Burundi (ISABU), B.P. 795, Bujumbura, Burundi, price unknown.

B325 Maladies et ravageurs des plantes cultivées au Maroc (tome 1.)

F.A. Saba & K.A. Schlter, 1976, 207 p., (24 x 17 cm), 237 black & white and coloured illustr., 100 references, indexes, French.

Following an introduction to the cultivation situation in Morocco, chapters deal with mite pests in general, and diseases, nematodes and insect pests in some 15 food crops, vegetables and fruit trees. The final

chapter describes mollusc, bird and rodent pests. Suitable for farmers, extension workers, pest control operators and agricultural students in Morocco.

Available from Ministere de l'Agriculture et de la Reformes Agraire, Institut National de la Recherches Agronomique, B.P. 415, Rabat R.P., Morocco, price unknown.

B326 Plant import regulations (Malaysia).

Jabatan Pertanian Semenanjung Malaysia, 1982, 10 p., (20.5 x 10 cm), 11 coloured illustr., English.

Brochure describing Malaysia's plant import regulations. The objectives of the regulations are described, and those plants and plant materials requiring special inspection and regulations are listed and categorized. Import procedures and application instructions for import permits and certificates are included. Suitable for plant protection officers and extension workers in Malaysia.

Available from the Plant Quarantine Section, Crop Protection Branch, Dept. of Agriculture, Jalan Gallagher, Kuala Lumpur, Malaysia, price unknown.

B327 Agropecuaria sem veneno.

S. Pinheiro et al., 1985, Portuguese.

Describes the advantages of agriculture and animal husbandry without the use of chemical pesticides and fertilizers.

Available from Acao Democratica Feminia Gaucha (AFDG), Rue Gen. Joao Telles 522, CEP 90.000 Porto Alegre, R.S., Brazil, price unknown.

B328 El bioensayo: método que el productor puede usar en sus campos para detectar y prevenir el dano causado por el nemátodo agallador, *Meloidogyne* spp.

E. Candanedo Lay, J. Pinochet & G. Aranda, 1986, 6 p., (23 x 10 cm), 3 black & white illustr., Spanish.

Leaflet describing a bioassay which assesses nematode (*Meloidogyne* spp.) infestation rates. Sampling procedures, preparation of the bioassay, and evaluation of infestation rates are described. The use of nematicides, resistant varieties, or non-host crops is recommended when decision thresholds are reached. Suitable for farmers, and extension workers in Panama and Latin America.

Available from Proyecto Manejo Integrado de Plagas, Instituto de Investigacion Agropecuaria de Panama (IDIAP), Apartado postal 6-4391, Estafeta El Dorado, Panama 6, Panama, price unknown.

B329 The African armyworm.

DLCO-EA, 1987, 18 p., (21 x 15 cm), 10 coloured illustr., English.

Brochure describing the life cycle of the African armyworm (*Spodoptera exempta*), the damage it causes, and characteristics to aid recognition. Major natural enemies, the moth's migration process, and seasonal outbreaks are summarized. Control strategies and methods are discussed, with the emphasis on chemical control. Addresses of national agencies and plant protection services are listed, as well as recommended insecticides for armyworm control. Suitable for agricultural students, pest control operators, and extension workers in East Africa.

Available from the Armyworm Section of DLCO-EA (see I015), price unknown.

B330 Organic pest control: preliminary database for program formulation.

SIBAT, 1987, 102 p., (21 x 16 cm), 27 black & white illustr., 17 references, appendices, English.

Provides information on pest control without chemical pesticides. Chapters deal with bio-sprays (the use of plant extracts and other mixtures), biological control methods, and cultural and physical methods of crop protection. Appendices provide local names of common insect pests in the Philippine provinces, information on important natural enemies, lists of major pests of rice, corn, vegetables and legumes, and the side effects of pesticides. Suitable for farmers, and extension workers in the Philippines.

Available from SIBAT (see I087), price unknown.

B332 Control integrado de plagas en cultivo de alfalfa para semillo.

EEA/INTA, 1982, Boletin de Divulgacion no. 5, dic. 1982, 8 p., (22 x 17 cm), 9 references, Spanish.

Issue of an extension newsletter, dealing with IPM in alfalfa seed production. Major alfalfa pests, important natural enemies, economic injury levels, and considerations when choosing appropriate insecticides are described. Suitable for farmers, and extension workers in Argentina.

Available from Instituto Nacional de Tecnologia Agropecuaria (INTA), Chile 460, 1098 Capital Federal, Argentina, free of charge.

B333 Primeras jornadas sobre control integrado de plagas agrícolas: resúmenes de relatos.

INTA, 1985.

Brochure containing introductory information about major pests of sorghum, maize, cotton, soya, winter cereals, and alfalfa. Monitoring of pest populations, biological, chemical and cultural control, and economic injury levels are covered. Suitable for pest control operators and extension workers in Argentina.

Available from Instituto Nacional de Tecnología Agropecuaria (INTA), Chile 460, 1098 Capital Federal, Argentina, free of charge.

B334 Girasol.

INTA, Técnicas de Producción no. 4, 20 p., (20 x 20 cm), coloured illustr., Spanish.

Brochure providing general instructions for sunflower cultivation. General remarks are included about chemical control of pests and diseases. Suitable for farmers, and extension workers in Argentina.

Available from Instituto Nacional de Tecnología Agropecuaria (INTA), Chile 460, 1098 Capital Federal, Argentina, free of charge.

B335 Trichogramma: un eficaz insecticida biológico.

J. Peisajovich & A. Ojimenet, 1987, 7 p., (27 x 21 cm), illustr., Spanish.

Brochure describing the advantages of using *Trichogramma* spp. (egg-parasites of butterflies and moths) for biological control of lepidopteran pests. The life cycle and main characteristics of the wasp are included, as well as an extensive list of crops and lepidopteran pests against which *Trichogramma* could be used. Suitable for farmers, extension workers and pest control operators.

Available from Laboratorio Biofarma S.A., Av. Caraffa 2754, 5009 Córdoba, Argentina, free of charge.

B337 Training course leaflets.

ODNRI, 1987. The following are available: Pesticide management overseas (order code TCL1); Storage of durable agricultural products in the tropics (order code TCL3); Storage of grain and other durable agricultural products in the tropics (order code TCL4); Special training in food-grain storage technology (order code TCL9).

Leaflets providing information on training courses organized by the British Overseas Development Administration (ODA).

Available from ODNRI (see I039), free of charge.

B338 Departmental pamphlets and leaflets.

ODNRI, 1987. The following are available: Development, pesticides and the environment (order code DL6); Storage department, Slough (order code DL2); Control of insect pests of crops before and after harvest and disease vectors (order code DL1).

Leaflets describing the services provided by departments of the Overseas Development Natural Resources Institute (ODNRI).

Available from ODNRI (see I039), free of charge.

B339 Distribution, frequency of attack and seasonal incidence of the African Armyworm (*Spodoptera exempta*, Walk., Lepid., Noctuidae), with particular reference to Africa and South-Western Arabia.

ODNRI, 1984.

Suitable for researchers, pest control operators and extension workers in Africa and Arabia.

Available from ODNRI (see I039) for £ 9.50, including postage, quoting order code L69.

B340 Illustrated descriptions, distribution maps and bibliography of the species of *Quelea* (weaver-birds: Ploceidae).

ODNRI, 1972.

No additional information available.

Available from ODNRI (see I039) for £ 1.60, including postage, quoting order code TPB1.

B342 Sugarcane diseases.

A. Sivanesan & J.M. Waller, 1986, CAB Mycological Institute Phytopathology Paper no. 29, 88 p., (25 x 19 cm), 36 black & white illustr., references, English, ISBN 0-85189-564-5.

An up-to-date account of sugarcane pathogens, providing information on synonyms and descriptions of the characteristics, symptoms and distribution of each pathogen. Identification keys are also given for each

taxonomical group. Suitable for plant pathologists and agricultural students.

Available from CAB International (see I006) for £ 13.75 overseas, or US \$ 24.00 for the Americas, including postage.

B343 Plant parasitic nematodes of the pacific.

K.J. Orton Williams, 1981, (30 x 21 cm), English, ISBN 0-85198-488-6.

No additional information available.

Available from CAB International (see I006) for US \$ 29.10 for the Americas, or £ 16.85 overseas, including postage.

B344 How to perform an agricultural experiment.

G.S. Pettygrove, 26 p., English, ISBN 0-86619-039-2 (also available in Spanish, ISBN 0-86619-040-6).

Brochure describing the basic considerations for the design, execution, and measurement procedures of an agricultural experiment. Suitable for agricultural students and extension workers.

Available from VITA Publication Services (see I054) for US \$ 7.50 surface mail, or US \$ 9.75 airmail outside the USA.

B345 Understanding insect pests and their control.

VITA Technical Paper no. 27. 13 p., English. ISBN 0-86619-230-1.

One of a series of technical papers intended as guidelines for the selection of technologies suitable to specific situations in developing countries. Construction and implementation details are not included. This paper describes methods of applied insect control, with emphasis on the dangers of harming beneficial insects. Suitable for farmers, pest control operators and extension workers.

Available from VITA Publication Services (see I054) for US \$ 7.75 per paper surface mail, or \$ 9.75 airmail. Cost of any 3 papers is US \$ 21.00 surface mail, or US \$ 25.00 airmail outside the USA.

B346 Fascicules de cours.

DFPV.

(28 x 21 cm), black & white illustr., references, French.

The following manuals are available:

Phytopathology, 70 p., for F.CFA 1050.00;

- Nématologie (tome I), 88 p., for F.CFA 1300.00;
 Nématologie (tome II), 70 p., for F.CFA 1050.00;
 Malherbologie, 25 p., for F.CFA 500.00;
 Manual illustré de la protection des cultures contre les dégâts des oiseaux granivores, 75 p., for F.CFA 1125.00;
 Entomologie générale systématique (tome I), 65 p., for F.CFA 975.00;
 Entomologie générale systématique (tome II), 103 p., for F.CFA 1500.00;
 Entomologie générale: anatomie et physiologie des insectes, 105 p., for F.CFA 1575.00;
 Entomologie générale: cahier d'instruction pour travaux pratiques, 50 p., for F.CFA 750.00;
 Entomologie générale: morphologie, 38 p., for F.CFA 500.00;
 Entomologie appliquée (tome I en reproduction), 125 p., for F.CFA 1875.00;
 Entomologie appliquée (tome II en reproduction), 90 p., for F.CFA 1350.00;
 Entomologie appliquée – chap. 11: le cotonnier, 105 p., for F.CFA 1575.00;
 Lutte biologique contre les ravageurs, son potentiel en Afrique de l'Ouest, 17 p., for F.CFA 250.00;
 Apiculture, 35 p., for F.CFA 500.00;
 Appareils et technique de traitement (tome I), 60 p., for F.CFA 900.00;
 Appareils et technique de traitement (tome II), 115 p., for F.CFA 1725.00;
 Entretien et maintenance des produits et appareils de traitement, 88 p., for F.CFA 1300.00;
 Organisation du chantier lors de l'application des pesticides, 88 p., for F.CFA 1300.00;
 Phytopharmacie, 97 p., for F.CFA 1875.00.

A series of student manuals for courses of the Department de Formation en Protection des Végétaux. They introduce basic aspects of entomology, phytopathology, nematology, pesticide science and weed science. Suitable for agricultural students, trainees in plant protection and extension workers in the Sahel region, Africa.

Available from Department de Formation en Protection des Végétaux (DFPV), P.P. 12625, Niamey, Niger, prices given above, excluding postage.

B347 Crop pests in Tanzania and their control.

E. Bohlen, 1973, Berlin and Hamburg, Republic of Germany, Verlag Paul Parey, English.

No additional information available.

Available from most bookshops or from GTZ (see I024), price unknown.

B348 Manual of surveillance and early warning techniques for plant pests and diseases.

T.L. Tan, 1981, English.

No additional information available.

Available from GTZ (see I024) through GTZ-Fachbereich 152, price unknown.

B349 Maladies des plantes cultivées au Togo: recherches et observations.

J. Kranz & J. Palti (eds.), 1984, 164 p., illustrated, French, ISBN 3-88085-265-0.

Research and observations of cultivated plants diseases in Togo.

Available from GTZ (see I024) for DM 28.00, quoting order code R42/1208.

B350 Instructions pour l'inspection des végétaux dans les pays du Sahel.

D. Willers, 1985, French.

Instructions for the inspection of crops in Sahelian countries.

Available from GTZ (see I024) through GTZ-section 34, price unknown.

B352 Handbook for field trials in technical cooperation.

K. Rohmoser, 1985, 304 p., English, ISBN 3-88085-272-3.

No additional information available.

Available from GTZ (see I024) for DM 19.00, quoting order code R22/1108.

B353 Die ökologie und bekämpfung des blutschnabelwebervogels (Quelea quelea L.) in Nordost Nigeria.

GTZ, 1983, Schriftenreihe der GTZ no. 80, 274 p., German, ISBN 3-88085-167-0.

Describes the problems and objectives of a programme to control weaver birds (*Quelea quelea*) in Nigeria. Information is provided about the biology, distribution and importance of this pest. Suitable for extension workers and plant protection officers in Nigeria.

Available from GTZ (see I024) for DM 76.00, quoting order code 0080-SR.

B354 Virus and similar diseases in tropical and subtropical areas.

F. Nienhaus, 1981, Schriftenreihe der GTZ no. 109, 216 p., 155 coloured photographs, English, ISBN 3-88085-106-9.

Deals with the identification of viral and related diseases in tropical crops. General information about control methods and prevention of these diseases is provided. Suitable for pest control operators and extension workers.

Available from GTZ (see I024) for DM 34.50, quoting order code 0109-SR.

Section C: Slide sets

C001 Field problems of tropical rice.

IRRI, 158 coloured slides of special size (5 x 5 cm), no text.

Transparencies of all colour plates in the handbook 'Field problems of tropical rice' (see B010). Each slide is numbered to correspond with the plate number in the book. The slide set is supplied with a copy of the handbook. Suitable for farmers and extension workers.

Available from IRRI (see H048) for US \$ 60.00 (HDC) or US \$ 50.00 (LDC), including airmail postage.

C002 IRRI audiovisual production training modules.

IRRI, 63 modules each containing between 40 and 80 coloured slides, script, cassette, English.

Used in the IRRI's 6-month rice production training course. The modules are organized into 7 units: production management; growth and morphology of rice; production problems and techniques; weeds, diseases and their control; pests and their control; research design and analysis; and soil relationships. Individual modules are described later in this section (see C003-C021, C093, C094, C116, C117 and C120). Suitable for extension workers, pest control operators, agricultural students and training courses.

Available from IRRI (see H048) for US \$ 1500.00 for the complete series (LDC) or US \$ 2000.00 (HDC), including airfreight. Individual modules are also available.

C003 Stored grain pests of rice.

IRRI audiovisual production training module PPT-8 IRRI, 46 coloured slides, script, cassette, 24 minutes, English.

One of IRRI's training modules (see C002) which describes the identification of stored grain pests of rice, their mode of attack, sources of infestation, detection and preventative methods, and control measures for insect pests of stored rice grain. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.



C004 Weed identification: lowland and upland rice.

IRRI audiovisual production training module WDC-1 IRRI, 66 coloured slides, script, cassette, 34 minutes, English.

One of IRRI's training modules (see C002) which describes general aspects of weeds in rice, their influence on crop growth and classification and identification of the most common rice weeds. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C005 Methods of weed control.

IRRI audiovisual production training module WDC-2 IRRI, 62 coloured slides, script, cassette, 34 minutes, English.

One of IRRI's training modules (see C002) which describes weed management in rice, methods of weed control, chemical weed control, characteristics of herbicides, herbicides for weed control in rice, and selection of appropriate herbicides. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C006 Bacterial blight and bacterial leaf streak of rice in tropical Asia.

IRRI audiovisual production training module WDC-3 IRRI, 65 coloured slides, script, cassette, 18 minutes, English.

One of IRRI's training modules (see C002) which describes the symptoms of bacterial blight and bacterial leaf streak, field identification of both diseases, development and transmission, and the most practical and effective control measures. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C007 Fungal diseases of rice.

IRRI audiovisual production training module WDC-4 IRRI, 80 coloured slides, script, cassette, 55 minutes, English.

One of IRRI's training modules (see C002) which describes the symptoms of rice blast disease in different plant parts, its life cycle and development, and control methods. The symptoms, life cycle, spread, development and control measures of several other fungal diseases are also included. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C008 Virus and virus-like disease of rice.

IRRI audiovisual production training module WDC-5 IRRI, 71 coloured slides, script, cassette, 29 minutes, English.

One of IRRI's training modules (see C002) which describes the symptoms of 14 virus and viral-like diseases in rice. A simple classification key of virus diseases is provided and identification in the field is described. Geographic distribution of each disease is also shown. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C009 Nutritional and physiological disorders of the rice plant.

IRRI audiovisual production training module WDC-6 IRRI, 79 coloured slides, script, cassette, 43 minutes, English.

One of IRRI's training modules (see C002) which describes factors affecting nutrient uptake, symptoms caused by deficiency of essential elements, procedures to solve nutritional problems, and toxicity symptoms in cases where certain elements are present in excess. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C010 Transmission and control of virus and virus-like diseases of rice.

IRRI audiovisual production training module WDC-7 IRRI, 65 coloured slides, script, cassette, 44 minutes, English.

One of IRRI's training modules (see C002) which describes rice virus transmission methods, identification of known insect vectors for each of the virus or viral-like diseases, differences between transitory and persistent viruses, transmission cycles, and effective control measures for each of the diseases described. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C012 Chemical control of rice insect pests.

IRRI audiovisual production training module PC-1 IRRI, 80 coloured slides, script, cassette, 54 minutes, English.

One of IRRI's training modules (see C002) which provides a general introduction to the action modes of insecticides and an explanation of the ineffectiveness of foliage spraying in the tropics. Lists of the common contact and systemic insecticides and recommended doses for the major insect pests are given, as well as safety precautions when using insecticides. Criteria used to determine appropriate preventative control measures and application times are also discussed. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C013 Rice gall midge and whorl maggot.

IRRI audiovisual production training module PC-2 IRRI, 60 coloured slides, script, cassette, 52 minutes, English.

One of IRRI's training modules (see C002) which describes the identification of eggs, larvae and adults of rice gall midge and whorl maggot, their life cycle, damage caused, and the advantages of breeding for resistance to these pests. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC),

including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C014 Stem borers of rice.

IRRI audiovisual production training module PC-3 IRRI, 79 coloured slides, script, cassette, 28 minutes, English.

One of IRRI's training modules (see C002) which describes the life cycle and identification of egg masses, larvae and adults of the major rice stem borers. Damage symptoms and effective control measures are discussed. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C015 Leaf hoppers and plant hoppers of rice.

IRRI audiovisual production training module PC-4 IRRI, 71 coloured slides, script, cassette, 38 minutes, English.

One of IRRI's training modules (see C002) which describes the egg masses, nymphs, adults, and life cycle of the major leaf- and plant hoppers of rice, and the damage they cause. Virus diseases transmitted by the pests are listed and effective control measures are given. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C016 Minor pests of rice.

IRRI audiovisual production training module PC-5 IRRI, 79 coloured slides, script, cassette, 43 minutes, English.

One of IRRI's training modules (see C002) which describes different stages of the rice bug, stink bug, leaf-folder, caseworm, greenhorned caterpillar, skipper, rice hispa and thrips, and the damage caused by these insects. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC),



including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C017 Insect pest management in rice.

IRRI audiovisual production training module PC-9 IRRI, 64 coloured slides, script, cassette, 41 minutes, English.

One of IRRI's training modules (see C002) which provides a general introduction to the need for, and basic elements of, an insect pest management programme. Sampling techniques and the determination of economic threshold levels are described. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C018 Varietal resistance of rice to insect pests.

IRRI audiovisual production training module PC-10 IRRI, 63 coloured slides, script, cassette, 36 minutes, English.

One of IRRI's training modules (see C002) which describes the advantages of resistant rice varieties as elements of a pest management programme. The major resistant varieties are listed, together with the insects to which they are resistant. The mechanisms and expression of resistance components are discussed for varieties resistant to stem borer, gall midge, brown plant hopper, whitebacked plant hopper and green plant hopper. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C019 Cultural control of rice insect pests.

IRRI audiovisual production training module PC-11 IRRI, 78 coloured slides, script, cassette, 55 minutes, English.

One of IRRI's training modules (see C002) which defines the characteristics of cultural control, lists cultural practices contributing to insect pest control in rice, and assesses their effectiveness. Practices that can be implemented at farm level or at community level are also discussed.

Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.



C020 Biological control of rice insect pests.

IRRI audiovisual production training module PC-12 IRRI, 80 coloured slides, script, cassette, 30 minutes, English.

One of IRRI's training modules (see C002) which describes the major parasites, predators and pathogens of rice insect pests in tropical Asia. Life cycles of parasites, and parasitized pests are included. The natural enemies of stem borers and hoppers are listed, as well as methods of conserving and augmenting natural enemies. The steps in importation, quarantine and release of natural enemies are discussed. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C022 Principales malezas en el cultivo del arroz en América Latina.

CIAT audiotutorial unit 04SR-03.01 CIAT, 1983, 105 coloured slides, script, cassette, 27 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes the most important weeds in rice in Latin America, their distribution, identification characteristics, aggressiveness, and control methods. Weeds are generally a more important factor in rice harvest reduction than diseases and pest attack. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C023 Descripción y danos de los insectos que atacan el arroz en América Latina.

CIAT audiotutorial unit 04SR-04.01 CIAT, 1983, 111 coloured slides, script, cassette, 31 minutes, 5 study guides (a special package containing

25 study guides provides the slides in a carouse). Spanish.

Part of CIAT's series of training material which describes the recognition of insect pests in rice in Latin America. Damage symptoms, life cycle and preferred growth stages are included. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C024 Barrenadores del tallo del arroz en América Latina y su control.

CIAT audiotutorial unit 04SR-04.02 CIAT, 1980, 120 coloured slides, script, cassette, 27 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes 2 rice borers in Latin America: the sugarcane borer (*Diatraea saccharalis*); and the South American white borer (*Rupela albinella*). The biology, damage symptoms, cultural and biological control (including some natural enemies), and chemical control methods are described for both. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C025 La sogata, sogatodes oryzicola, y el viros de la hoja blanca en arroz.

CIAT audiotutorial unit 04SR-04.03 CIAT, 1983, 66 coloured slides, script, cassette, 17 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes 'hoja blanca' (VHB), one of the major viral diseases of tropical rice. Information is included about several rice plant hopper species (*Sogatodes* spp.) which act as vectors. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C026 Enfermedades del arroz en América Latina y su control.

CIAT audiotutorial unit 04SR-06.01 CIAT, 1983, 102 coloured slides, script, cassette, 26 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes the major diseases of rice in Latin America, including their symptoms and control methods.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C030 Manejo y control de las malezas en el cultivo del frijol.

CIAT audiotutorial unit 04SW-02.02 CIAT, 1980, 112 coloured slides, script, cassette, 41 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses weed control in beans. Weeding by hand is promoted where ecology, economy and social factors permit this labour-intensive method. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C031 Descripción y danos de las plagas que atacan el frijol.

CIAT audiotutorial unit 04SB-05.01 CIAT, 1980, 2nd ed., 97 coloured slides, script, cassette, 32 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which concentrates on recognition of damage symptoms caused by insect pests of bean. Damage symptoms are important aids to identification, in addition to recognition of the pest stages themselves. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

- C032 Principales insectos que atacan el grano de frijol almacenado y su control.**
 CIAT audiotutorial unit 04SB-05.03 CIAT, 1981, 2nd ed., 80 coloured slides, script, cassette, 30 minutes. 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish (also available in English, see C003).

Part of CIAT's series of training material which deals with insect pests of stored beans. Control methods are discussed, especially in relation to small farmers, including temperature control, ashes, and plant oil extracts. Suitable for farmers extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

- C033 Main pests of stored bean.**
 C.A. Valencia, CIAT audiotutorial unit 04EB-05.031986, 80 coloured slides, script, cassette, 30 minutes. 5 study guides (a special package containing 25 study guides provides the slides in a carousel), English.

This unit is part of CIAT's series of training material and is the English version of C032. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

- C034 El lorito verde (*Empoasca kraemeri*) y su control.**
 CIAT audiotutorial unit 04SB-05.04 CIAT, 1980, 84 coloured slides, script, cassette, 30 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with recognition and control of green jassids (*Empoasca* spp.), an increasingly important pest of bean which is spreading throughout Latin America. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.



C035 Principales crisomélidos que atacan el frijol y su control.

CIAT audiotutorial unit 04SB-05.05 CIAT, 1982, 80 coloured slides, script, cassette, 20 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with the most important leaf beetles (Chrysomelidae). Their distribution, importance as pests, biology, life cycle, damage symptoms caused by larvae and adults, and control measures are discussed. Suitable for farmers, extension workers, pest control operators and agricultural students in Latin America.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C036 Enfermedades del frijol causadas por hongos y su control.

CIAT audiotutorial unit 04SB-06.01 CIAT, 1980, 140 coloured slides, script, cassette, 52 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish (also available in English, see C037).

Part of CIAT's series of training material which discusses the fungal diseases that attack different parts of bean crops, and their control. These diseases can cause significant differences between actual and potential yields. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C037 Bean diseases caused by fungi and their control.

CIAT audiotutorial unit 04-EB-06.01 CIAT, 1981, 140 coloured slides, script, cassette, 52 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), English.

This unit is part of CIAT's series of training material and is the English version of C036. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit

code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C038 Enfermedades del frijol causadas por virus y su control.

CIAT audiotutorial unit 04SB-06.02 CIAT, 1980, 2nd ed., 125 coloured slides, script, cassette, 62 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses the major viral diseases of bean and possibilities for resistant varieties. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C039 Control genético del mosaico común de frijol (BCMV).

CIAT audiotutorial unit 04SB-06.03 CIAT, 1983, 55 coloured slides, script, cassette, 22 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses CIAT's method of breeding bean varieties resistant to bean common mosaic virus (BCMV). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C040 Técnicas para el aislamiento, identificación y conservación de hongos patógenos del frijol.

CIAT audiotutorial unit 04SB-06.04 CIAT, 1981, 2nd ed., 97 coloured slides, script, cassette, 27 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses techniques for isolating and identifying fungal diseases of bean. Suitable for extension workers, agricultural students and research workers.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit

code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

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C042 Enfermedades bacterianas del frijol: identificación y control.

CIAT audiotutorial unit 04SB-06.05 CIAT, 1981, 104 coloured slides, script, cassette, 39 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses important bacterial diseases of bean, their distribution, and identification. Possible control methods are included, of which resistant varieties seems the most promising approach. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C043 La roya del frijol y su control.

CIAT audiotutorial unit 04SB-06.06 CIAT, 1980, 91 coloured slides, script, cassette, 33 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses the importance and control of bean rust (*Uromyces* spp.). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C044 Pudriciones radicales del frijol y su control.

CIAT audiotutorial unit 04SB-06.07 CIAT, 1981, 111 coloured slides, script, cassette, 40 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses attack of bean seedlings and plants by soil fungi. A variety of fungal diseases are discussed and control methods provided. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit

code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C045 La Antracnosis del frijol y su control.

CIAT audiotutorial unit 04SB-06.08 CIAT, 1981, 77 coloured slides, script, cassette, 26 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with Anthracnose (*Colletotrichum* spp.), an important fungal disease of bean, and control methods. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C046 La mancha angular del frijol y su control.

CIAT audiotutorial unit 04SB-06.09 CIAT, 1982, 79 coloured slides, script, cassette, 24 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with angular leaf spot of bean (*Isariopsis griseola*), and control methods for this fungal disease. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C047 Principales nematodos que atacan el frijol y su control.

CIAT audiotutorial unit 04SB-06.10 CIAT, 1982, 94 coloured slides, script, cassette, 35 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with nematode pests of bean, an important but underestimated group of pests, and their control. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit

code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C048 La mustia hilachosa del frijol y su control.

CIAT audiotutorial unit 04SB-06.12 CIAT, 1983, 75 coloured slides, script, cassette, 17 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with web blight, probably the most destructive disease of beans in the humid lowlands of the tropics. Possible control methods are included. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C049 Diseases of beans (*Phaseolus vulgaris*) in Africa.

CIAT audiotutorial unit 04EB-06.13 CIAT, 1986, script, cassette, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), English.

Part of CIAT's series of training material which describes the principal diseases of field beans in Africa. Suitable for farmers extension workers, pest control operators and agricultural students in Africa.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C050 Desordenes nutricionales de la planta de yuca.

CIAT audiotutorial unit 04SC-01.01 CIAT, 1981, 100 coloured slides, script, cassette, 28 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish (also available in English, see C052).

Part of CIAT's series of training material which describes symptoms of nutritional deficiencies in cassava, showing the resulting malformations and colour changes. If symptoms are not specific, which is often the case, analysis of the soil and/or plant material is necessary for a correct diagnosis. Suitable for farmers, extension workers, pest control operators and agricultural students.



Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C052 Nutritional disorders of cassava.

CIAT audiotutorial unit 04EC-01.01 CIAT, 1985, 100 coloured slides, script, cassette, 28 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), English.

This unit is part of CIAT's series of training material and is the English version of C050. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C053 Acaros presentes en el cultivo de la yuca y su control.

CIAT audiotutorial unit 04SC-02.04 CIAT, 1982, 99 coloured slides, script, cassette, 33 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes the major mite pests of cassava and control methods. Cassava is attacked by more than 200 arthropod pests, of which mites are among the most important. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C054 El cultivo de meristemas para el saneamiento de clones de yuca.

CIAT audiotutorial unit 04SC-02.04 CIAT, 1982, 61 coloured slides, script, cassette, 26 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which explains the advantages of in-vitro propagation of cassava meristem cultures as a means of producing virus- and fungus-free planting material. Suitable for extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C

C055 Descripción de las enfermedades de la yuca.

CIAT audiotutorial unit 04SC-03.01 CIAT, 1980, 2nd ed., 94 coloured slides, script, cassette, 29 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which illustrates symptoms of more than 30 bacterial, viral and fungal diseases which attack cassava. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C056 El control de erinnyis ello, gusano cachón de la yuca.

CIAT audiotutorial unit 04SC-04.01 CIAT, 1982, 2nd ed., 71 coloured slides, script, cassette, 26 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel). Spanish.

Part of CIAT's series of training material which describes one of the insect pests of cassava, the cassava hornworm. As a result of intensified cultures and indiscriminate use of insecticides, the hornworm and a number of other cassava pests have become increasingly important. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C057 Descripción de las plagas que atacan el cultivo de la yuca y características de sus danos.

CIAT audiotutorial unit 04SC-04.02 CIAT, 1980, 93 coloured slides, script, cassette, 39 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes the major arthropod pests of cassava and their damage symptoms. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C058 Mosca blanca de la yuca: biología y control.

CIAT audiotutorial unit 04SC-04.05 CIAT, 1985, script, cassette, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes several species of whitefly (Aleyrodidae), an important pest and virus vector in America, Africa and certain parts of Asia. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C059 Manejo y control de malezas en el cultivo de la yuca.

CIAT audiotutorial unit 04SW-02.01 CIAT, 1979, 86 coloured slides, script, cassette, 35 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which describes the importance of weed control in cassava. In certain cases, appropriate control may double the harvest. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C060 Serie principios basicos de entomologia.

EAP-UFLA, 14 units totalling 701 coloured slides, each unit accompanied by script, cassette and study guide, Spanish.

A complete introduction to entomology, dealing with basic topics such as the exoskeleton, internal organization, development, taxonomy and

systematic insect ecology. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 750.00 for the complete series, including postage. A catalogue of all individual units and prices is available upon request.

C062 Control de los insectos (parte I y II).

EAP-UFLA, 54 coloured slides (series 1), 46 coloured slides (series 2), 15 p. & 12 p. script respectively, cassette, study guides in preparation, Spanish.

Two slide series which are part of a basic introduction to entomology (see C060) and deal with the basic principles of insect control. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 57.00 (series 1) including postage, quoting unit code 19, or US \$ 50.10 (series 2) quoting unit code 20. A catalogue of all available units and prices is available upon request.

C063 Enemigos naturales de las plagas agricolas (parte I y II).

EAP-UFLA, 47 coloured slides (series 1), 40 coloured slides (series 2), 12 p. & 9 p. script respectively, cassette, 10 p. study guide, Spanish.

Two slide series which describe natural enemies of agricultural pests, and introduce principles of IPM and biological control. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 53.85 (series 1), including postage, quoting unit code 39, or US \$ 47.70 (series 2) quoting unit code 45. A catalogue of all available units and prices is available upon request.

C064 Introducción al manejo integrado de plagas (MIP).

EAP-UFLA, 87 coloured slides, 14 p. script, cassette in preparation, 11 p. study guide, Spanish.

A general introduction to IPM. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 77.25 including postage, quoting unit code 2. A catalogue of all available units and prices is available upon request.



C065 Toma de muestras, conceptos y metodos.

EAP-UFLA, 71 coloured slides, 26 p. script, cassette, 16 p. study guide, Spanish.

Deals with the principles and methods of sampling, which is one of the basic requirements for IPM. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for \$ 77.85 including postage, quoting unit code 21. A catalogue of all available units and prices is available upon request.

C066 Umbrales económicos en principio y práctica.

EAP-UFLA, 60 coloured slides, 22 p. script, cassette, 22 p. study guide, Spanish.

Deals with the basic principles and practical application of the concept of economic thresholds. Can be used in combination with C065. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for \$ 67.80 including postage, quoting unit code 22. A catalogue of all available units and prices is available upon request.

C067 Uso de entomopatógenos en el MIP.

EAP-UFLA, 38 coloured slides, 10 p. script, cassette, 10 p. study guide, Spanish.

Provides information on the use of entomo-pathogens (diseases that attack insects) as part of an IPM programme. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 46.50 including postage, quoting unit code 23. A catalogue of all available units and prices is available upon request.

C068 Conceptos básicos de la ecología (parte I y II).

EAP-UFLA, 63 coloured slides (series 1), 63 coloured slides (series 2), 13 p. & 11 p. script respectively, cassettes and study guides in preparation, Spanish.

Two slide sets providing basic concepts used in ecology, as an introduction to the principles of crop protection. Suitable for extension

workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 50.65 (series 1) including postage, quoting unit code 60, or US \$ 55.05 (series 2) quoting unit code 61. A catalogue of all available units and prices is available upon request.

C

C069 Aplicación de conceptos básicos al desarrollo de programas del MIP.
EAP-UFLA, in preparation.

This slide series will show practical applications of the basic principles of crop protection explained in other series, aiming to integrate these principles into IPM programmes. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017), price unknown. A catalogue of all available units and prices is available upon request.

C070 Introducción al MIP en los cítricos.

EAP-UFLA, 37 coloured slides, 8 p. script, cassette and study guide in preparation, Spanish.

A general introduction to IPM in citrus. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 34.65 including postage, quoting unit code 3. A catalogue of all available units and prices is available upon request.

C072 Monitoring aphid populations.

K. V. Raman, 1984, 35 slides, 13 p. guidebook, English (also available in Spanish).

Deals with monitoring of aphid populations in potato. Aphids are the major source of virus infections in potato. Suitable for plant protection officers, extension workers and agricultural students.

Available from CIP (see H024) for US \$ 15.00 including surface mail, quoting code IV-2, or US \$ 1.00 for the guidebook only.

C073 Major potato diseases, nematodes and insects.

CIP, 1983, 100 slides, 40 p. guidebook, English (also available in Spanish).

Illustrates the major diseases, insects and nematodes of potato. Suitable for farmers, extension workers and pest control operators.

Available from CIP (see H024) for US \$ 20.00 including surface mail, quoting code IV-1, or US \$ 1.00 for the guidebook only.

C074 Ravageurs des cultures vivres tropicales.
IRAT/CIRAD Entomologie, 1985, French.

IRAT/CIRAD's collection of slides showing pests of major crops in Africa, damage symptoms, control methods and entomological techniques, which are available for duplication and publication. Suitable for extension workers, agricultural students and scientists in Africa.

Available from IRAT/CIRAD Entomologie (see I033) for FF 200.00-500.00 per duplicate. A complete catalogue, or lists of slides per host plant or specialist subject, are available on request.

C075 Plagas del cultivo del maiz.
EAP-UFLA, 80 coloured slides, 21 p. script, cassette in preparation, 12 p. study guide, Spanish.

One of several units in a series about crop pests, which deals with insect pests of maize. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 74.40 including postage, quoting unit code 12. A catalogue of all available units and prices is available upon request.

C076 Plagas del cultivo del frijol.
EAP-UFLA, 61 coloured slides, 15 p. script, cassette in preparation, 12 p. study guide, Spanish.

One of several units in a series about crop pests, which deals with the insect pests of beans. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 58.35 including postage, quoting unit code 13. A catalogue of all available units and prices is available upon request.

C077 Pests of cowpea and their damage symptoms.
L.N. Jackai, 1986, coloured slides.

Describes insect pests of cowpea with examples of damaged plant parts, to encourage field identification and surveys prior to control measures.

Suitable for extension workers, pest control operators and agricultural students in Africa.

Available from Grain Legume Improvement Programme, IITA (see H042), price unknown.

C078 Plagas y enfermedades del repollo.

EAP-UFLA, 55 coloured slides, 6 p. script, cassette and study guide in preparation, Spanish.

One of several units in a series about crop pests, which deals with insect pests and diseases of white cabbage. Suitable for workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 47.55 including postage, quoting unit code 42. A catalogue of all available units and prices is available upon request.

C079 Plagas y enfermedades de chili.

EAP-UFLA, 47 coloured slides, 11 p. script, cassette and study guide in preparation, Spanish.

One of several units in a series about crop pests, which deals with diseases and insect pests of chili. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 43.05 including postage, quoting unit code 43. A catalogue of all available units and prices is available upon request.

C080 Descripción de las plagas que atacan los pastos tropicales y características de sus danos.

CIAT audiotutorial unit 04SP-03.01 CIAT, 1982, 106 coloured slides, script, cassette, 41 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with insect pests of tropical pastures, their biology, damage caused and effective control measures. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

- C082 Cercópidos plagas de los pastos de América Tropical: biología y control.**
 CIAT audiotutorial unit 04SP-03.02 CIAT, 1983, 79 coloured slides, script, cassette, 37 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with those frog hoppers or spittle bugs (Homoptera, Cercopidae) which are important pests of pastures in tropical America. Their biology, economic importance, and control methods are described. Suitable for farmers extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

- C083 Descripción de las enfermedades de las principales leguminosas forrajeras tropicales.**
 CIAT audiotutorial unit 04SP-03.03 CIAT, 1983, 113 coloured slides, script, cassette, 42 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material describing the diseases of Leguminosae which are used as fodder. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

- C084 Serie introduccion a la fitopatologia.**
 EAP-UFLA, 5 units totalling 372 coloured slides, 72 p. script, cassettes and study guides in preparation, Spanish.

A general introduction to phytopathology consisting of 5 subjects: a general introduction; fungi; bacteria; viruses; and nematodes. Units are also available as individual items. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 310.00 for the complete series, including postage. A catalogue of all available units and prices is available upon request.

C085 Manipullo de nemátodos.

EAP-UFLA, script in preparation, cassette, study guide in preparation, Spanish.

Provides information about control of plant-parasitic nematodes. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 27.75 including postage, quoting unit code 5. A catalogue of all available units and prices is available upon request.

C086 Conceptos básicos de la nematología.

EAP-UFLA, slides, script, cassette and study guide in preparation.

Will provide information on the basic aspects of nematology. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017), price unknown, quoting unit code 54. A catalogue of all available units and prices is available upon request.

C087 Conceptos básicos de los fitopatógenos.

EAP-UFLA, slides, script, cassette and study guide in preparation.

Will describe the basic principles of phytopathology. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017), price unknown. A catalogue of all available units and prices is available upon request.

C088 L'agriculture paysan Africaine.

ENDA/PRONAT, 4 sets of 60 coloured slides, cassette, French (also available in English and Wolof).

Describes agricultural methods and practices of African peasants, including alternative pest management practices. Suitable for farmers, extension workers and agricultural students in Africa.

Available from ENDA/PRONAT, B.P. 3370, Dakar, Sénégal (see K005), price unknown.



- C089 Grain storage: enemies of stored grain (part 1); controlling pests (part 2).**
World Neighbors, 2 filmstrips of 92 coloured frames, 20 p. script, English
(also available in French, Spanish and Portuguese).

Part 1 discusses the loss of weight and quality caused to stored grains by pests such as rats, birds, insects, moulds and rot. Part 2 explains different methods of pest prevention and control before and during storage, such as cleanliness, proper use of pesticides and appropriate location and ventilation of a granary. Suitable for farmers, extension workers, pest control operators and agricultural students in the Philippines.

Available from World Neighbors (see I056) for US \$ 20.00 including surface mail, quoting the language required and item no.9.

- C090 Insect control using fumigants.**
ODNRI, 1983, script, cassette, English.

Outlines recommended methods for using fumigants, including safety precautions which must be followed. Store types suitable for fumigation are shown, as well as how fumigation should be carried out. Suitable for farmers, extension workers and pest control operators.

Available through ODNRI (see I039) for £ 25.00 including handling and surface postage, quoting code SL2.

- C092 Rat control campaign.**
Crop Protection Branch, 1986, cassette, leaflets and pictorial booklets also available, Bahasa Malay.

Part of a multimedia extension approach towards rat control (see F001). Integrated rat control, control techniques, and the importance of group and community involvement in control campaigns are described. Suitable for farmers, extension workers, pest control operators and rural communities in Malaysia.

Available from National Programme Leader IPC, Crop Protection Branch, Dept. of Agriculture, Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

- C093 Identification and biology of rats.**
IRRI audiovisual production training module PC-7 IRRI, 72 coloured slides, script, cassette, 57 minutes, English.

One of IRRI's training modules (see C002) which describes the 4 species of rat which damage Philippine agricultural crops, their physical

characteristics, life history, reproduction and potential population increase. Certain habits, behaviour, signs of rat infestation, and procedures for estimating rat numbers are also included. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C094 Methods of rat control.

IRRI audiovisual production training module PC-8 IRRI, 61 coloured slides, script, cassette, 42 minutes, English.

One of IRRI's training modules (see C002) which describes rat control methods, including advantages and disadvantages. The use of rodenticides, baiting techniques and related problems are explained. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C095 Rat control: rats are everywhere (part 1); let's get rid of them (part 2).

World Neighbors, 2-part filmstrip of 126 coloured half-frames, 24 p. script, English (also available in Spanish, French and Portuguese).

Discusses simple methods of rat eradication which are available to most rural communities. Part 1 introduces rats, the damage they cause to stored products, homes and buildings, and diseases they can transfer to man. Part 2 discusses prevention and control methods including cleanliness, rat-proofing, poisoning and trapping. A special issue of the newsletter 'World neighbors in action' on rat control (vol. 6, no. 3) is also available in English, Spanish and French. Suitable for farmers, extension workers, pest control operators and rural communities.

Available from World Neighbors (see I056) for \$ 20.00, including surface mail, quoting language required and item no 5, or US \$ 1.25 for newsletter issues, quoting item no. 71.

C096 Let's try it.

World Neighbors, filmstrip of 36 coloured frames, script, English (also available in Spanish and French).



Designed to encourage small farmers to try new ideas by narrating a story of 2 farmers in Guatemala who test new agricultural practices. It suggests that only a small plot of land should be used for trials, only one idea should be tried at a time, and records should be maintained about costs of experiments (see C097). Suitable for farmers, particularly small scale farmers, extension workers and agricultural students.

Available from World Neighbors (see I056) for US \$ 10.00, including surface postage, quoting language required and item no. 12.

C097 How to test a new idea.

World Neighbors, filmstrip of 39 coloured frames, script, English (also available in Spanish).

Shows small farmers how they can try new agricultural ideas using a test plot. Step-by-step instructions are given for laying off a test plot of land, and methods of experimenting with seed varieties and fertilizers are discussed. Emphasis is placed on accurate record-keeping of time and money spent on the test plot. Can be used in conjunction with C096. Suitable for farmers, particularly small scale farmers, extension workers and agricultural students.

Available from World Neighbors (see I056) for US \$ 10.00, including surface postage, quoting the language required and item no. 13.

C098 Testing new ideas.

World Neighbors, filmstrip of 22 coloured frames, script, English (also available in French).

A combination of ideas originally used in 2 other filmstrips (C096 and C097), and made in Togo, Africa. It emphasizes that farmers should only test new ideas on small plots. If the new idea proves successful, the practice can then be used on the entire farm. Suitable for farmers, particularly small scale farmers, extension workers and agricultural students.

Available from World Neighbors (see I056) for \$ 10.00 including surface mail, quoting the language required and item no. 77.

C100 Principios básicos para el manejo y control de las malezas en los cultivos.

CIAT audiotutorial unit 04SW-01.01 CIAT, 1980, 2nd ed., 85 coloured slides, script, cassette, 26 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which provides basic information on weed control and weed management in tropical crops.

Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C101 Información básica sobre la competencia entre malezas y los cultivos.

CIAT audiotutorial unit 04SW-01.02 CIAT, 1980, 2nd ed., 104 coloured slides, script, cassette, 44 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which provides basic information on the competition process, by which weeds hamper optimal crop growth and development. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C102 Manejo de malezas (parte I y II).

EAP-UFLA, 2 sets of slides, script, cassette, and study guide in preparation.

Will deal with weed management and control methods. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017), price unknown, quoting unit code 51 (part 1) and 54 (part 2). A catalogue of all available units and prices is available upon request.

C103 Conceptos básicos de las ciencias de las malezas.

EAP-UFLA, in preparation.

The slide series will describe basic concepts of weeds and their management. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017), price unknown. A catalogue of all available units and prices is available upon request.

C104 El coquito (*Cyperus rotundus* L.): biología y posibilidades de control.

CIAT audiotutorial unit 04SC-02.06 CIAT, 1982, 127 coloured slides, script, cassette, 39 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish (also available in English, see C105).

Part of CIAT's series of training material which deals with purple nutsedge, the world's most damaging weed, which has spread throughout the tropics and subtropics. It poses severe agricultural problems because of its aggressiveness, high competitive capacity, adaptability to different environments and conditions, and difficulty to control. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C105 The biology and control of purple nutsedge (*Cyperus rotundus* L.).

CIAT audiotutorial unit 04EC-02.06 CIAT, 1985, 127 coloured slides, script, cassette, 39 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), English.

This unit is part of CIAT's series of training material and is the English version of C104. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C106 Principios básicos para el manejo y control de las malezas en los potreros.

CIAT audiotutorial unit 04SW-03.01 CIAT, 1981, 2nd ed., 129 coloured slides, script, cassette, 43 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with the basic principles of weed management and control in tropical pastures. Suitable for farmers, extension workers and pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit

code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C107 Guia practica para el control de las malezas en los potreros.

CIAT audiotutorial unit 04SW-03.02 CIAT, 1977, 106 coloured slides, script, cassette, 37 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which, in combination with C106, gives practical guidelines for chemical control of weeds in tropical pastures. Suitable for farmers, extension workers and pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C110 Principios básicos sobre la selectividad de los herbicidas.

CIAT audiotutorial unit 04SW-01.03 CIAT, 1981, 2nd ed., 110 coloured slides, script, cassette, 39 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which provides basic selectivity principles for herbicides. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C111 Los herbicidas: modo de actuar y sintomas de toxicidad.

CIAT audiotutorial unit 04SW-01.04 CIAT, 1982, 2nd ed., 156 coloured slides, script, cassette, 60 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with the working mechanisms of herbicides and subsequent consequences for their selective use. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C112 Equipos para la aplicacion terrestre de herbicidas.

CIAT audiotutorial unit 04SW-01.06 CIAT, 1980, 128 coloured slides, script, cassette, 36 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with one aspect of weed management, chemical control. The equipment available for herbicide applications is described. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C113 Formulaciones de herbicidas.

CIAT audiotutorial unit 04SW-01.07 CIAT, 1981, 2nd ed., 109 coloured slides, script, cassette, 32 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which gives basic information on formulation of herbicides. The process can have considerable influence on effectiveness and selectiveness in different circumstances. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C114 Los surfactantes: clases, propiedades y uso con herbicidas.

CIAT audiotutorial unit 04SW-01.09 CIAT, 1980, 83 coloured slides, script, cassette, 33 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which discusses the use of surfactants as additives to herbicides, their effects and properties, and the different types available. Suitable for farmers in general, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C115 Formulación de pesticidas.

EAP-UFLA, 52 coloured slides, 17 p. script, cassette, 12 p. study guide, Spanish.

Provides information on the formulation of pesticides. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 59.70 including postage, quoting unit code 6. A catalogue of all available units and prices is available upon request.

C116 Herbicide calculations.

IRRI audiovisual production training module WDC-8 IRRI, 37 coloured slides, script, cassette, 22 minutes, English.

One of IRRI's training modules (see C002) which describes how to read label information, calculate the amount of herbicide needed to treat a given area, and calculate percentages of active ingredients from designated content of any herbicide. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C117 Insecticide calculations.

IRRI audiovisual production training module PC-6 IRRI, 52 coloured slides, script, cassette, 42 minutes, English.

One of IRRI's training modules (see C002) which provides calculations and guidelines for the preparation and application rates of root-soaking suspensions, dust formulations, granular formulations and spray solutions for a given area. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C118 Equipo para la aplicación de pesticidas.

EAP-UFLA, 72 coloured slides, 19 p. script, cassette in preparation, 9 p. study guide, Spanish.

Provides information on application equipment for pesticides. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 66.90, including postage, quoting unit code 59. A catalogue of all available units and prices is available upon request.

C119 Principios básicos de calibración de equipo de aspersión.

EAP-UFLA, 58 coloured slides, 7 p. script, cassette and study guide in preparation, Spanish.

Deals with calibration of spraying equipment, including measurement of the amount of water dispensed per time unit. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017), price unknown. A catalogue of all available units and prices is available upon request.

C120 Sprayer calibration.

IRRI audiovisual production training module PTT-9. IRRI, 40 coloured slides, script, cassette, 20 minutes, English.

One of IRRI's training modules (see C002) which deals with aspects of knapsack sprayer usage. The emphasis is on calculation of application rates, volume of water per unit area, nozzle delivery, total dosages, improving the efficiency of sprayers, and maintenance of sprayer equipment. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from IRRI (see H048) for US \$ 35.00 per module (LDC), including airmail postage, or US \$ 45.00 (HDC), quoting title and module number. A proforma invoice is necessary for 5 or more modules at reduced prices.

C122 Recomendaciones básicos sobre el manejo de agroquímicos.

CIAT audiotutorial unit 04SW-01.08 CIAT, 1981, 2nd ed., 137 coloured slides, script, cassette, 34 minutes, 5 study guides (a special package containing 25 study guides provides the slides in a carousel), Spanish.

Part of CIAT's series of training material which deals with all stages of pesticide application, including guidelines and safety precautions for the proper use of pesticides. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from CIAT (see H019) for US \$ 90.00 (standard unit), excluding airmail postage, or US \$ 130.00 (special package), quoting title and unit code. A 10% discount is given to universities and non-profit making institutions. Extra study guides are available for \$ 2.00 each.

C123 Guidelines for the safe transport of pesticides.

GIFAP, 1987, coloured slides.

Provides the same information as the accompanying brochure (see B285), with which the slides can be used for group instruction. Suitable for extension workers, pest control operators, plant protection officers and agrochemical shopkeepers.

Available from GIFAP (see I023) for BF 2500.00, including postage and handling, quoting code GSTS.

C124 Guidelines for the avoidance, limitation and disposal of pesticide waste on the farm.

GIFAP, coloured slides.

Provides the same information as the accompanying brochure (see B284), with which the slides can be used for group instruction. Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from GIFAP (see I023) for BF 2500.00, including postage and handling, quoting code GWDS.

C125 Guidelines for emergency measures in cases of pesticide poisoning.

GIFAP, 23 coloured slides.

Provides practical information on how to handle pesticide poisoning. The slides can be used in combination with the accompanying brochure (see B282) for group instruction. A pictorial poster is also available (see D022). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from GIFAP (see I023) for BF 1500.00, including postage and handling, quoting code GEMS.

C126 Guidelines for the safe and effective use of pesticides.

GIFAP, 46 coloured slides.

Provides the same information in a practical condensed form as the accompanying brochure (see B281), with which the slides can be used for

group instruction. A pictorial poster is also available (see D020). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from GIFAP (see I023) for BF 2500.00, including postage and handling, quoting code GSVS.

C127 Guidelines for the safe handling of pesticides during their formulation, packing, storage and transport.

GIFAP, 43 coloured slides.

Provides the same information as the accompanying brochure (see B280), with which the slides can be used for group instruction. Suitable for extension workers, pest control operators, plant protection officers, pesticide formulators and packers, and shopkeepers.

Available from GIFAP (see I023) for BF 2500.00, including postage and handling, quoting code GSHS.

C128 Spray safe with ULV.

Shell Ltd., 65 coloured slides, script, cassette. English (also available in French).

Deals with safe and proper application of pesticides, especially when using ultra-low-volume (ULV) applications. Suitable for farmers, extension workers and pest control operators in Africa.

Available from Shell International Chemical Company Ltd., Shell Centre, London SE1 7PG, UK, price unknown.

C129 Preventing pesticide poisonings in developing countries.

H. O'Brien, 1984, 51 coloured slides, script, 19 p. instructor's guide, participants handouts, English.

Intended as an educational unit for group discussions, providing information on all common problems associated with the use of pesticides. Suitable for farmers, extension workers, pest control operators, agricultural students, and rural communities.

Available from Office of Environmental and Scientific Affairs World Bank, 1818 H St., N.W., Washington D.C. 20433, USA, free of charge.

C130 Uso seguro de plaguicidas (parte I y II).

EAP-UFLA, 2 sets totalling 45 coloured slides (part 1), 56 coloured slides (part 2), 8 p. and 7 p. script, cassettes and study guides in preparation, Spanish.

Information is provided about the safe and proper use of pesticides. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 40.65 (part 1) including postage, quoting unit code 34A, or US \$ 48.60 (part 2) quoting unit code 34B. A catalogue of all available units and prices is available upon request.

C132 Consecuencias colaterales del uso de plaguicidas

EAP-UFLA, 29 coloured slides, 6 p. script, cassette and study guide in preparation, Spanish.

Deals with the negative side effects resulting from the use of pesticides. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 28.05 including postage, quoting unit code 51. A catalogue of all available units and prices is available upon request.

C133 Resistencia a pesticidas (parte I y II)

EAP-UFLA, 2 sets totalling 109 coloured slides, 19 p. script, cassette and study guide in preparation, Spanish.

Information is provided about resistance to pesticides in pests and diseases. Suitable for extension workers, pest control operators and agricultural students in Central America.

Available from EAP (see I017) for US \$ 91.95 including postage, quoting unit code 49. A catalogue of all available units and prices is available upon request.

C134 Pesticides: a guide for farm workers.

126 coloured slides, scripts, guidebook, 15 minutes, English (also available in Spanish).

Concentrates on the hazards of pesticide use. Guidelines are provided for the safe handling of pesticides. Suitable for farmers, extension workers and pest control operators in the USA and Central America.

Available from California Institute for Rural Studies, P.O. Box 530, Davis, CA 95617, USA, price unknown.

C135 Prevenção de acidentes na utilização de defensivos agrícolas.

Fundacentro, Portuguese.

Series of slides dealing with accident prevention when working with crop protection chemicals.

Available from Fundacentro, Caixa Postal 11.484, CEF 05499 Sao Paulo (SP), Brazil, price unknown.

C136 Pesticide safety review instruction module.

IPPC, 1987, 53 slides, manual, English.

Part of a module on pesticide safety, including information on toxicity and hazards, LD50, exposure to pesticides, and label information. Also available as overhead transparencies, or as MSDOS/CGA-compatible diskette (see F006). Suitable for extension workers and pest control operators in Northern America.

Available from International Plant Protection Centre (IPPC), Oregon State University, Corvallis, OR 97331, USA, for US \$ 30.00 and US \$ 5.00 for the manual: add \$ 5.00 (North America) or \$ 15.00 (all other countries) for shipping and handling.

C137 Precautions in the use of pesticides.

World Neighbors, filmstrip of 35 coloured frames, script, English (also available in Spanish and French).

Aims to educate about the safest use of pesticides. Dangers to the farmer, his family, neighbours and animals are pointed out which are always present when using pesticides. Correct and incorrect practices for handling, applying and storing pesticides are contrasted. An accompanying special issue of the newsletter 'World neighbors in action' is also available in English, Spanish or French (vol. 15, no. 2; using pesticides safely). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from World Neighbors (see I056) for US \$ 10.00, including surface postage, quoting language required and item no. 117, or US \$ 1.25 for newsletter issues, quoting item no. 71.

Section D: Posters and instruction cards

D001 Mineuse de l'épi du mil: cycle vital.

Service de Protection des Végétaux, (70 x 55 cm), black & white poster, French.

Shows all stages of the pest noctuid (*Raghuva albipunctuella*) and describes its life cycle in relation to the growth stages of millet. Useful aid when discussing appropriate control measures and timing of pesticide applications. Suitable for farmers, and extension workers in Niger.

Available from Projet de Protection des Végétaux, Ministère du Développement Rural, Direction des Services Agricoles, B.P. 323, Niamey, Niger, price unknown.

D002 Identification of rust diseases on wheat.

CIMMYT Staff, 1985, (28 x 61 cm), coloured poster, English (also available in French and Spanish).

The 3 rust diseases occurring in wheat (stem rust, leaf rust and stripe rust) are pictured to aid identification. A description of symptoms and disease development, as well as spore morphology, is given for each disease. Suitable for farmers and extension workers.

Available from CIMMYT (see H023) for US \$ 2.00 (HDC), or US \$ 1.00 (LDC).

D003 Characteristics of selected seed-borne fungi.

CIMMYT Staff, 1985, (80 x 29 cm), coloured poster, English (also available in Spanish and French).

Wheat seed infected with 4 seed-borne fungal diseases (karnal bunt, common bunt, dwarf bunt and black point) are compared to healthy seed. Affected crops, symptoms and spore morphology are described for each disease. Suitable for extension workers and agricultural students.

Available from CIMMYT (see H023) for US \$ 2.00 (HDC), or US \$ 1.00 (LDC).

D004 La caminadora (*Rottboellia cochinchinensis*): una maleza agresiva en cultivos de china cálido.

R. de la Cruz, C. Merino & J. Andino, 1987, (45 x 53 cm), coloured poster, Spanish.

Describes and illustrates the aggressive weed *Rottboellia cochinchinensis*,



which has accidentally been introduced into Central America. Information about characteristics, distribution, history, importance, development, infestation conditions, and cultural and chemical control recommendations is included. Suitable for farmers, extension workers and pest control operators in Central America.

Available from CATIE Proyecto MIP (see H012); or CENTA/CATIE, Apartado (01)78, San Salvador, El Salvador, price unknown.

D005 Ikinyabwoya kirya amababi y'ibijumbu.

ISABU, 1984, (80 x 70 cm), coloured poster, Kirundi.

Shows damage symptoms of the sweet potato in Burundi which has been attacked by the butterfly pest (*Acraea acerata*). Control measures are described. Suitable for farmers, and extension workers in Burundi, Africa.

Available from Institut des Sciences Agronomiques du Burundi (ISABU), B.P. 795, Bujumbura, Burundi, price unknown.

D006 Les ravageurs du cotonnier.

ISABU, 1984, (100 x 70 cm), coloured poster, French.

Illustrates the growth stages of cotton, 6 important insect pests of cotton, cultural measures to prevent pest problems, and the application of pesticides. A simple diagram emphasizes which pesticides should be applied against which pests, and at what time in the season. Suitable for farmers, and extension workers in Burundi, Africa.

Available from Institut des Sciences Agronomiques du Burundi (ISABU), B.P. 795, Bujumbura, Burundi, price unknown.

D007 Affiches didactique concernent les principaux ravageurs du cotonnier.

IRCT, (95 x 65 cm), series of 7 coloured posters (*Heliiothis armigera*; *Earias insulana* et *E. biplaga*; *Pectinophora gossypiella* et *Cryptophlebia leucotreta*; *Diparopsis watersi*; Les chenilles defoliantes: *Sylepta*, *Spodoptera*, *Cosmophila*; Les Hémiptères piqueurs des capsules et les pourritures; Les insectes producteurs des meillats: *Aphis gossypii* et *Bemisia tabaci*), French (also available in English).

Show stages of some important African cotton pests, including descriptions of damage symptoms. Suitable for farmers, and extension workers in Africa.

Available from Institut de Recherche du Coton et des Textiles Exotiques (IRCT), 2, rue Louis David, 75116 Paris, France, for FF 350.00 (5 copies) or FF 600.00 (10 copies). Minimum order is 5 copies.

D008 Africa-wide biological control project.

IITA, (60 x 45 cm), coloured poster, English.

Gives general information about the large scale project for biologically controlling cassava mealybug and green spider mites. Biological control is explained by showing the project's organization and major steps on one side of the poster. Pests, symptoms and natural enemies are illustrated on the other side. An accompanying brochure, 'Biological control of cassava mealybugs and green spider mites' (see B046) is also available. Suitable for extension workers and agricultural students in Africa.

Available from IITA (see H042), price unknown.

D009 La conservation du niébé (haricot) avec l'huile de neem: ajiyar wake bayan angarwaye shi da man diyan bedi: dunguri masangu haggoy yan nda milia ji.

Direction de la Protection des Végétaux, Niger, (98 x 63 cm), coloured poster, French and 2 local languages.

The preparation of neem seed extract for the protection of stored cowpeas is shown step-by-step in 28 photographs, each accompanied by a short explanation in the 3 languages. Suitable for farmers (particularly small scale farmers) and extension workers in Africa.

Available from Ministère de l'Agriculture, Direction de la Protection des Végétaux, Project Nigéro-Canadien de la Protection de Végétaux, Phase IV, B.P. 724, Niamey, Niger, price unknown.

D010 Rat control.

O. Granado, E. Santo & L.C. Gruber, 1986, (50 x 80 cm), series of 3 coloured posters, English.

Deals with rat control and the importance of community vigilance. Suitable for farmers, extension workers, pest control operators and agricultural students in the Philippines.

Available from GTZ/PAS, P.O.Box 1021 MCPO, Makati, Metro Manila, Philippines, free of charge for Philippino farmers and technicians. Although intended for local use, posters may be available upon special request.

D012 Déprédateurs des marchandises stockées.

DEGESCH GMBH, (85 x 120 cm), coloured poster, French (also available in English).

Symptoms and damage caused by pests of stored products are illustrated

by photographs and drawings, together with the insect or mite pests responsible. Chemical pesticides for product protection are also mentioned. A short brochure providing background information on the biology, life cycle, importance and damage of the pests is also available (see B250). Suitable for extension workers, pest control operators and agricultural students.

Available from DEGESCH GMBH, 32-40 Weissmullerstrasse, D-6000 Frankfurt am Main 1, Federal Republic of Germany, price unknown.

D013 Wood boring insects.

DEGESCH GMBH, 1980, (85 x 120 cm), coloured poster, English.

Shows damage symptoms of insect pests attacking wood, together with drawings of the pests responsible. Chemical pesticides are recommended for control. Suitable for extension workers, pest control operators and agricultural students.

Available from DEGESCH GMBH, 32-40 Weissmullerstrasse, D-6000 Frankfurt am Main 1, Federal Republic of Germany, price unknown.

D014 Natural enemies of insect pests of rice.

R. Cabrera, P. Kenmore & J. Lowe, (80 x 110 cm), coloured poster, English.

Drawings and photographs provide information about 8 species of spider, 9 species of insect predator, 16 species of parasite, a nematode and 3 diseases which attack important rice pests. General information about which pests are attacked, their size, habitat, and behaviour is included. Suitable for farmers, extension workers, pest control operators and agricultural students in Asia.

Available from FAO Intercountry Programme for Integrated Pest Control in Rice in South and South-East Asia, c/o IRRI (see H048), price unknown.

D015 Natural enemies of insect pests of rice.

FAO/IRRI 1983, (23 x 79 cm), coloured poster, English (also available in Bahasa Indonesian, Bahasa Malay, Bengali, Bicolano, Cebuano, Hindi, Ilongo, Ilokano, Maguindanao, Philipino, Tamil, Thai, and Warai.)

Designed to help farmers and rice workers recognize natural enemies of rice insect pests which control their population. It also explains that

insecticides can kill these natural enemies and cause outbreaks of major pests, such as brown plant hoppers and white-backed plant hoppers. Natural enemies can be preserved by using insecticides only when rice pest populations are high enough to damage the rice crop. Small numbers of pests will not damage rice, but instead provide food for their natural enemies. Suitable for farmers, extension workers and pest control operators in Asia.

Available from IRRI (see H048) for US \$ 2.00 (HDC), or US \$ 0.50 (LDC), excluding postage; add \$ 1.00 for mailing tube, \$ 4.00 for airmail, or \$ 0.50 for surface mail.

D016 Pesticides.

SPC, Environmental Education Notes, Fact Sheet no. 1.

Provides information on symptoms of pesticide poisoning, first aid, LD50, safety rules for pesticide use, and hazardous effects of pesticides on the environment.

Available from South Pacific Regional Environment Programme, South Pacific Commission, BPD 5, Noumea, New Caledonia, price unknown.

D017 DPI posters.

DPI, series of posters.

The following posters have been published: Pests of sweet potato (no. 1): sweet potato weevil; Pests of sweet potato (no. 2.): sweet potato hawkmoth; Pests of taro (no. 1): taro beetle; Pests of taro (no. 2) taro hawkmoth.

Available from Department of Primary Industry, Publications Section, P.O. Box 417, Konedobu, Papua New Guinea, for Toea 20.00 each, excluding postage.

D018 The African armyworm (*Spodoptera exempta*): life history.

TDRI / DLCO-EA, 1987, (42 x 30 cm), coloured poster, English.

Illustrates all stages of the African armyworm's life history by means of 11 photographs, accompanied by remarks on the duration of each stage and pest behaviour. Suitable for agricultural students, pest control operators and extension workers in East Africa.

Available from the Desert Locust Control Organization for Eastern Africa, P.O. Box 4255, Addis Ababa, Ethiopia; or from ODNRI (see I039), price unknown.

D019 Red locust warning poster.

ODNRI, English (also available in Swahili and Bemba).

No additional information.

A limited stock is available from ODNRI (see I039), free of charge, quoting order code P-RLE (P-RLS for Swahili version). The Bemba poster is only available on special request.

D020 Guidelines for the safe and effective use of pesticides.

GIFAP, coloured poster, English (also available in French, Spanish and Portuguese).

Condenses the most important information provided in the brochure of the same title (see B281), by illustrating safety precautions and proper practices. An accompanying series of slides is also available (see C126). Suitable for farmers, extension workers and pest control operators.

Available from GIFAP (see I023) for BF 80.00 (less than 35 copies) including postage and handling, quoting GSUPE (GSUPS for Spanish version, GSUPF for French version, or GSUPP for Portuguese version).

D022 Guidelines for emergency measures in cases of pesticide poisoning.

GIFAP, coloured poster, English (also available in Spanish and French).

Condenses the most important information provided in the brochure of the same title (see B282), using drawings to illustrate handling of pesticide poisoning. An accompanying series of slides is also available (see C125). Suitable for farmers, extension workers and pest control operators.

Available from GIFAP (see I023) for BF 80.00 (less than 35 copies) including postage and handling, quoting GEMPE (GEMPS for Spanish version, or GEMPF for French version).

D023 Le criquet puant: *Zonocerus variegatus*.

CIRAD/PRIFAS, 1988 (in preparation), (43 x 30 cm), coloured poster, French (will also be available in English).

Suitable for farmers, extension workers and pest control operators in Africa.

Available from CIRAD/PRIFAS Dept. GERDAT (see I009), price unknown.

D024 Alerta ao 'Mane Magro' no nordeste do Brasil.

M.A. Larenois et al., 1987, (43 x 30 cm), coloured poster, Portuguese, ISBN 2-87614-007-1.

Shows the life cycle and stages of the grasshopper *Stiphra robusta*, giving common names and host plants, distribution in Brazil, and the address of the regional plant protection institute. Suitable for farmers, extension workers and pest control operators in Brazil.

Available from FAO (see I020); CIRAD/PRIFAS (see I044); or EMBRAPA, Empresa Brasileira de Pesquisa Agropecuária, Vinculada do Ministério da Agricultura, C.P. 11.1316, 70333 Brasília DF, Brazil, price unknown.

D025 Toujours menaçant: le criquet pèlerin.

M. Launois, J. Mestre & T.M. Luong, 1986, (43 x 30 cm) or (90 x 63 cm), coloured poster, French (also available in English and Arabic), ISBN 2-87614-000-4.

Illustrates biology and life cycle of the desert locust, with some instructions for surveillance, sampling and control methods. Suitable for farmers, extension workers and pest control operators in Africa.

Available from FAO (see I020); or CIRAD/PRIFAS Dept. GERDAT (see I009), price unknown.

D026 Practical guide to farmers on how to control locusts and grasshoppers.

A. Duhart et al., 1984, (90 x 63 cm), black & white poster, English, (also available in French, Portuguese, Arabic and Chinese).

Provides information on the recognition and biology of locusts and grasshoppers, outbreak procedures, chemical control methods, and precautions for safe pesticide use (see D027). Suitable for farmers and extension workers.

Available from FAO (see I020); or CIRAD/PRIFAS Dept. GERDAT (see I009), free of charge.

D027 Conseils pratiques de lutte antiacridienne à l'usage des agriculteurs.

J.F. Duranton et al., 1986, (44 x 30 cm), coloured poster, French, ISBN 2-87614-003-9.

A new coloured edition of D026, providing the same information. Suitable for farmers and extension workers.

Available from FAO (see I020); or CIRAD/PRIFAS Dept. GERDAT (see I009), free of charge.

D028 Les acridiens du Sahel aux Iles du Cap-Vert: os gafanhotos do Sahel nas ilhas de Cabo-Verde.

J.F. Duranton et al., 1980, (90 x 65 cm), coloured poster, French and Portuguese.

Illustrates 19 locust and grasshopper species that occur on the Cabo Verde islands, with an indication of their abundance and pest status. Directions for use in schools are available in Portuguese. Suitable for farmers, extension workers and pest control operators in Cabo Verde and Sahel region, Africa.

Available from GERDAT, Centre de Recherches CIRAD (see I009), price unknown.

D029 Rat control.

MRDC, 1987, (30 x 45 cm), 5 black & white posters, English.

Series of posters dealing with rat control. Two posters illustrate 7 major rodent pests, the others illustrate the reproductive capacity of rats, damage to rice, and the major natural enemies of rats. An accompanying extension guide to rat control is also available (see B210). Suitable for farmers, extension workers and pest control operators in the Philippines.

Available from Montanosa Research and Development Centre Inc. (MRDC), Sagada, Mountain Province, Philippines; or SIBAT (see I087), price unknown.

D030 Fichier ennemies des cultures.

Association de Coordination Technique Agricole, (27 x 21 cm), series of more than 200 cards, double sided, coloured illustr., French.

Series dealing with the major pests and diseases of food crops, vegetables, fruit trees and ornamentals in France. Each card provides coloured drawings of the described pest or disease with affected plant material. On the back of each card, information is given about recognition, life cycle, damage symptoms, and recommended control measures. Although oriented on France, several series may be relevant to African regions. Suitable for extension workers, pest control operators and agricultural students.

Available from ACTA-Publications, 149, Rue de Bercy, F-75595 Paris-Cedex 12, France, for FF 3.92 per card (reductions for series of cards referring to single crops or groups). A catalogue can be requested listing all available cards, together with an order form.

D032 Fiches techniques.

ISRA, (21 x 28 cm), series of 7 cards (Ennemies de la pomme de terre; Ennemies du melon; Ennemies de la tomate; Ennemies du poivron et du piment; Ennemies des choux; Ennemies du haricot; Ennemies du gombo et du bissap), coloured illustr., one sided, French.

The major insect pests and diseases of a given crop are described. Short descriptions, damage symptoms and control measures are given, illustrated by coloured photographs. The emphasis is on chemical control. A book which describes these pests in more detail is also available, 'Les principaux ennemis des cultures maraichères au Sénégal' (see B146). Suitable for farmers, extension workers, pest control operators and agricultural students in Sénégal, Africa.

Available from Institut Sénégalais de la Recherche Agronomique (ISRA), Centre pour le Développement de l'Horticulture, B.P. 53, Bambay, Sénégal, price unknown.

D033 Fiches techniques: serie entomologie.

Service Protection des Végétaux,
(21 x 28 cm), series of 24 cards, double sided, coloured illustr., French

Important insect pests of the major crops are described. Each card provides coloured photographs of the pest species and damaged plant parts, as well as information on host plants, damage, recognition, life cycle, importance, and cultural and chemical control measures. Suitable for farmers, extension workers, pest control operators and agricultural students in Africa, especially the Sahel region.

The following cards are currently available:

- PV-I-01 *Spodoptera littoralis* – ver du cotonnier;
- PV-I-02 *Passer luteus* – moineau doré;
- PV-I-03 *Haimbachia ignefusalis* – borer des tiges du mil;
- PV-I-04 *Dysdercus voelkeri* – punaise rouge du cotonnier;
- PV-I-05 *Maruca testulalis* – foreuse des gousses;
- PV-I-06 *Mégalurothrips sjostedti* – thrips des fleurs de niébé;
- PV-I-07 *Oedaleus senegalensis* – sautériaux ravageur du mil, criquet sénégalais;
- PV-I-08 *Raghava albipunctella* – mineuse de l'épi, mourzouna (haoussa);
- PV-I-09 *Aphis graccivora* – puceron de l'Arachide;
- PV-I-10 *Poophilus costalis* – cicadelle du sorgho;
- PV-I-12 *Rhinyptia infusata* (improprement désigné *Anomala plebeja*);
- PV-I-13 *Plutella xylostella* – teigne des crucifères;
- PV-I-14 *Hellula undalis* – pyrale du chou;
- PV-I-15 *Atherigona* spp. – meuche de la tige du sorgho;
- PV-I-16 *Contarinia sorghicola* – cécidomie du sorgho;

- PV-I-17 *Lema planifrons* – criocère du mil;
 PV-I-18 *Spodoptera exempta*, *S. exigua* – chenilles processionnaires;
 PV-I-19 *Locusta migratoria migratorioides* – criquet migrateur africain;
 PV-I-20 *Schistocerca gregaria* – criquet pèlerin, criquet du désert;
 PV-I-22 *Tetranychus* spp.- araignée rouge, *Oligonychus* spp. – araignée verte;
 PV-I-23 *Chilo zacconius* – borer de tige du riz;
 PV-I-24 *Dacus* spp. – la mouche des cucurbitacées;
 PV-I-25 *Heliothis armigera* – ver de la tomate, ver de la capsule;
 PV-I-26 *Bemisia tabaci* – la mouche blanche.

Available from Ministère du Développement Rural, Service Protection des Végétaux Niger (SPVN), B.P. 323, Niamey, Niger, price unknown.

D034 Fiches Techniques: series phytopathologie.

Service Protection des Végétaux,
 (21 x 28 cm), series of 15 cards, double sided, coloured illustr., French

important diseases of the major crops are described. Each card provides coloured photographs of the causal organism, as well as information on host plants, damage symptoms, characteristics for identification, biology and life cycle, importance, and cultural (resistant varieties) and chemical control measures. Suitable for farmers, extension workers, pest control officers and agricultural students in Africa, especially the Sahel region.

The following cards are currently available:

- PV-M-01 *Sclerospora graminicola* – lépre du mil, maladie de l'épi vert, mildiou du mil;
 PV-M-02 *Striga* spp.;
 PV-M-03 *Xanthomonas manihotis* – chancre bactérien du manioc;
 PV-M-04 *Tolysporium ehrenbergii* – charbon allongé, *Sphacelotheca reiliana* – charbon de la panicule, *S. sorghi* – charbon couvert, *S. cruenta* – charbon nu;
 PV-M-05 *Xanthomonas campestris* pv. *oryza* – bactériose du riz, flétrissement bactérien;
 PV-M-06 *Pyricularia oryzae* – pyriculariose du riz;
 PV-M-07 Déperissement du manguiier, Gommose – *Botryosphaeria ribis*, *Hendersonula toruloidae*, *Macrophoma mangiferae*;
 PV-M-08 Maize streak virus (MSV) – maladies des bandes, striure du maïs;
 PV-M-09 Groundnut rosette virus (GRV) – rosette de l'arachide;
 PV-M-10 Mosaique du manioc;
 PV-M-11 *Macrophoma phaseolina* – pourriture cendrée, fonte de semis;
 PV-M-12 *Xanthomonas campestris* pv. *vignicola* – chancre bactérien, brûlure bactérienne;
 PV-M-14 Rice yellow mottle virus (RYMV) – mosaïque jaune du riz;

- PV-M-15 *Quelea quelea* – mange mil;
 PV-M-16 *Passer luteus* – moineau doré).

Available from Ministère du Développement Rural, Service Protection des Végétaux Niger (SPVN), B.P. 323, Niamey, Niger, price unknown.

D035 Fiches techniques: serie technique.

Service Protection des Végétaux,
 (28 x 21 cm), series of 10 cards, double sided, black & white illustr., French

Technical information is provided about pesticide application equipment, including usage and calculation of exact dosages. Cards deal with motorized mist blowers for normal applications, ultra-low-volume (ULV) applications and powder distribution, and with spinning disc sprayers for ULV applications. Suitable for extension workers and pest control operators in Africa, especially the Sahel region.

The following cards are currently available:

- PV-T-01 FONTAN – Pulvérisation standard;
- PV-T-02 FONTAN – Pulvérisation ULV;
- PV-T-03 FONTAN – Poudrage;
- PV-T-04 Atomiseur rotatif à pile – appareil ULV;
- PV-T-05 Pulvérisation à dos, Tecnomat, Berthoud;
- PV-T-06 Les pesticides agricoles – utilisation, précaution;
- PV-T-07 FONTAN – Mode d'emploi;
- PV-T-08 Traitement de semences;
- PV-T-09 L'atomiseur terrestre à turbulence avec pulvérisation rotative;
- PV-T-10 Consitution et mise en marche de l'atomiseur ULV du type micron 16.

Available from Ministère du Développement Rural, Service Protection des Végétaux Niger (SPVN), B.P. 323, Niamey, Niger, price unknown.

D036 Fiches Techniques.

Institut du Sahel/ILISS, 1984-1986.

(21 x 30 cm), series of 13 cards, double sided, coloured illustr., languages as indicated.

The following cards are currently available:

Entomology:

- G1-E-01 *Sesamia calamistis*, Lepid., Noctoidae – borer rose, French, English and Portuguese;
- G1-E-02 *Contarinia sorghicola*, Dipt., Cecidomyiidae, – la cécidomyie du sorgho, French, English and Portuguese;
- G1-E-03 *Chilo zacconius*, Lepid., Pyralidae, synonymes *Parerupa africana*, *Proceras africana* – foreur des tiges de riz, French and English;
- G1-E-04 *Raghuva albipunctella*, Lepid., Noctoidae – chenille mineuse de l'épi du mil, French and English;

- G1-E-05 *Callosobruchus maculatus*, Coleopt., Bruchidae – la bruche de niébé, French and English;
 G1-E-06 *Amsacta moloneyi*, Lepid., Noctoidae – la chenille poilue du niébé, French and English; P1 *Plutella xylostella*, Lepid., Plutellidae – lagartinha da couve, Portuguese; P2 *Heliothis armigerae*, H. peltigera; Lepid., Noctoidae – lagarta de tomate, Portuguese; P3 *Dacus frontalis*, Dipt., Tephritidae – mosca de abóbora, Portuguese;

Phytopathology:

- G1-P-01 *Sclerospora graminicola* – millet mildew or green head disease, French and English;
 G1-P-02 *Pyricularia oryzae*, *Ceratospheeria grisea* – rice blast, French and English;
 G1-P-03 *Drechslera maydis* or *Helminthosporium maydis* – maize leaf blight, French and English;
 G1-P-04 *Sphacelotheca sorghi* – sorghum covered kernel smut, French and English;

Weed sciences:

- G1-M-01 *Striga* spp., Scrophuriacees, English, French and Portuguese.

Insect pests, diseases and weeds in the major food crops are described. Each card is illustrated with coloured photographs showing the harmful organism and damage symptoms. Host plants, description, biology, damage, distribution and importance, and recommended control measures are given. Suitable for farmers, extension workers, pest control operators and agricultural students in Africa, especially Sahel region.

Available from CILSS, Institut du Sahel (see I035), Projet d'Information en Protection des Cultures et des Récoltes; or Projet de Lutte Intégrée contre les ennemies des principales cultures vivrières, B.P. 1530, Bamako, Mali, price unknown.

D037 Les pesticides les plus couramment utilisés au Niger.

La Direction de la Protection des Végétaux, 1987, (42 x 22 cm), 1 card, black & white, French.

Provides comprehensive information about the major pesticides used in Niger. Common names, active ingredients, usage, application methods, dosage, toxicity, safety periods and the major target pests of some 30 pesticides are given. Suitable for farmers, and extension workers in Niger.

Available from La Direction de la Protection des Végétaux, B.P. 323, Niamey, Niger, price unknown.

D038 Ravageurs des cultures vivrières tropicales.

IRAT-CIRAD, 1985-1987, (21 x 30 cm), series of 35 cards, double sided, coloured illustr., French.

The major insect pests of food crops are described. Information on recognition, geographical distribution, host plants, biology, life cycle, and control methods is provided for each pest. Important entomological methods and techniques (such as sampling and trapping), crop loss assessment, identification, and breeding of pest species are discussed. Suitable for farmers, extension workers, pest control operators and agricultural students in Africa.

Available from Institut de IRAT-CIRAD Entomologie (see I033) for FF 100.00 (set of 10 individual cards), FF 900.00 (set of 100 individual cards), FF 250.00 (set of 10 different cards published in 1985), FF 325.00 (set of 13 cards published in 1986), FF 300.00 (series of 12 cards published in 1987), or FF 250.00 (set of 10 cards to be published in 1988), excluding postage and handling. A catalogue which lists all topics, and includes an order form, is available upon request.

D039 Fichier produits phytosanitaires employes en Afrique.

CNEARC, 1988, (21 x 28 cm). series of cards, black & white, French.

Detailed information is provided about the chemicals used for crop protection in French-speaking African countries. The cards are organized using common names of active ingredients, and include information on the product's toxicity, type and class of material, chemical name, general properties, commercial formulations available in Africa, and recommended crops and harmful organisms against which the product can be used. Suitable for extension workers and pest control operators in French-speaking Africa.

Available from CNEARC Séminaire Homologation, B.P. 5098, 34033 Montpellier Cedex, France, for FF 500.00, including postage.

D040 Fiches phytosanitaires.

SPV, (21 x 30 cm), series of 7 cards (Les bactérioses de l'anthurium; La gommose à phytophthora des agrumes; L'exocortis des agrumes; La psorose écailleuse des agrumes; Alternariose de la tomate (*Corynespora* et *Phoma*); Anthracnose de l'igname; Arboculture fruitiere: les agrumes), double sided, coloured illustr., French.

Information is provided about diseases and pests of fruits, vegetables and ornamental crops. Symptoms and characteristics, the life cycle, transmission to other hosts, preventative measures, cultural control and chemical control measures are described. Suitable for farmers, agricultural students and extension workers in Martinique.

Available from Service de la Protection des Végétaux (SPV), Jardin Desclieux, B.P. 241, 97262 Fort de France, Martinique, for FF 10.00 per card, including postage (reductions for larger quantities).

Section E: Films and videos

- E001 Un nouveau ravageur de la culture du manioc; la cochenille farineuse.**
ISABU, 1988, video-cassette (VHS system), 13 minutes, French.

Gives a general overview of problems caused by the cassava mealybug in Burundi. Damage is shown and the introduction of parasites and predators as part of IITA's project on biological control is demonstrated. The IITA publication 'Biological control of cassava mealybug and green spider mites' (see B046) provides general background information on the African-Wide Project. Suitable for farmers and extension workers in Africa.

Available from ISABU, Institut des Sciences Agronomiques du Burundi, Direction Générale, B.P. 795, Bujumbura, Burundi, price unknown.

- E002 The biology of leaf cutting ants; control of leaf cutting ants.**
ODNRI, 1980, 2 video-cassettes, English.

Provides information about leaf cutting ants, their biology, social organization, various nest types, colony reproduction and control measures. Attention is focused on *Atta* spp. and *Acromyrex* spp. and how they can be controlled using citrus-meal bait. Suitable for extension workers, pest control operators and agricultural students in Central and South America.

Available from London Television Services, Hercules House, Hercules Rd., London SE1 7DU, UK, price unknown.

- E003 Pigeonpea: protection for Heliothis.**
ICRISAT, 1985, video-cassette, English.

Deals with *Heliothis* control in pigeon peas. Suitable for extension workers and pest control operators.

Available from ICRISAT (see H038), price unknown.

- E004 Les acridiens: un fléau ancestral.**
PRIFAS, video-cassette, 10 minutes, French.

Deals with locusts as pests, and their control. Suitable for extension workers and pest control operators in Africa.

Available from PRIFAS, Dept. GERDAT (see I044), price unknown.

E005 Bio-écologie des acridiens

PRIFAS, video-cassette, 10 minutes, French.

Deals with the biology and ecology of locusts. Suitable for extension workers and pest control operators in Africa.

Available from PRIFAS, Dept. GERDAT (see I044), price unknown.

E006 Stratégies antiacridiennes.

PRIFAS, video-cassette, 10 minutes, French.

Deals with strategies for locust control. Suitable for extension workers and pest control operators in Africa

Available from PRIFAS, Dept. GERDAT (see I044), price unknown.

E007 Pflanzenschutz: formulierung.

Hoechst, 16 mm film, 14 minutes, colour, optical sound, German.

The principle of additives in pesticides to increase their effectiveness is explained, as well as the elements important in formulating pesticides. Suitable for extension workers, pest control operators and agricultural students.

Available from Hoechst AG, Filmstelle, 6230 Frankfurt am Main 80, Federal Republic of Germany, price unknown.

E008 Die schmetterlinge liebesgrusse: insekten als chemiker.

BASF, 1983, 8 mm or 16 mm film, 26 minutes, colour, magnetic (35 mm) or optical sound (16 mm), German (also available as a video-cassette).

Deals with chemical communication (pheromones) in butterflies, which attract male and females and regulate aspects of their reproductive behaviour. Synthesized pheromone imitations can be used to monitor population densities and may be used to disrupt communication. Both methods may be adopted in IPM systems. Suitable for extension workers and agricultural students.

Available from BASF AG, ZOA-Filmstelle, Wöhlerstrasse 19, 1700 Ludwigshafen, Federal Republic of Germany; or LDF 9 Schleswig-Holstein, Hollesenstrasse 14, 2370 Rendsburg, Federal Republic of Germany, price unknown.

E009 Operation rat control.

GTZ, 1975, 16 mm film, 31 minutes, colour, optical sound, English.

The importance of rat control is stressed, and extension methods are shown for introducing certain techniques and measures as elements of a rat control campaign. Suitable for farmers, extension workers and pest control operators in the Philippines.

Available from GTZ (see I024); or CRW-Filmservice, Sandstrasse 10, 3565 Breidenbach 2, Federal Republic of Germany, price unknown.

E010 Rice storage in Indonesia.

ODNRI, 1979, film, 20 minutes, English.

Provides information on appropriate ways of threshing and drying rice and testing its quality before storage. Recommendations are given for sampling and controlling insect infestations, including fumigation, and for reducing losses from rats and birds. Suitable for farmers, extension workers and pest control operators in Indonesia and other rice growing countries in the tropics.

Available from London Television Services, Hercules House, Hercules Rd., London SE1 7DU, UK, price unknown.

E011 Storing maize on the farm.

ODNRI, 1977, film, 12.5 minutes, English (also available in French, Indonesian and Latin American-Spanish).

Deals with traditional and improved methods of drying and storing maize, including recommended measures to prevent losses. Ways are discussed by which farmers can ensure that the harvested crop is available for eating, selling or planting after storage. Suitable for farmers (particularly small scale farmers), extension workers and agricultural students.

Available from London Television Services, Hercules House, Hercules Rd., London SE1 7DU, UK, price unknown.

E012 Good storage practices.

ODNRI, 1980, film, 25 minutes, English.

The importance of improved storage practices is stressed. Steps are recommended for carrying out building inspections, sampling, reducing pest infestations, and chemical pest control. Suitable for farmers, extension workers and agricultural students.

Available from London Television Services, Hercules House, Hercules Rd., London SE1 7DU, UK, price unknown.

Section F: Tape recordings and other materials

F001 Rat control campaign.

Crop Protection Branch, 1986, tape-recording of radio broadcasts (dramas, songs, features), Bahasa Malay.

Part of a multimedia extension campaign for rat control to mobilize members of local communities into cooperative action (see C092). Suitable for farmers, extension workers, pest control operators, agricultural students and rural communities in Malaysia.

Available from National Programme Leader IPC, Crop Protection Branch, Dept. of Agriculture, Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

F002 Radio broadcasts.

Institut du Sahel, 1983 and 1984, tape-recording of 4 radio broadcasts, 8-12 minutes each, French.

Deals with seed treatments, locust control, pests of food crops, and birds as pests of grains. Suitable for farmers, extension workers and pest control operators in Sahel countries, Africa.

Available from L'Institut du Sahel (see I035), price unknown.

F003 IPM on air.

Philippine German Crop Protection Programme, 1986 and 1987, tape-recordings of 48 short radio broadcasts (dramas, features), 2 Philippine dialects: Tagalog, Cebuano.

Introduces concepts of IPM, such as botanical insecticides, resistant varieties, spraying when needed and after sampling pest populations, biocontrol, and friendly insects. The broadcasts aim to create awareness about IPM and a desire to learn more about the subject. An accompanying brochure with the same title, providing background information on the campaign and its objectives, is available upon request. Suitable for farmers, extension workers, and pest control operators and agricultural students in the Philippines.

Available from CTZ, P.O. Box 1021, MCPO, Makati, Manila, Philippines; or the Bureau of Plant Industry, Ministry of Agriculture and Food, President Quirino Ave., Malate, Metro Manila, 2801 Philippines, price unknown.

F004 DCFRN packages: items on weed and pest control.

DCFRN, 12 packages of cassettes, scripts, references, English (also available in French and Spanish).

- 1-1 Some farmers control insects without costs;
- 1-8 A simple, but effective fly trap;
- 2-2 Rats;
- 3-3 Rat prevention;
- 4-9/B Chickens reduce insects in fruit;
- 5-1/A Weeds;
- 5-1/C A simple crop duster;
- 6-8 Insects die in airtight grain storage;
- 7-9/B Simple solution to a big pest problem;
- 7-9/C Rats, are they a problem for you ?;
- 8-2 Fruit and vegetable soft rot;
- 9-1/A Birds – a problem for many farmers;
- 9-1/B A simple rat trap;
- 10-8 Knowing insect pest life cycles helps you control pests;
- 10-9 Preventing insect pest damage to crops;
- 10-10 Pesticide safety, part 1 – handle with care;
- 10-11 Pesticide safety, part 2 – preparing and applying pesticides;
- 11-4 A light trap for insect pests;
- 11-5 Raising ducks in the paddy field;
- 11-6 Aphid control at little cost, part 1 – a homemade insecticide for aphids;
- 11-7 Aphid control at little cost, part 2 – applying your homemade insecticide;
- 12-10 Preventing bird damage in garden crops.

Packages of cassettes consisting of approximately 20 short items about weeds and pests, together with notes for radio broadcasts, extension work and classroom discussions. The information contained in the packages is practical, simple, field tested in developing countries, easily adaptable elsewhere, inexpensive, requires readily available resources with no external inputs, and requires little or no help from extension workers. Suitable for farmers, particularly small scale farmers, and extension workers in developing countries.

Available from DCFRN (see I013) free of charge, but the information poll accompanying each package should be completed and returned.

F005 The pesticide manual.

C.R. Worthing & S.B. Walker (eds.), 1987, 7th ed, microfiche (24 x 1 reduction 20 cm), 98-frame format, English.

Microfiche of the handbook of this name (see A063).

Available from CAB International (see I006) for US \$ 65.00 for the Americas, or £ 36.00 overseas, including postage.

F006 Pesticide safety.

A.S. Cooper, 1987, computer-based module of MSDOS/CGA-compatible diskettes, 20 p. manual, references, English.

Module dealing with the proper use and handling of pesticides. Also available as a slide set (see C136), or transparencies.

Available from IPPC (see I032) for US \$ 10.00; add \$ 15.00 for postage and handling outside the USA.

F007 Rat control.

Crop Protection, 1986, includes posters, leaflets, brochures, stickers, flip charts, stencils and cassette tapes, Bahasa Malay.

Various materials developed for the Malaysian campaign on rat control, launched in 1986 by the Department of Agriculture, Crop Protection Branch. The project aims to mobilize groups such as rural communities, farmers and their families, school children, and religious leaders in cooperative action against rats (see B212-B216, and F008).

Information about the campaign and its materials is available from National IPM Committee, Crop Protection, Dept. of Agriculture, Jalan Gallagher, 50480 Kuala Lumpur, Malaysia.

F008 Pantun seloka kawal tikus.

Jabatan Pertanian, 12 p. booklet, (21 x 30 cm), 12 coloured illustr., Bahasa Malay.

Contains a series of short poems and songs about rats, the problems they cause, and control strategies, illustrated with comic strips. The objective is to create awareness about the need for rat control and to mobilize rural communities, farmers and school children. Suitable for school children and teachers, rural communities and extension workers in Malaysia.

Available from Jabatan Pertanian Semenanjung Malaysia, (Crop Protection Branch), Jalan Gallagher, 50480 Kuala Lumpur, Malaysia, price unknown.

**Chapter 4: DIRECTORY OF IPM RESEARCH AND
INFORMATION**

Section G: Newsletters and periodicals

G001 Actividades en Turrialba CATIE.

CATIE, quarterly, Spanish, ISSN 0304-2529.

Newsletter providing research news, articles, notes, recent events and lists of new publications, with the emphasis on crop protection and IPM.

Available from Centro Agronomico Tropical de Investigacion y Ensenanza (CATIE), Turrialba 7170, Costa Rica.

G002 Afrique agriculture.

Publiafric, monthly, French, ISSN 0337-9515.

Journal providing general information on all technical, socio-economical and political aspects of African agriculture. Crop protection is one of many topics found among the wide-ranging articles and news items.

Available from S.A. Publiafric, 190 bd. Haussmann, 75008 Paris, France, for an annual subscription of FF 400.00, including special issues and airmail.

G003 Agricultural information development bulletin.

ESCAP, quarterly, English, ISSN 0252-4376.

Bulletin providing information about rural and agricultural development, communications in rural communities, research results, and news on meetings and congresses relevant for the Asian and Pacific Region.

Available from United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), Agricultural Division, UN Building, Rajdamnern Nok Ave., Bangkok 10200, Thailand.

G004 Agriculture international: the journal of international crop and animal husbandry.

Agraria Press, monthly, English, ISSN 0269-2457.

International journal providing research articles, news, general information, and book reviews on agriculture, including occasional crop protection topics.

Available from Agraria Press Ltd., Yew Tree House, Horne, Horley, Surrey RH6 9JP, UK, for an annual subscription of £ 30.00 or US \$ 60.00, including surface mail.

G005 L'agronomie tropicale.

IRAT/CIRAD, triannual, French (English and Spanish summaries),
ISSN 0151-1238.

A journal providing research results and news in brief concerning tropical agriculture, including crop protection.

Available from IRAT (see I033); or CIRAD (I009), for an annual subscription of FF 195.00 (French-speaking African countries) or FF 236.00 (other countries). Editorial office: 45 bis, avenue de la Belle Gabrielle, 94736 Nogent-sur-Marne Cedex, France.

G006 Arroz en las Américas.

CIAT, biannual, Spanish, ISSN 0210-2634.

Newsletter providing exchange of technical notes, news of upcoming events, and progress reports from rice researchers throughout Latin America.

Available from CIAT (see H019), free of charge.

G

G007 AT source: technology and development.

Quarterly, English (also available in French), ISSN 0920-7996

Journal concerned with spreading information about appropriate technology in order to improve the position of Third World countries. Practical information is given about agricultural, technical and health-related topics, including social implications. Seven NGOs from Belgium and The Netherlands, active in dissemination of information about appropriate technology, contribute to the journal. Several of these organizations, such as TOOL and AGROMISA, provide an enquiry service.

Available from The Editors, AT Source, P.O. Box 41, 6700 AA Wageningen, The Netherlands, for an annual subscription of Dfl. 20.00 per year (a free subscription can be requested for groups or individuals unable to pay the subscription).

G008 Bananas and plantains information bulletin.

IRFA/CIRAD, monthly, English (also available in French and Spanish),
ISSN 0767-1709.

A selective bibliography of printed information concerning bananas and plantains, to provide an exchange of information between scientists, developers, technicians and growers. A delivery service is linked to this bulletin.

Available from Service de Documentation IRFA/CIRAD (see I009) for an annual subscription of US \$ 115.00 or FF 825.00.

G009 Boletín informativo MIP (manejo integrado de plagas).
CATIE, quarterly, Spanish.

Newsletter including short research articles, news, announcements, book reviews and forthcoming events concerning IPM projects in Central America.

Available from CATIE (see H012), free of charge to participants in the MIP/CATIE project.

G010 Cassava newsletter.
CIAT, triannual, English (also available in Spanish), ISSN 0210-1824.

Newsletter providing interchange of technical notes, news of upcoming events, and progress reports from cassava researchers throughout the world.

Available from CIAT (see G014), free of charge.

G012 Centerpoint.
AVRDC, quarterly, English.

Newsletter providing information about AVRDC's activities, including research, training, and publications concerning vegetables.

Available from AVRDC (see H006), free of charge.

G013 Ceres: the FAO review.
FAO, bimonthly, English, ISSN 0009-0379.

Journal providing general research articles on agriculture, opinions, book reviews and news from FAO programmes. Publication was temporarily suspended in 1988, but may resume in the following year.

Available from FAO (see I020) for an annual subscription of US \$ 17.00.

G014 CIAT international.
CIAT, triannual, English (also available in Spanish), ISSN 0110-4084.

Newsletter highlighting CIAT's current research activities and results, and its impact in international development.

Available from CIAT (see H019), free of charge.

G015 CIP circular: circular del CIP.

International Potato Centre, quarterly, English and Spanish text.

Circular providing research reports, training activities, and new publications related to potato research.

Available from Centro Internacional de la Papa (see H024), free of charge.

G016 Crop protection: an international journal of pest, disease and weed control.

IPC Business Press, quarterly, English, ISSN 0261-2194.

Newsletter providing research articles, partly dealing with tropical crop protection, and book reviews.

Available from IPC Business Press, Oakfield House, Perrymount Rd., Haywards Heath RH16 3DH, UK, for an annual subscription of £ 45.00 or US \$ 112.50, including postage, packing and delivery by surface mail.

G017 Current awareness.

ICARDA, irregular, English.

A Selective Dissemination of Information (SDI) service produced by ICARDA's library. Contains complete book listings, relevant journal articles, reprints, bulletins and reports.

Available from ICARDA (see H034).

G018 FABIS.

ICARDA, triannual, English.

FABIS (Faba Bean Information Service) mainly contains scientific articles, as well as book reviews and news items about training and conferences on faba beans.

Available from ICARDA (see H034), free for developing countries, US \$10.00 per year for others.

G019 FAO documentation: current bibliography.

FAO, bimonthly, English, French, and Spanish text, ISSN 0304-582X.

Periodical listing selected documents and publications produced by, or on behalf of, the FAO. The Library and Documentation Systems Division also provides microfiche lists, and carries out searches on



FAO documentation in the FAO's database ('AGRIS') on request.

Available from FAO, Library and Documentation Systems Division, David Lubin Memorial Library (see I020).

G020 FAO plant production and protection papers.

FAO, references, over 75 papers published, several dealing with IPM in specific crops.

7. Rodent pest biology and control, bibliography 1970-74, 1977, English;
13. The use of FAO specifications for plant protection products, 1979, English, French;
14. Guidelines for integrated control of rice insect pests, 1979, Chinese, English, French, Spanish;
18. Guidelines for integrated control of maize pests, 1980, English;
19. Elements of integrated control of sorghum pests, 1980, English, French, Spanish;
32. Weeds in tropical crops: selected abstracts, 1981, English;
- 32 Sup. Weeds in tropical crops: review of abstracts, 1982, English;
40. Rodent control in agriculture, 1982, English;
44. Improving weed management, 1983, English;
48. Guidelines for integrated control of cotton pests, 1983, English, Spanish;
50. International plant quarantine treatment manual, 1983, English;
54. Manual of fumigation for insect control, 1984, English;
55. Breeding for durable disease and pest resistance, 1984, English;
58. Economic guidelines for crop pest control, 1984, English;
63. Manual of pest control for food security reserve grainstocks, 1985, English;
64. Contributions à l'écologie des aphides africains, 1985, French;
74. Ecology and control of perennial weeds in Latin America, 1986, English.

Practical and useful papers dealing with several aspects of plant production and protection in the tropics.

Available from FAO, Distribution and Sales Section (see I020). An overview of available papers can be found in 'FAO plant protection bulletin.'

G022 FAO plant protection bulletin: bulletin phytosanitaire: boletín fitosanitario.

FAO, quarterly, titles and summaries in English, French and Spanish; most articles in English, ISSN 0254-9727.

Provides short research articles, news and notes, including information about pest outbreaks and new records.

Available from FAO, Plant Production and Protection Division (see I020) for an annual subscription of US \$ 10.00.

G023 Farm chemicals international.

Meister Publishing, quarterly, English (with Spanish titles and introductions).

International magazine on pesticides and fertilizers providing practical information, short articles, notes and news.

Available from Meister Publishing Co., 37841 Euclid Ave., Willoughby, OH 44094, USA for a subscription of US \$ 20.00 (surface mail) or US \$ 50.00 (airmail).

G024 Food legume newsletter.

ACIAR, English, ISSN 0814-4133.

Newsletter providing research news, short communications and other updates on food legume research.

Available from ACIAR, Food Legume Programme (see H001).

G025 GATE: questions, answers, information.

GATE, quarterly, English, ISSN 0723-2225.

Journal concerned with appropriate technology, which discusses problems and suggests approaches to solutions.

Available from GATE (see I022), free of charge.

G026 GIFAP bulletin.

GIFAP, quarterly, English and French text (summaries in the other language).

Provides notes, news of international developments, announcements and book reviews on the use of pesticides.

Available from GIFAP (see I023), 79A Ave. Albert Lancaster, B-1180 Brussels, Belgium, free of charge.

G027 Hojas de frijol.

CIAT, triannual, Spanish, ISSN 0210-2480.

Newsletter providing interchange of technical notes, news of upcoming events, and progress reports from bean researchers worldwide.

Available from CIAT (see H019), free of charge.

G028 IITA research briefs.

IITA, quarterly, English, ISSN 0331-9512.

Newsletter detailing aspects of IITA's research projects, as well as news about major events in the Institute.

Available from IITA (see H042), free of charge.

G029 ILCA newsletter.

ILCA, quarterly, English (also available in French), ISSN 0255-0024.

Provides information on recent developments in traditional livestock systems, including disease control, cropping practices, intercropping, and mixed farming.

Available from International Livestock Centre for Africa (ILCA), P.O. Box 5689, Addis Adaba, Ethiopia, free of charge.

G030 ILEIA newsletter.

ILEIA, quarterly, English, ISSN 0920-8771.

Provides interesting research articles, opinions, practical experiences, news and developments in the field of small scale, sustainable agriculture.

Available from ILEIA (see I029) for an annual subscription of Dfl 40.00, quoting 'Newsletter', for individuals or institutions in or financed by Europe, North America, Canada, Japan or Australia, Dfl 25.00 for those based in Third World countries and not financed by donor countries mentioned previously, Dfl. 25.00 for students, or free of charge in special cases.

G032 Infoletter.

IPPC, English, ISSN 0145-6288.

Newsletter providing brief information about conferences, workshops and other meetings, recent developments and equipment, publications, and

news from research institutes related to crop protection in the tropics and subtropics.

Available from IPPC (see I032), free of charge.

G033 Insects science and its application: the international journal of tropical insect science.

ICIPE, bimonthly, English, ISSN 0191-9040.

Journal dealing with all aspects of research on tropical insects and other arthropods, including pest and vector management.

Available from ICIPE (see H036) for an annual subscription of US \$ 165.00 for institutions, including postage, or US \$ 70.00 for private individuals. Information about reduced rates for ICIPE or AAIS members, additional subscriptions, or longer periods available upon request.

G034 International arachis newsletter.

ICRISAT, biannual, English, ISSN 1010-5824.

Intended to transfer information between workers worldwide who are interested in the research and development of groundnut peanut (*Arachis*) and its wild relatives. Provides brief research articles, information and new publications from ICRISAT, addresses and announcements of symposia.

Available from Legumes Programme, ICRISAT (see H038), free of charge.

G035 International chickpea newsletter.

ICRISAT, biannually in June and December, English.

Intended to transfer information between workers worldwide who are working on chickpea research. Features short communications about recent developments, progress, or problems in chickpea research, and information about relevant publications and meetings.

Available from ICRISAT (see H038).

G036 International pest control: crop and stock protection, public health, wood preservation.

McDonald Publications, bimonthly, English, ISSN 0020-8256.

Magazine providing information about recent developments, research articles, news and book reviews.

Available from McDonald Publications, 238A High St., Uxbridge, UB8 1UA, Middlesex, UK, for an annual subscription of £ 21.00.

G037 International pigeonpea newsletter.

ICRISAT, biannual, English.

Transfers information between workers worldwide who are working on pigeonpea research. Contains news, views, requests, and research notes, as well as previously unpublished data, an abstract section, and information regarding relevant publications and meetings.

Available from ICRISAT (see H038).

G038 International rice research newsletter (IRRN).

IRRI, bimonthly, English, ISSN 0115-0944.

Transfers information between workers worldwide who are working on rice research. Includes short articles, news, and information about recent publications and forthcoming events.

Available from IRRI (see H048), free of charge.

G039 Intertropics.

L'Agence Periscoop, bimonthly, French, ISSN 0755-6152.

International journal on tropical agriculture which provides brief articles on agricultural topics, recent developments, reviews of articles from other journals, short news items and book reviews.

Available from L'Agence Periscoop, Multimedia 34 bis, rue de Dunkerque, 75010 Paris, France, for an annual subscription of FF 195.00.

G040 INTSOY newsletter.

International Soybean Program, biannual, English (also available in French and Spanish).

Provides information on INTSOY activities and research, and news items relevant to soya bean workers worldwide.

Available from International Soybean Program (see H045), free of charge.

G042 IRRI research paper series.

IRRI, irregular, English, ISSN 0115-3862.

More than 100 issues contain research articles and results of experiments carried out by IRRI or associated scientists.

Available from IRRI (see H048), free of charge for libraries and certain

institutions. Individuals may request 2 selected papers on a complimentary basis. Information about prices of additional copies and bound volumes (20 issues per volume) available on request.

- G043 ISPP international newsletter on plant pathology.**
T. Kommendahl (ed.), ISPP, bimonthly, English.

Provides news and announcements of symposia and congresses.

Available from International Society for Plant Pathology (ISPP), University of Minnesota, 495 Borlaug Hall, 1991 Buford Circle, St. Paul, MN 55108, USA, for an annual subscription of US \$ 15.00 for ISPP members (membership costs US \$ 8.00 per year).

- G044 LENS newsletter.**
ICARDA, biannual, English, ISSN 0257-7143.

Contains scientific articles, as well as a bibliography, key abstracts, book reviews and news items on lentils. A free annual supplement is available (lentil abstracts).

Available from Lentil Experimental News Services, ICARDA (see H034), free of charge.

- G045 List of publications on insect, disease and weed pests.**
IRRI, annual, English.

A bibliography of publications in IRRI's database about insects, diseases and weed pests of rice. Since 1978, 9 supplements have been published. A document delivery service is linked to this series.

Available from Entomology, Plant Pathology and Agronomy Depts., IRRI (see H048), free of charge.

- G046 Manejo integrado de plagas (MIP): revista del proyecto MIP/CATIE.**
CATIE, quarterly, Spanish.

Research articles and results from IPM projects in Central America.

Available from CATIE (see H012), free of charge for project participants, or US \$ 15.00, including airmail.

- G047 MARDI report.**
MARDI, irregular, 6 to 8 titles per year, English or Bahasa Malay.

The following issues have been published dealing with pest management (articles in English unless stated otherwise):

1. Current status of diseases and pests of sugarcane in West Malaysia, M \$ 0.50;
4. Assessment keys for some rice diseases, M \$ 0.50;
17. A mosaic virus disease of *Capsicum annum* L. in West Malaysia), M \$ 1.50;
21. Epidemiological studies of tungro virus in Malaysia, M \$ 1.50;
22. Potential for the biological control of rice insect pests, M \$ 1.50;
33. Insects in rice packing: development and pattern of infestation, M \$ 1.50;
35. A study of the rodent problem in district I of the Muda padi area, M \$ 1.50;
46. Important rice pests and their management in Malaysia, M \$ 1.50;
50. Habitat modification for regulating pest population of rice in Malaysia, M \$ 1.50;
51. Weed control for crops grown on peat, M \$ 1.50;
66. Rice weed control in Malaysia, M \$ 1.50;
72. The control of vegetable diseases in Cameron Highlands, M \$ 6.00;
78. Paraquat for weed control and crop desiccation in Malaysia: a review, M \$ 5.00;
- 81A. Beberapa cara kawalan lalat buah, Bahasa Malay, M \$ 3.00;
- 81B. Some methods of controlling fruit flies, M \$ 3.00;
85. Nematod parasit tumbuhan utama pada tanaman pisang, *musa sapientum* di semenanjung Malaysia, Bahasa Malay, M \$ 3.00;
88. Insect pest and disease problems of grain legumes in Peninsular Malaysia, M \$ 3.00;
97. Diseases and disorders of pineapples in Peninsular Malaysia, M \$ 25.00;
100. A guide for visual diagnosis of macro-nutrient deficiency symptoms in some cruciferous vegetables, M \$ 10.00;
105. The perception and management of pest among rice farmers in the Muda irrigation scheme, Malaysia, M \$ 5.00;
108. Database development for pest management, M \$ 5.00.

Available from MARDI (see H050), prices given above.

G048 Nematropica.

OTAN, English.

Journal providing research articles on tropical nematology.

Available for OTAN members from Organization of Tropical American Nematologists (OTAN), Peggy S. King (Secretary of OTAN), Dept. of Plant Pathology, Auburn University, Auburn, AL 36849, USA. Annual membership costs US \$ 10.00 (applications to the secretary), and includes a year's subscription to *Nematropica*.

G049 Nouvelles de l'ICRISAT (At ICRISAT).

ICRISAT, quarterly, French (also available in English).

Presents recent ICRISAT activities and research developments to agriculturalists, donor agencies, government officials, and interested readers. Lists latest publications, and articles by ICRISAT scientists which have been accepted by professional journals in the current quarter.

Available from ICRISAT (see H038), free of charge for single copies.

G050 Paginas de contenido: NIP (manejo integrado de plagas).

CATIE, quarterly, Spanish.

Periodical containing photocopies of contents pages from some 35 scientific journals on crop protection, as well as news on congresses and workshops. A document delivery service (US \$ 0.10 per photocopy) is linked to this publication.

Available from CATIE (see H012) for an annual subscription of US \$ 10.00.

G052 Paradisiaca.

IITA, annual, English and French text.

Newsletter of the International Association of Plantain and Other Cooking Bananas.

Available from International Association for Research on Plantain and Other Cooking Bananas, IITA (see H042), free of charge.

G053 RACHIS (barley, wheat and triticale newsletter).

ICARDA, biannual, English (also available in Arabic).

Contains scientific articles, book reviews, and news items about training, and conferences for scientists working with wheat, barley and triticale.

Available from ICARDA (see H034).

G054 Scientific information bulletin: boletín de información científica.

CIMMYT, bimonthly, English and Spanish text, ISSN 1010-0024.

Provides news, addresses and information on CIMMYT research, lists of CIMMYT's new library accessions, and information on document delivery and photocopying service.

Available from CIMMYT (see H023) Londres 40, Apdo. Postal 6-641, 06600 Mexico D.F., Mexico.

G055 Seed pathology news.

Danish Government Institute of Seed Pathology for Developing Countries, irregular, English, ISSN 0160-5297.

Journal providing information about courses and programmes in and for developing countries.

Available from Danish Government Institute of Seed Pathology for Developing Countries, Ryvangs Allé 78, DK-2900 Hellerup, Copenhagen, Denmark, free of charge.

G056 Semillas para América Latina.

CIAT, quarterly, Spanish, ISSN 0210-2979.

Newsletter providing information on courses, meetings, and other activities of CIAT's Seed Unit, as well as seed procedures in various regions of Latin America.

Available from CIAT (see H019).

G057 SMIC newsletter.

SMIC/ICRISAT, triannual, English (also available in French).

Provides worldwide information about research efforts to improve production and utilization of sorghum and millet, as well as a selected bibliography on current relevant literature. Suitable for sorghum and millet researchers and extension workers.

Available from Sorghum and Millets Information Center (SMIC), ICRISAT (see H038).

G058 Soybean rust newsletter.

AVRDC, annual, English.

Newsletter of the International Working Group on Soybean Rust.

Available from AVRDC (see H006), free of charge.

G059 SPORE, bulletin bimestriel d'information scientifique et technique en matière de développement agricole et rurale.

CTA, bimonthly, French (also available in English), ISSN 1011-0046.

Provides general information and articles on tropical agriculture, including news, announcements and recent publications. Crop protection is one of the main topics.

Available from CTA (see I012).

G060 Tropical agriculture.

Faculty of Agriculture, Imperial College of Tropical Agriculture,
University of the West Indies, quarterly, English, ISSN 0041-3216.

Journal containing research articles on tropical agriculture in general, with news of forthcoming events.

Available from Butterworth Scientific Ltd., Westbury Subscription Services, P.O. Box 101, Sevenoaks, Kent TN15 8PL, UK, for an annual subscription of £ 82.00 (overseas).

G062 Tropical grain legume bulletin.

HTA, quarterly, English, ISSN 0304-5765.

Contains research articles, news, abstracts and notes on grain legumes (particularly cowpeas and soya beans). Suitable for research and extension workers.

Available from The International Grain Legume Information Centre, HTA (see H042), free of charge.

G063 Tropical pest management (continuation of PANS).

Taylor & Francis, quarterly, English, ISSN 0143-6147.

Journal providing research articles which are an important source of information about pest management in the tropics and subtropics.

Available from Taylor & Francis Ltd., Rankine Rd., Basingstoke, Hampshire RG24 0PR, UK, for an annual subscription of £ 49.00.

G064 Turrialba: revista interamericana de ciencias agrícolas.

ICCA, quarterly, Spanish and English editorial, articles in Spanish, English, French and Portuguese, ISSN 0041-4360.

Journal containing research articles, book reviews, technical notes and recent advances in agricultural research in Latin America.

Available from ICCA (see H040) for an annual subscription of US \$ 12.00 (surface mail) or US \$ 20.00 (airmail). Two-year subscriptions are US \$ 20.00 (surface mail) or US \$ 35.00 (airmail).

G065 TVIS news.

TVIS/AVRDC, English, ISSN 0258-3119.

Newsletter providing short communications, research articles and

information about vegetables (mainly on mungbean, soya bean and Chinese cabbage) in the tropics

Available from The Tropical Vegetable Information Service (TVIS), AVRDC's Library and Documentation Centre (see H006), free of charge.

G066 WARDA occasional papers.

WARDA, irregular, English (also available in French).

Papers reporting research and findings by WARDA staff members. The main topics cover technical, social and economic aspects of rice production, trade and consumption in West Africa.

Available from WARDA (see H075).

G067 WARDA technical newsletter: bulletin technique de l'ADRAO.

WARDA, irregular, French and English text.

Short technical articles related to rice research in West Africa.

Available from WARDA (see H075).

Section H: International research institutes

H001 ACIAR.

Australian Centre for International Agricultural Research: P.O. Box 1571, Canberra, ACT 2601, Australia.

H002 ACORBAT.

Association pour la Coopération des Recherches Bananieres aux Antilles en Amérique Tropicale: IFAC, Fort de France, Martinique.

An international organization for research on bananas in tropical America.

H003 AGMIP.

Asociación Guatemalteca de Manejo Integrado de Plagas: 30 Calle 11-42, Zona 12, Guatemala.

A national organization for IPM in Guatemala.

H004 ASAM.

Asociación Argentina para el Control de Malezas: Ave. Corrientes 123, Of. 607, 1043 Buenos Aires, Argentina.

An Argentinian organization for weed control.

H005 Asociación Colombiana de Fitopatología y Ciencias Afines.

Calle 22, no. 21-48, Of. 205, Manizales, Colombia.

The Colombian phytopathological society.

H006 AVRDC.

The Asian Vegetable Research and Development Center: P.O. Box 42, Shanhua, Tainan, 74199, Taiwan, Republic of China (telex 73580 AVRDC; tel. (06) 5837801).

AVRDC is an international research and training centre charged with improving vegetable crop production in the tropics. Scientific staff conduct research aimed at increasing the production potential of tomatoes, Chinese cabbage and sweet potatoes, as well as soya bean and mungbean. Research also includes the study of the nutritional, environmental and management factors that influence vegetable production in the tropics. Emphasis is directed at scientific and training programmes conducted in collaboration with various national and international agencies, organizations and institutions. AVRDC publishes annual reports, monographs, symposia proceedings and newsletters (see G012, G058 and G065).

AVRDC publications can be ordered from the Office of Information Services (OIS) at the above address. Most publications are available free of charge and will be posted upon request via surface mail. If airmail delivery or multiple copies are required, the indicated prices should be paid with a US dollar cheque drawn on a US bank, made payable to AVRDC.

Single copies of all AVRDC publications are available to libraries free of charge. If more than one copy is required, or if records show that a library has previously received a free copy, a charge will be made for the publication at the 'additional copies' price. All library copies will be sent by surface mail unless requested otherwise. The price list should be consulted for airmail rates.

H007 Bangladesh Jute Research Institute.
Tejgaon, Dacca-15, Bangladesh.

A national research institute for jute.

H008 Bangladesh Rice Research Institute.
Joydevpur, Dacca, Bangladesh.

A national research institute for rice.

H009 BARC.
Bangladesh Agricultural Research Council: New Airport Rd., Farm Gate,
Dhaka-15, Bangladesh.

BARC is the national coordinating institution for the agricultural research system in Bangladesh. It coordinates the activities of 11 institutes.

H010 Bureau of Sugar Experiment Stations.
99 Gregory Terrace, Brisbane, Queensland 4000, Australia.

A national experimental station for sugarcane.

H012 CATIE.
Centro Agronomico Tropical de Investigacion y Ensenanza:
7170 Turrialba, Costa Rica (tel. 56-64-31).

CATIE conducts graduate and training courses, as well as research programmes into alternatives for small farmers in Central America. One regional project aims to establish a Latin American network of scientists and extension workers involved in IPM. A variety of information and several newsletters, bibliographies and other publications are provided as part of this programme (see G001, G009, G046 and G050).

H013 Central Coffee Research Institute.

Chikmagalur District, Karnataka, India.

A national research institute for coffee.

H014 Central Institute for Cotton Research.

Nagpur 440001, India.

A national research institute for cotton.

H015 Central Plantation Crops Research Institute.

Kasaragod 670124, Kerala, India.

A national research institute for plantation crops.

H016 Central Potato Research Institute.

Simla 171001, India.

A national research institute for potatoes.

H017 Central Rice Research Institute.

Cuttack 753006, Orissa, India.

A national research institute for rice.

H018 Central Tuber Crops Research Institute.

Sreekariyan, Trivandrum 17, Kerala, India.

A national research institute for tuber crops.

H019 CIAT.

Centro Internacional de Agricultura Tropical: Apartado Aereo 6713, Cali, Colombia (telex 05769 CIAT Co; tel. 57-3-680111).

CIAT's objective is to develop improved agricultural technology, in cooperation with national organizations, which will increase the quality and quantity of specific basic food commodities in the tropics. The main crops are cassava, field beans and rice. CIAT also conducts a large programme to develop suitable pasture technology for the infertile, acid soils of Latin America. CIAT publishes several newsletters (see G006, G010, G014, G027 and G056), miscellaneous reports, and abstract journals in English and Spanish. English versions of many of CIAT's publications can be obtained through IADS Agribookstore (see I061).

Prices for developing countries are determined by direct production costs.

to ensure that the research information is available to those who need it. 'List prices' and 'HDC prices' are commercial sales prices. Discounts are available for educational institutions and distribution agents. An invoice can be requested, in order to verify the availability of materials and total price. Payment must accompany the order and should be made with a personal or cashier cheque, drawn only on banks affiliated with a US bank and made payable to CIAT. Payment may also be made in Colombian pesos, or in CIAT, AGRINTER or UNESCO coupons. Refunds for cheques exceeding the exact amount of the invoice can only be made in CIAT coupons, due to currency restrictions.

H020 CIBC.

CAB International Institute of Biological Control: Silwood Park, Ascot, Berks SL5 7PY, UK (telex 847964; tel. 0990-23911). CIBC also operates from a network of other regional research centres: European station, I. Chemin des Grillons, CH-2800, Delémont, Switzerland; Indian station, Post Bag 2484, Hebbal Agricultural Farm, P.O. Bangalore 560024, India; Kenya station, c/o Kenya Agricultural Research Institute, P.O. Box 30148, Nairobi, Kenya; Pakistan station, PARC-CIBC station, P.O. Box 8, Rawalpindi, Pakistan; West Indian station, Gordon St., Curepe, Trinidad, West Indies.

CIBC's projects mainly involve finding, selecting, testing and shipping natural enemies of insects, mites and weeds, for biological control. Studies are also undertaken to develop biological control components for IPM systems. CIBC runs a regular international training course in biological control, and several other courses. It publishes books, reviews and abstracts, and edits the quarterly journal 'Biocontrol news and information' (published by CAB International, see I006).

H022 CIE.

CAB International Institute of Entomology: 56 Queen's Gate, London SW7 5JR, UK (tel. 01-584-0067/8).

CIE provides an identification service for insects, mites and other arthropods, especially species that are of actual or potential importance as pests, parasites, predators and pollinators, or are relevant in other ways to agriculture, forestry or related subjects. Contract research is also undertaken in these fields. The Institute's taxonomists work in the British Museum (Natural History) where they have access to 23 million reference specimens of insects and mites, a valuable aid to authoritative identification and research on arthropod classification. CIE publishes books, reviews and abstracts, and edits the quarterly journal 'Bulletin of entomological research', the half-yearly journals 'Review of applied entomology, series A - agricultural, and series B - medical &

veterinary' and the series 'Distribution maps of pests' (published by CAB International, see I006).

H023 CIMMYT.

Centro Internacional de Mejoramiento de Maiz y Trigo (International Maize and Wheat Improvement Centre): Lisboa 27, Apartado Postal 6-641, 06600 Mexico D.F., Mexico (telex 1772023 CIMTME; tel. 761-33-11 or 761-36-56).

CIMMYT's primary objective is to develop superior maize and wheat germplasm to provide higher and more stable yields, as well as better nutritional quality. Towards this end, CIMMYT promotes and helps implement research, training and information programmes designed to improve maize and wheat production in developing countries. The Centre currently conducts research into maize, bread wheat, durum wheat, and triticale.

CIMMYT publishes newsletters (see G054), annual reports, conference proceedings, technical information bulletins, which are also available on microfiche, and slide sets. CIMMYT provides single copies of most of its publications free of charge to over 5000 agricultural scientists and libraries in developing countries. A 2-tiered pricing structure is otherwise employed for publications, listing separate prices for HDCs or LDCs, including airmail postage. Publication lists, prices and more detailed ordering information are available on request.

H024 CIP.

International Potato Centre (Centro Internacional de la Papa; Centre International de la Pomme de Terre): Apartado Postal 5969, Lima, Peru (telex 25672 PE; tel. 354354-366920).

CIP has 8 other regional addresses:

Region 1 Latinoamérica Andina:

CIP, Apartado Aéreo 92654, Bogota 8, D.E., Colombia;

Region 2 Latinoamérica no Andina:

CIP, c/o CNPH - EMBRAPA, Caixa 70 359 Brasilia D.F., Brazil;

Region 3 Tropical Africa:

CIP, P.O. Box 25171, Nairobi, Kenya;

Region 4 Middle East & North Africa:

CIP, P.O. Box 2415, Cairo, Egypt;

Region 5 Afrique du Nord et Afrique de l'Ouest:

CIP, 11 Rue des Oranges, 2080 Ariana-Tunis, Tunisia;

Region 6 South Asia:

CIP, c/o NBPGR, IARI Campus, New Delhi, 110012 India;

Region 7 South-East Asia:

CIP, c/o IRRI, P.O. Box 933, Manila, Philippines;

Region 8 China:

CIP, c/o Chinese Academy of Agricultural Sciences, Bai Shi
Quio Rd. No. 30, Beijing, P.R. of China.

CIP is a scientific institution aiming to develop and disseminate knowledge to encourage greater use of the potato as a basic food. CIP's publications are designed to support research and communication between worldwide agricultural programmes. CIP publishes several periodicals (see G015), conference proceedings, technical information bulletins, and slide sets, which are available from the regional addresses. Nearly all publications are in English, Spanish or French, although local language translations may be available from some of the regional offices. Many national potato programmes also provide CIP publications.

A CIP publications list is available on request, in which detailed instructions for ordering are provided, together with prices inclusive of surface mail (airmail delivery involves extra payment). Orders should be sent to the nearest CIP address. It is recommended that a proforma invoice is obtained before ordering, because publications may be temporarily out of print. Payment can be made with UNESCO coupons, US dollar cheques drawn on a US bank, or US dollar bank drafts made payable to CIP. Materials will not be sent before payment is received.

H025 CIP.

CAB International Institute of Parasitology: Winches Farm,
395A Hatfield Rd., St. Albans AL4 0XU, UK (tel. 0727-33151/5).

CIP provides an identification service for plant-parasitic and entomophilic nematodes, and helminth parasites of animals and man. Their reference collection contains over 65,000 specimens, and an extensive specialist library is maintained. The Tropical Plant Nematology Advisory and Research Unit provides practical advice on plant-parasitic nematodes and their control worldwide. The Institute also houses the WHO Filarial Reference Collection.

CIP publishes books, reviews and abstracts, and edits the quarterly journal 'Helminthological abstracts, series A – animal helminthology, and series B – plant nematology' (published by CAB International, see I006).

H026 CMI.

CAB International Mycological Institute: Ferry Lane, Kew,
Richmond TW9 3AF, UK (tel. 01-940-4086).

CMI is the largest centre for systematic mycology in the world and provides an identification service for filamentous fungi and plant-

pathogenic bacteria. It maintains about 300,000 dried reference specimens, a culture collection of more than 11,500 isolates, an extensive library, a biodeterioration and industrial services laboratory, a biochemical laboratory, and a plant pathology liaison unit. The Institute provides a wide range of consultancy and contract services for plant pathologists and industry, and incorporates the UK National Collection of Fungus Cultures and the Biodeterioration Centre.

CMI publishes books, reviews and abstracts, and edits the biannual journal 'Review of plant pathology' and the series 'Distribution maps of plant diseases', 'Index of fungi', 'Bibliography of systematic mycology' and 'Descriptions of pathogenic fungi & bacteria' (published by CAB International, see I006).

H027 Cocoa Research Institute.
P.O. Box 8, Tafo, Ghana.

A national research institute for cocoa.

H028 Cocoa Research Institute of Nigeria.
Gambari Experimental Station, PMB 5244, Ibadan, Nigeria.

A national research institute for cocoa.

H029 Coconut Research Institute of Sri Lanka.
Lunuwila, Sri Lanka.

A national research institute for coconut.

H030 Coffee Research Station.
P.O. Box 4, Ruiru, Kenya.

A national research institute for coffee.

H031 COMALFI.
Sociedad Colombiana de Control de Malezas y Fisiologia Vegetal:
Apartado Aereo 29688, Bogota, D.E., Colombia.

The Colombian society for weed control.

H032 COPR.
Centre for Overseas Pest Research.

This centre has been incorporated into ODNRI (see I039).



H033 IBPGR.

International Board for Plant Genetic Resources: Crop Genetic Resources Centre, FAO, Via delle Terme de Caracalla, 00100 Rome, Italy (telex 610181 FAO I).

This organization aims to compile information on the genetic diversity and resources of the world's major food crops. IBPGR publishes monographs on the genetic resources of selected crops, directories of germplasm collections and research workers, standardized descriptors for selected crops, and several publications about the objectives, priorities and role of the IBPGR.

H034 ICARDA.

The International Center for Agricultural Research in the Dry Areas: P.O. Box 5466, Aleppo, Syria (telex 331206 SY or 331208 SY; tel. 550465 or 551280).

ICARDA's objective is to improve the agricultural systems and major food crops of the drier regions in Western Asia and North Africa. These areas are Mediterranean-type climates (cool, moist winters and dry, hot summers) but include high elevation plateaux with extremes of winter cold and summer heat, with snow cover for up to 5 months a year.

ICARDA publishes annual reports, information brochures and bulletins, discussion papers, bibliographies and several newsletters (see G017, G018, G044 and G053). Information about these publications and how to order them is available on request.

H035 ICC.

International Association for Cereal Science and Technology: Schmidgrasse 3-7, A-2320 Schwechat, Austria.

An international research association for cereals.

H036 ICIPE.

The International Centre of Insect Physiology and Ecology: P.O. Box 30772, Nairobi, Kenya (telex 22053; tel. Nairobi 43049, 43081 or 43719).

ICIPE was established in 1970, as a result of the realization that long-term solutions to pest problems in the tropics could not rely on chemical insecticides alone. Even their effective use depends on a thorough understanding of insect biology, ecology and related disciplines. ICIPE's research programme is primarily concerned with tropical insect pests of crops and vectors of livestock diseases. The crop pests under investigation include crop borers of maize, sorghum, and cowpeas, and tsetse and ticks

are the livestock pests being studied. The ultimate result of the research will be the development of integrated pest and vector management systems for these economically important pests and disease vectors. ICIZE conducts training in 3 areas: professional scientific training for postdoctorate and postgraduate students in close cooperation with several African universities; short-term training courses in pest and vector management for practicing insect scientists and technologists from developing countries; and programmes for upgrading the special skills and techniques of ICIZE staff.

ICIZE publishes annual reports, conference proceedings, and the journal 'Insect science and its application' (see G033).

H037 ICRAF.

International Council for Research in Agroforestry: P.O. Box 30677, Nairobi, Kenya (tel. 29867).

ICRAF's objective is to improve the nutritional, economic, and social well-being of inhabitants of developing countries by promoting agroforestry systems for better land use which do not harm the environment. ICRAF acts as an international catalyst in agroforestry research.

ICRAF publishes annual reports, proceedings, working papers, and the journals 'Agroforestry systems' and 'ICRAF newsletter'.

H038 ICRISAT.

International Crops Research Institute for the Semi-Arid Tropics: Patancheru P.O. Andhra Pradesh 502 324, India (telex 0152-203).

ICRISAT has several objectives. Firstly, it serves as a world centre to increase grain yield and improve the quality of sorghum, millet, chickpea, pigeonpea and groundnut, and acts as a world repository for the genetic resources of these crops. Secondly, ICRISAT aims to develop improved farming systems to help increase and stabilize agricultural production through more effective use of natural and human resources in the seasonally dry semi-arid tropics. Thirdly, the institute seeks to identify constraints to agricultural development in the semi-arid tropics, and to evaluate means of alleviating them by technological and institutional changes. Lastly, ICRISAT assists in the development and transfer of technology to the farmer by cooperation with national and regional programmes, and by sponsoring workshops and conferences, operating training programmes, and assisting with extension activities.

ICRISAT publishes a wide range of scientific and practical information,



including handbooks, research bulletins, symposia proceedings, plant material descriptions, bibliographies and newsletters (see G034, G035, G037, G049 and G057). ICRISAT prices its publications at production cost for LDCs, and charges higher prices for HDCs (exclusive of postage and handling). Trade discounts are available on request, and orders for 5 or more copies are discounted by 30%. Pre-payment is required, based on a proforma invoice. Payment is accepted in Indian rupees, US dollars, negotiable hard currencies, or in UNESCO coupons.

Out-of-print publications are available as microfiche copies, at flat-rate page charges. Organizations that formally exchange publications with the ICRISAT library, journal editors who review ICRISAT publications, and national programme staff who collaborate with ICRISAT research programmes are entitled to single free copies. Publications are dispatched via air bookpost, unless sea mail is specifically requested. Surface mail is not recommended because of possible delays, damage and disappearance of packages.

H039 IFCC.

Institut Francais du Café, du Cacao et Autre Plantes Stimulantes:
Direction, 42 rue Scheffer, 75016 Paris, France.

A national research institute for coffee, cocoa and other stimulating plants.

H040 IICA.

Instituto Interamericano de Cooperación para la Agricultura: Programa de Salud Animal y Sanidad Vegetal; Apartado 55-2200, Coronado, San José, Costa Rica.

The Inter-American Institute for Agricultural cooperation has programmes on veterinary health care and crop protection.

H042 IITA.

International Institute of Tropical Agriculture: P.M.B. 5320, Ibadan, Nigeria (telex TROPIB NG 31417).

IITA seeks to develop alternatives to shifting cultivation that will maintain the productivity of land under continuous cultivation in the humid and sub-humid tropics. The Institute also has a global mandate for research into higher yielding pest- and disease-resistant varieties of cowpeas, yams, and sweet potatoes, as well as research into maize, rice, cassava, and soya beans in Africa. It organizes training, conferences and workshops to increase the number of qualified persons able to carry out research and development. A recent project is the Africa-Wide Biological Control Project for Cassava Mealybug and Green Spider Mites.

IITA publishes a series of monographs, conference proceedings, bibliographies and the 'Tropical grain legume bulletin' (see G062, G028 and G052). A list of publications and ordering information is available on request.

H043 Indian Institute of Sugarcane Research.

Locknow, UP, India.

A national research institute for sugarcane.

H044 Indian Rubber Research Institute.

Kottayam, Kerala, India.

A national research institute for rubber.

H045 INTSOY.

International Soybean Program (Programme International pour le Soja: Programa Internacional de la Soya): University of Illinois at Urbana-Champaign, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801, USA (telex 206957; tel. 217-333-6422).

INTSOY seeks to improve worldwide human nutrition by the use of soya beans. Cooperating with like-minded regional, national, and international organizations, it works toward this goal through research, cultivar testing and breeding programmes conducted under varied ecological conditions, and feasibility studies. Training and study programmes, regional and international conferences, and publications transfer practical information to soya bean workers. INTSOY provides information about cultivar adaption, crop management and protection, seed storage, and the processing and use of soya food. Their programme offers direct access to a worldwide collection of soya bean germplasm. INTSOY publishes monographs, conference proceedings, miscellaneous reports, bibliographies and the 'INTSOY newsletter' (see G040).

H046 IOBC.

International Organization for Biological and Integrated Control of Noxious Animals and Plants.

IOBC is an international organization striving to coordinate and network all research on biological control. It is divided into several geographical regions, with numerous working groups and committees on specific crops or problems, groups of pests, or natural enemies.

The West Palaertic Regional Section (WPRS) has been most active in organizing workshops, and symposia, and publishes the 'WPRS bulletin'

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and 'Profile' newsletter. The address for WPRS publications is: Pr. Dr. F. Klingauf, Institut für Biologische Schädlingsbekämpfung, Heinrichstrasse 243, D-6100 Darmstadt, Federal Republic of Germany. The editorial address for 'Profile' is: A.K. Minks, Research Institute for Plant Protection, P.O. Box 9060, 6700 GW Wageningen, The Netherlands. Information about IOBC working groups and committees can also be obtained from these addresses.

H047 IRCT.

Institut de Recherches du Coton et des Textiles Exotiques: 34 rue des Renaudes, 75017 Paris, France.

A national research institute for cotton and fibre plants.

H048 IRRI.

International Rice Research Institute: P.O. Box 933, Manila, Philippines (telex 45365 RICE PM via ITT, 22456 IRI PH via RCA, or 63786 RICE PN via EASTERN).

Rice is a staple food for almost a third of the world's 4.5 billion inhabitants. Rising populations and the accompanying demand for more food put increasing burdens on the world's small-scale rice farmers. IRRI was established in 1960, and its scientists cooperate with scientists worldwide to develop improved rice varieties and technology to enhance the quality and quantity of rice crops. IRRI has always stressed the need to communicate developments in rice research and production technology by books, conference proceedings, bibliographies, periodicals (see G038, G042 and G045), and other instruction materials. Most relevant material on rice pests, diseases and weeds can be found in their catalogue.

IRRI provides materials at a 70% discount to developing countries to encourage the transfer of rice information. Book dealers in HDCs and LDCs receive a 40% discount. Appropriate airmail or surface mail rates should be added to the price of each publication (sea freight orders cannot be processed). Surface mail orders can only be sent in 5 kg packages with a total weight less than 20 kg, although air mail is recommended for all packages because some 30% of publications dispatched via surface mail never arrive, or take 5-6 months or longer.

Pre-payment is required by cheques in Philippine pesos, or US dollar cheques which must be drawn on a US bank. Cheques made out in the following selected currencies drawn on their respective country banks can also be accepted: French francs, pound sterling, yen, HK dollars, Swiss francs, Deutschmarks, Australian dollars, and Singapore dollars. Cheques drawn on dollar accounts in US banks by the correspondent foreign bank

in special cheque arrangements are also acceptable. Payment may also be made in US dollars in cash, UNESCO coupons or traveller's cheques.

Orders should be sent to the Communication and Publications Dept., IRRI, at the above address, with cheques made payable to IRRI-CPD. A proforma invoice that includes exact air freight charges is available from Division F, Communication and Publications Dept., IRRI, at the above address.

All major IRRI books and technical publications are available as basic sets (approximately 55 kg). Libraries or individuals in developing nations can purchase those in stock (except bibliographies) for US \$ 400.00, excluding air freight. In HDCs, the price is US \$ 950.00, plus air freight.

H049 Jute Agricultural Research Institute.
Barrackpore 743101, West Bengal, India.

A national research institute for jute.

H050 MARDI.
Malaysian Agricultural Research and Development Institute:
P.O. Box 12301, 50774 Kuala Lumpur, Malaysia.

MARDI is an agricultural research organization aimed at developing locally-adapted technology for farming communities and agro-based industries. Its primary objective is to act as a centre for collecting and disseminating information and advice about scientific, technical and economic matters related to agriculture. MARDI publishes a range of publications, including the newsletter 'Berita penyelidikan' and the scientific journal 'MARDI research bulletin'. Interesting publications also appear in the 'MARDI report' series (G047).

H051 National Cereals Research Institute.
PMB 5042, Ibadan, Nigeria.

A national research institute for cereals.

H052 National Root Crops Research Institute.
PMB 1006, Umuahia, Nigeria.

A national research institute for root crops.

H053 NBCRC.
National Biological Control Research Centre: Kasetsart University,
P.O. Box 9-52, Bangkok 10900, Thailand.

The NBCRC is a research institute for biological control in Thailand and the nearby region. It has published several reports and series of extension bulletins about biological control of insect pests.

H054 Nigerian Institute of Oil Palm Research.
PMB 1030, Benin City, Nigeria.

A national research institute for oil palm.

H055 OILB.

Organisation Internationale de Lutte Biologique et Integree Contre les Animaux et les Plantes Nuisibles.

The official French name for the IOBC (see H046).

H056 Palm Oil Research Institute of Malaysia.
Kuala Lumpur, Malaysia.

A national research institute for oil palm.

H057 Pineapple Research Institute of Hawaii.
2500 Dole Street, Honolulu, Hawaii.

A national research institute for pineapple.

H058 Rubber Research Institute of Malaysia.
P.O. Box 150 Kuala Lumpur, Malaysia.

A national research institute for rubber.

H059 Rubber Research Institute of Nigeria.
PMB 1049, Benin City, Nigeria.

A national research institute for rubber.

H060 Rubber Research Institute of Sri Lanka.
Dartonfield, Agalawatta, Sri Lanka.

A national research institute for rubber.

H062 SCPM.

Silwood Centre for Pest Management: Imperial College at Silwood Park, Ascot, Berks SL5 7PY, UK (telex 261503; tel. 0990-23911).

The SCPM provides training in all aspects of pest management (including

research training and postgraduate courses), offers professional advice, and undertakes contract research for industries, international organizations and governments. A major aspect of SCPM activity is the chemical control of agricultural pests, pathogens and weeds. The Pesticide Group deals with application techniques, bioassays, environmental screening and field trials.

H063 South African Sugar Association Experiment Station.

Mount Edgecombe, Natal, South Africa.

A national experimental station for sugarcane.

H064 Sugar Industry Research Institute.

Kendal Rd., Mandeville, Jamaica.

A national research institute for sugarcane.

H065 Sugar Industry Research Institute.

Reduit, Mauritius.

A national research institute for sugarcane.

H066 Sugarcane Breeding Institute.

Coimbatore 641007, India.

A national research institute for sugarcane.

H067 Sugarcane Research Institute.

Ishurdi, Pabna, Bangladesh.

A national research institute for sugarcane.

H068 Taiwan Sugar Research Institute.

Tainan, Taiwan.

A national research institute for sugarcane.

H069 Tea Research Institute of Sri Lanka.

St. Coombes, Talawakelle, Sri Lanka.

A national research institute for tea.

H070 Tobacco Research Board.

P.O. Box 1909, Salisbury, Zimbabwe.

A national research board for tobacco.

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H072 Tobacco Research Institute.
Taiwan.

A national research institute for tobacco.

H073 Tocklai Experimental Station.
Cinnamara PO, Asam, India.

A national experimental station for tea.

H074 UPASI Tea Experimental Station.
Devarshola, India.

A national experimental station for tea.

H075 WARDA.

West Africa Rice Development Association: P.O. Box 1010, Monrovia, Liberia (telex WARDA 4333 LI; tel. 22-14-66 or 22-19-63).

WARDA's mandate is to assist its 16 West African member countries to achieve self-sufficiency in rice, a staple food of the region. The headquarters and regional training centre are located in Liberia, with 4 regional research stations in Bouake, Ivory Coast (upland rice); Rokupr, Sierra Leone (mangrove and swamp rice); Richard-Toll, Senegal (irrigated rice); and Mopti, Mali (deep water/floating rice). WARDA publishes technical monographs, conference proceedings, brochures and bulletins (see G066 and G067).

A list of publications and ordering information is available from the above address.

Section I: International information centres and book shops

I001 AGRECOL.

Agrecol Development Information: c/o Oekozentrum Langenbruck,
CH-4438 Langenbruck, Switzerland (tel. 062-601420).

This information centre for sustainable agriculture in the Third World was initiated by IFOAM (see I028) and financed by GTZ, Swissaid, the Swiss Government and several churches. AGRECOL transmits information, aiming to build a contact network for those involved in ecological and sustainable agriculture in the tropics and subtropics. AGRECOL provides a query-answer service, and has a library accessible to visitors. It also participated in publication of the book 'Natural crop protection' (see B270).

I002 Agromisa Foundation.

P.O. Box 41, 6700 AA Wageningen, The Netherlands.

Agromisa is a NGO working in the field of development and agriculture in the Third World. Volunteers provide a query-answer service, and Agromisa publishes a series of 'Agrodoks'. These booklets assemble practical and background information on agricultural subjects and solutions to problems on a small scale, and are intended for people and organizations aiming to improve the position of the rural poor at a village level. Agrodoks cost approximately Dfl. 5.00; most are available in English, some in French. A list of available publications, exact prices and ordering information is available from the above address. Agromisa is also co-editor of the periodical 'AT source' (G007).

I003 ANR Publications.

University of California, 6701 San Pablo Ave., Oakland, California
94608-1239, USA (tel. 415 642-2431).

The University of California's Division of Agriculture and Natural Resources has been working on IPM projects for several years, resulting in a series of IPM manuals for walnuts, tomatoes, rice, citrus, cotton, cole crops and lettuce, almonds, alfalfa hay, and potatoes. Although these publications are oriented on the USA, much of the information, approaches and suggested management practices may be relevant to other geographical regions or projects. (For more details about the manuals, refer to the title index L).

Orders should be sent to the above address, quoting titles and number of copies required. The price per manual is US \$ 17.00, including postage, handling, and applicable sales tax. A 20% discount is given on orders of

10 to 49 copies, and a 25% discount for 50 to 99 copies sent to one address. Special discounts are available on request for orders of more than 100 copies, and for commercial booksellers.

Orders within the USA must be accompanied by payment, with cheques or money orders payable to UC Regents, or a formal purchase order. Outside the USA, 15% of the total cost should be added for surface mail or 50% for airmail after deducting applicable discounts. Payment in US dollar cheques drawn on a USA bank is required before orders are shipped.

1004 APS.

The American Phytopathological Society: 3340 Pilot Knob Rd., St. Paul, Minnesota 5512, USA (tel. 612 454-7250).

The APS is a professional scientific society devoted to the study of plant diseases and their control. Members are located in more than 70 countries. Through its publications, APS is dedicated to communicating important research findings and information about crop diseases and their control. The society publishes 2 monthly newsletters, the scientifically-oriented 'Phytopathology', and the more practical 'Plant disease'. The Compendium of Plant Diseases is a major APS publication. This series of 15 comprehensive compendia are useful both as diagnostic tools for scientists and as field guides for growers identifying crop diseases. Although primarily oriented on circumstances in North America, these compendia may be relevant to the identification of crop diseases and appropriate control measures in other regions of the world.

APS prices include surface postage (a minimum of 2-3 months should be allowed for arrival). Additional costs for airmail delivery depend on the country of destination. More information on airmail costs and discounts for high quantity orders can be found in the publications list of APS Press, available on request from the above address. A proforma invoice can be requested. Payment must accompany the order and can be made through a member bank of the US Federal Reserve System (cheques made payable to APS); by purchasing a New York bank draft (available at most foreign banks); requesting a draft drawn on a foreign bank's US correspondent bank; or by VISA, MasterCard or American Express credit cards (except in Mexico).

1005 BIRC.

Bio-Integral Resource Centre: P.O. Box 7414, Berkeley, CA 94707, USA (tel. 415 524-2567).

BIRC is a non-profit making organization providing information on IPM

methods and strategies in Northern America. BIRC publishes practical information, slide shows on urban IPM, and 2 newsletters, 'The IPM practitioner' and 'The common sense pest control quarterly' with research notes, IPM products and other data.

I006 CAB International.

Wallingford, Oxon, OX10 8DE, UK (telex 847964; tel. 0491-32111 COMAGG G). The North American office is at 845 North Park Ave., Tucson, Arizona 85719, USA.

CAB International is an international non-profit making organization controlled by governments of member countries. Its main function is to provide a worldwide information service for agriculture, forestry and related areas of applied biology, sociology, economics, engineering, and medicine.

CAB International is the publishing agency for the CAB International Research Institutes (see H020, H022, H025 and H026), and is best known for its 46 abstract journals covering each of the main agricultural disciplines. The following are of special importance to crop protection research institutes: Biocontrol news & information; Bulletin of entomological research; Distribution maps of pests; Distribution maps of plant diseases; Helminthological abstracts series B – plant nematology; Review of applied entomology series A – agricultural; Review of plant pathology; Weed abstracts; and a series of 20 crop science and production abstracts, dealing with specific crops or cropping systems. The wide range of other publications includes annotated bibliographies, reviews, authoritative books and reference works, and specialized aids to the management of pests and diseases. Abstract journals and bibliographies are all derived from the CAB production database (covering over 15,000 serials and many other scientific publications), which is available for online searching and leased on magnetic tape. CAB also provides a Selective Dissemination of Information (SDI) Service, which provides subscribers with a regular printout of the most recent database input, selected on the basis of their own specific search profile. This service is also available on microfiche, diskette or CD-ROM.

Journal subscriptions should be fully paid by 1 December for volumes to be issued in the following year, which includes the annual index entitlement. Many journals are available to subscribers in member countries at special rates. Prices include packing and airmail, wherever the cost can be absorbed.

Book orders should specify title, author(s) and ISBN. Payment should be made in pounds sterling (minimum order £ 3.00) for all overseas

purchases, or in US dollars for all American countries, including Canada. Payment can be made by cheques, bank drafts, or international money orders, made payable to CAB International. Sterling cheques should be drawn on a UK bank, dollar cheques on a US bank. UNESCO coupons are also accepted. Books are supplied on a cash-with-order basis; a proforma invoice will be supplied on request. All publications are airmailed to the destination country, where national postage services make the final delivery. All material is sent by accelerated surface/air post (ASP) at no extra cost, unless a specific request is made for airmail postage, which is then charged at additional air-freight rates.

Orders should be sent to the address above. Further details relating to any of the publications and services can be requested from the Sales Department. Several catalogues as well as book lists, journals, information services, are available free of charge on request.

1007 CICP.

Consortium for International Crop Protection: 4321 Hartwick Rd.,
Ste # 404, College Park, MD 20740, USA.

CICP comprises 13 universities and the US Department of Agriculture. Its main goal is to advance environmentally and socio-economically sound crop protection methods in developing countries. CICP designs, implements and evaluates crop protection programmes, conducts training and provides educational material which promotes the IPM concept. CICP coordinates the Pest & Pesticide Management Project, a multidisciplinary project of the US Agency for International Development. CICP publishes the quarterly newsletter 'Pest management news'.

1008 CIPA.

Comité Inter-americano de Protection Agricola: Presidente Luis Saenz
Pena 1940, Buenos Aires, Argentina.

A South-American organization for the control of locusts and grasshoppers.

1009 CIRAD.

Centre de Coopération Internationale en Recherche Agronomique pour
le Développement: Ave. du Val de Montferrand, B.P. 5035,
34032 Montpellier Cedex, France (telex: 480762 F; tel. 67-63-91-70).

CIRAD is the French centre for international cooperation in agricultural research and development, and coordinates research on tropical pests, diseases and weeds, and on locust and grasshopper control. It incorporates

several departments, such as the 'Institut de recherches agronomiques tropicales et des cultures vivrières' (IRAT, see I033), the 'Groupement d'études et de recherches pour le développement de l'agronomie tropicale' (GERDAT), and 'PRIFAS - Acridologie opérationnelle ecoforce internationale' (see I044). Through its various departments, CIRAD is co-publisher of numerous important publications on crop protection in the tropics and subtropics.

I010 Colegio de Postgraduados.

Centro de Entomologia, Chapingo 56230, Mexico D.F., Mexico.

This college provides courses on entomology and crop protection. Several course readers, mainly about pesticides, have been published.

I011 CPPC.

Caribbean Plant Protection Commission: Naciones Unidas, Apartado postal 1424, Santo Domingo, Dominican Republic.

I012 CTA.

Centre Technique de Coopération Agricole et Rurale (Technical Centre for Agricultural and Rural Cooperation): P.O. Box 380, 6700 AJ Wageningen, The Netherlands (tel. 08380-20484).

CTA was established in 1983 under the Second Lomé Convention between the member states of the European Community and 63 states from Africa, the Caribbean and the Pacific (the ACP countries). The CTA's objective is to assemble and disseminate technical and scientific information in the spheres of agricultural and rural development and extension. It initiates studies, prepares publications, organizes meetings of experts, assists local documentation centres in ACP countries, and provides a query-response service. Besides several co-publications, CTA publishes the bimonthly bulletin 'SPORE' (see G059).

I013 DCFRN.

Developing Countries Farm Radio Network: English Language Division; c/o Massey-Ferguson Ltd., 595 Bay St., Toronto, Ontario M5G 2C3, Canada (tel. 416 593-3811). French and Spanish Language Division; c/o University of Guelph, Guelph, Ontario N1G 2W1, Canada (tel. 519 824-4120).

DCFRN is a worldwide information network of rural communicators, aiming to solve the world food problem by encouraging people to help themselves. It advises families on small-scale farms how to increase their food supplies and improve nutrition and health. Information packages provide broadcast material consisting of several short programmes on tape

cassette, together with written scripts and information sources for each item. Information deals with simple, practical, low-cost techniques originated in developing countries, which are successful at the farming level. DCFRN participants include farm broadcasters, writers, agricultural extension and health workers and other rural communicators in developing countries. All DCFRN publications, information packages and the newsletter 'The blue sheet', are available in English, French and Spanish.

DCFRN information packages are provided free of charge, but recipients are required to complete and return the information polls accompanying each package. They are also encouraged to contribute information for future use, including first-hand material as well as periodicals and other publications for the DCFRN Resource Library. A sample DCFRN package is available from the addresses given above.

1014 DFPV.

Departement de Formation en Protection des Végétaux: B.P. 12625, Niamey, Niger.

DFPV is a regional training centre for plant protection in Sahelian countries. It provides courses for technicians, plant protection officers and teachers in agricultural colleges. DFPV also publishes brochures, several bulletins, and a series of course readers ('Fascicules de cours', see B346) on topics related to crop protection.

1015 DLCO-EA.

Desert Locust Control Organization for Eastern Africa: P.O. Box 4255, Addis Ababa, Ethiopia.

This organization runs control programmes for the desert locust, as well as for other pests such as the armyworm (*Spodoptera exempta*) in East-Africa. National offices are based in Kenya, Djibouti, Somalia, Sudan, Tanzania and Uganda.

1016 DPI.

Department of Primary Industry: Publications Section, P.O. Box 417, Konedobu, Papua New Guinea.

This organization issues numerous publications dealing with plant protection in Papua New Guinea and nearby regions. A series of approximately 30 'Plant pathology notes', more than 40 'Entomology bulletins', a series of extension bulletins, research bulletins and technical reports have been published. A catalogue of these and other publications is available upon request.

I017 EAP.

Escuela Agricola Panamericana: Departement de Proteccion Vegetal Apartado 93, Tegucigalpa, Honduras.

EAP is a regional centre for agricultural education, with international courses on several aspects of plant protection.

I018 EPPO.

European and Mediterranean Plant Protection Organization: 1 rue Le Notre, 75016 Paris, France.

I019 EWC.

East-West Centre: 1777, East-West Rd., Honolulu, Hawaii 96848, USA.

A comprehensive programme of research into insecticidal plants is being carried out within the framework of the Botanical Pest Control Programme.

I020 FAO.

Food and Agriculture Organization of the United Nations: Via delle Terme di Caracalla, 00100 Rome, Italy.

The FAO participates in numerous international and regional programmes on food production and agriculture. It provides consultancy, financial support and information services to governments, and international or national agencies. The FAO publishes numerous reports, news bulletins, abstracts, guidelines and other periodicals (see G013, G019, G020 and G022). It also produces the AGRIS database, containing about 1 million publications on agriculture, food science and nutrition. Monthly printed updates are available through AGRINDEX, as well as a photocopy service.

I022 GATE.

German Appropriate Technology Exchange: Postfach 5180, D-6236 Eschborn 1, Federal Republic of Germany.

GATE is the appropriate technology department of the German Ministry of Developmental Aid (GTZ, see I024), and is part of the international network on appropriate technology (see SATIS, I045). One of its projects concerns insecticidal plants. GATE also publishes a periodical under the same title (see G025).

I023 GIFAP.

Groupement International des Associations Nationales de Fabricants de Produits Agrochimiques (International Group of National Associations

of Manufacturers of Agrochemical Products): Avenue Hamoir 12, B-1180 Bruxelles, Belgium.

GIFAP is an international association of national chemical producers. It publishes the monthly 'GIFAP bulletin' (see G026) which discusses pesticides from industry's point-of-view, and covers toxicology data and upcoming agrochemical meetings. Informative GIFAP booklets in English, French, Spanish and Portuguese are available from the above address (see B280 -- B286).

1024 GTZ.

Deutsche Gesellschaft für Technische Zusammenarbeit GmbH: Dag-Hammarskjöld-Weg 1 + 2, Postfach 5180, D-6236 Eschborn 1, Federal Republic of Germany (telex 41523-0 gtz d; tel. 06196-79-0).

GTZ is the official West-German development organization, mainly dealing with project aid. About 70 plant protection experts work on 40 plant- and post-harvest protection projects in some 30 countries. All such activities are based on the overall concept of integrated plant protection.

A series of 200 GTZ publications have appeared in the 'GTZ-schriftenreihe'. They can be obtained from the GTZ Press and Public Relations Unit 02, at the address above, together with a list detailing subjects covered by these publications.

1025 IAA.

Institute for Alternative Agriculture: 9200 Edmonston Rd., Suite 117, Greenbelt, MD 20770, USA (tel. 301 441-8777).

IAA conducts policy seminars and publishes an important newsletter 'Alternative agriculture news', as well as the scientific quarterly 'American journal of alternative agriculture'.

1026 IAPSC.

Interafrican Phytosanitary Council: B.P. 4170 Nlongkak, Yaounde, Cameroon.

1027 IASA.

International Alliance for Sustainable Agriculture: Newman Center at the University of Minnesota, 1701 University Ave. S.E., Room 202, Minneapolis 55414, USA (tel. 612 331-1099).

IASA conducts research, produces documentation, and provides networking and organizational support, education, and policy formulation on sustainable agriculture and alternative pest control

worldwide (with the emphasis on the USA). It produces the international bimonthly newsletter 'Manna', as well as slide and video shows and several other publications including 'Breaking the pesticide habit: alternatives to 12 hazardous pesticides' (see J003) and the multilingual 'Resource guide to sustainable agriculture in the third world'.

1028 IFOAM.

International Federation of Organic Agriculture Movements:
c/o Okozentrum Imsbach, D-6695 Tholey-Theley, Federal Republic of
Germany (tel. 06853-5190).

This umbrella organization links diverse worldwide groups to promote organic farming and ecologically-sound agriculture. IFOAM establishes organic standards, conducts scientific conferences and publishes technical information and a quarterly newsletter 'IFOAM bulletin'.

1029 ILEIA.

Information Centre on Low External Input Agriculture: P.O. Box 64,
3830 AB Leusden, The Netherlands.

ILEIA is an information centre for sustainable agriculture in the Third World, providing a contact network for all those active in low-input agriculture. ILEIA has published the bibliography 'Understanding traditional agriculture' (H. Carlier, 1987), and also issues the 'ILEIA newsletter' (see G030). ILEIA is one of the Dutch NGOs that initiated the project resulting in this catalogue.

1030 INADES-Formation.

Institut Africain pour le Developpement Economique et Social:
08 B.P. 8, Abidjan 08, Ivory Coast, Africa.

INADES-Formation is an international, non-profit making organization in Africa, which aims to develop rural areas by appropriate training. It provides courses in the fields of agriculture, animal husbandry, small management, extension, and rural economy. INADES works in close collaboration with ministries of agriculture and other organizations, and publishes simple texts and booklets for its training courses.

1032 IPPC.

International Plant Protection Center, Oregon State University, Corvallis,
Oregon 97331, USA (telex 510 596 0686; tel. 503 754-3541).

The IPPC is primarily involved with technical and economic assistance to solve weed and pesticide problems, as well as information collection and dissemination coupled with extensive network support. IPPC is also

concerned with effective and practical training for weed management, including safe, efficient pesticide use and handling, and organizes several relevant courses. The centre serves as an information clearing-house and publishes the periodical 'Infoletter' (see G032). IPPC also publishes a series of 'IPPC papers', an ongoing collection of 40 original papers (series A) and reprints (series B) related to weed science and international agricultural development. A list of titles is available on request and single copies of any title(s) are available free of charge.

IPPC prices include surface mail (additional costs will be charged for orders asked to be sent by airmail). Orders can be accompanied by payment to IPPC, or an invoice receipt can be obtained. Single complimentary copies of IPPC publications can be requested by non-commercial persons or organizations working in, or with, a less developed country.

1033 IRAT.

Institut de Recherches Agronomiques Tropicales et des Cultures Vivrières:
B.P. 5035, 34032 Montpellier Cedex, France.

IRAT is a department of CIRAD (see I009), whose entomology department is involved in research, training and extension work for crop protection in the tropics, especially Africa. IRAT participates in regional and national programmes and research projects, provides training courses, and publishes a series of instruction cards (see D038). A specialized 'Infento' service provides responses to queries, literature searches on request, and a selective dissemination of information. IRAT possesses a vast slide collection, which is available for illustrating publications (prices for duplicates vary between FF 200.00 and FF 500.00). IRAT also publishes the periodical 'l'Agronomie tropicale' (see G005). Information about IRAT publications and services is available on request.

1034 IRLCO-SA.

International Red Locust Control Organization for Central and Southern Africa: P.O. Box 37, 38 Mbale, Northern Province, Zambia.

1035 L'Institut du Sahel.

Comité Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS),
B.P. 1530, Bamako, Mali.

The Sahel Institute is a regional research and information institute for crop production and protection. It publishes several periodicals, participates in regional research programmes, including those for millet, sorghum, maize and beans, and acts as a coordination centre for the dissemination of information.

1037 NCPC.

National Crop Protection Center: University of the Philippines at Los Banos, College of Agriculture, College, Laguna 3720, Philippines.

The NCPC provides training publications and extension material for crop protection methods and techniques. A series of leaflets has been published, providing practical recommendations for pest, weed and disease control. The centre also publishes the 'NCPC newsletter' and the 'Crop protection newsletter'. A publications list is available on request from NCPC's library.

1038 OCLALAV.

Organisation Commune de Lutte Anti-acridienne et de Lutte Anti-aviaire: B.P. 1066, Dakar, Sénégal.

The West-African organization for the control of the desert locust, which is also involved with the control of grasshoppers and species of bird pest.

1039 ODNRI.

Overseas Development Natural Resources Institute: College House, Wrights Lane, London W8 5SJ, UK.

ODNRI is the scientific unit of Britain's Overseas Development Administration (ODA) concerned with tropical pest and vector management and post-harvest technology. ODNRI was established in 1987, and incorporates several other institutes, including the former Tropical Development Research Institute, the Centre for Overseas Pest Research, and the Tropical Stored Products Institute. ODNRI provides technical missions, research and development programmes in the tropics and Britain, advisory work, training courses, and identification services, as well as publishing numerous scientific and practical publications.

A publications list is available from the Publication Distribution Office at the address above. No charge is made for single copies of priced publications sent to governmental and educational establishments, research institutions and non-profit making organizations working in countries eligible for British Government Aid.

An invoice is issued for the cost of publications, plus airmail postage. Prices include handling and surface postage costs (if airmail is required, this should be clearly indicated). Priced publications are only despatched to paying clients upon receipt of payment which can be made by: a sterling cheque drawn on a London bank; a sterling international money order; a sterling postal order; a US dollar cheque; or UNESCO book coupons. Cheques/orders should be made payable to Overseas Development Administration.

I040 OICMA.

Organisation Internationale Contre le Criquet Migrateur Africain:
B.P. 136, Bamako, Mali.

This organization controls the migratory locust in West Africa.

I041 OIRSA.

Organismo Internacional Regional de Sanidad Agro-pecuaria: Apartado 146, Merida, Yucatan, Mexico. Two other offices are also involved in IPM projects in Central America: Departamento de Sanidad Vegetal; Apartado postal (01)61, San Salvador, El Salvador, and Apartado 3628-1000 San José, Costa Rica.

The Central American organization for locust and grasshopper control.

I042 PLC.

Australian Plague Locust Commission: Dept. of Primary Industry,
Industry House, Barton, ACT 2600, Australia.

The Australian organization for locust and grasshopper control.

I043 PMPP.

Perception and Management of Pests and Pesticides: PMPP, Systems Group, Faculty of Technology, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.

PMPP aims to network with IPM scientists worldwide, to stimulate exchange of information about national practices and research. International meetings have been held, and several publications have been issued. An overview of the networking approach is given in a special issue of 'Insect science and its application', (5[3]: 139 - 231) entitled 'Perception and management of pests and pesticides', T.R. Odhiambo (ed.), 1984.

I044 PRIFAS.

Acridologie Opérationnelle Ecoforce Internationale: Centre de Recherches CIRAD, B.P. 5035, 34032 Montpellier Cedex, France.

PRIFAS is a department of CIRAD (see I009), the French agricultural research centre for international cooperation and development. PRIFAS' primary objective is research into, and control of, grasshoppers and locusts. The main target area is Africa, especially the Sahel region, but projects have also been started in South America. PRIFAS has published a series of publications on grasshopper and locust identification and control, containing a variety of practical information. Information about these publications can be obtained on request.

I045 SATIS.

Socially Appropriate Technology International Information Service:
P.O. Box 803, 3500 AV Utrecht, The Netherlands.

SATIS is a network organization comprised of worldwide groups actively collecting information and developing technologies for sustainable development. SATIS has developed an information system adopted by hundreds of development groups, part of which is a detailed thesaurus of terms to facilitate information exchange between members. One of the services provided is the SATIS Token Programme. Tokens are coupons that can be used as payment for publications at member book shops (more information can be obtained at the above address).

Publications include: 'How to ... : tools for developing your world: the SATIS publications catalogue' (for US \$ 2.50 plus postage), 'SATIS classification' (complete set including scope notes and basic thesaurus of 2500 terms for US \$ 20.00, including postage), and 'AT and development journals' (describes 425 development and technology magazines and journals for US \$ 10.00, including postage). All SATIS publications are available in English, French or Spanish, or as trilingual versions.

Ordering information for SATIS publications is available on request from the secretariat. Publications listed in the annual 'SATIS publications catalogue' can be obtained from member book shops mentioned in the catalogue, which also includes detailed ordering information, prices, and conditions.

I046 SEAWIC.

Southeast Asian Weed Information Centre: P.O. Box 17, Bogor, Indonesia.

I047 SIRIC.

Soybean Insect Research Information Center: 163 Natural Resources Building, Urbana, IL 61801, USA.

I048 SPC.

South Pacific Commission: Plant Protection Office Box 2119, Suva, Fiji.

I049 TDRI.

Tropical Development and Research Institute.

This institute was incorporated into ODNRI (see I039).

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I050 TOOL.

Stichting TOOL, Technische Ontwikkeling Ontwikkelingslanden (TOOL Foundation, Technical Development Developing Countries):
Entrepotdok 68A, 1018 AD Amsterdam, The Netherlands
(tel. 020-264409).

The TOOL Foundation is composed of 11 groups active in the development of appropriate technology, and is a member of the international SATIS network (see I045). TOOL has published a number of practical manuals and construction plans, and also distributes some 300 books and brochures from other organizations within the Netherlands and abroad. A library specialized in appropriate technology is accessible to visitors, and a technical enquiry department responds to queries. A list providing prices and short descriptions of available publications is available on request. TOOL is co-editor of the periodical 'AT source' (G007).

I052 TPI.

Tropical Product Institute.

This institute was incorporated into ODNRI in 1987 (see I039).

I053 TSPC.

Tropical Stored Product Centre.

This institute was incorporated into ODNRI in 1987 (see I039).

I054 VITA.

Volunteers in Technical Assistance: 1815 North Lynn St., Suite 200,
Arlington VA 22209, USA (tel. 703 276-1800).

VITA is a non-profit making, international consultancy service providing technical assistance and an information delivery service for developing countries. VITA has published a number of documents on plant and stored product protection.

Requests for information or publication lists should be sent to VITA Publications Sales, 80 South Early St., Alexandria, Virginia 22304, USA. Orders should be sent to the same address and must be accompanied by payment if from individuals, or an authorized purchase order; orders under \$ 25.00 from organizations must also be prepaid. All prices include handling and postage. Indication should be made of preferred shipping method (air- or surface mail). Shipments within the USA will be sent via fourth class 'book rate', and US customers desiring UPS or first class mail should contact the publications office. In the case of an invoiced order,

the order will be charged and shipped at the most economic rate unless indicated otherwise. Discounts for booksellers, libraries and other institutions are available upon request. Payment can be made by personal cheque, bank drafts, international money orders, and postal money orders, payable in US dollars.

1055 World Bank.

Office of Environment and Scientific Affairs, 1818 H St. N.W.,
Washington, D.C. 20433, USA.

This office has been involved with pesticide safety for several years and has developed a set of guidelines governing the use of pesticides in projects sponsored by Bank funds. Other World Bank material includes 'Diagnosis and treatment of pesticide poisoning for clinicians' (J.E. Davies, 1984), which is a brochure providing information on pesticide poisoning symptoms, first aid and medical treatment, and the slide show 'Preventing pesticide poisoning in developing countries' (see C129).

1056 World Neighbors.

5116 North Portland Ave., Oklahoma City, OK 73112, USA
(tel. 405 946-3333).

This international NGO promotes north-south cooperation in rural development. One main activity is the production and distribution of easy-to-understand, informative filmstrips in several languages, on such subjects as community improvement, water, health and nutrition, family planning, and agriculture. Each filmstrip is accompanied by a written script describing the visual presentation. World Neighbors also publishes handbooks, practical booklets, posters, the newsletter 'World Neighbors in action' (available in English, French and Spanish), and provides simple projector equipment for use in remote locations.

A catalogue is available on request at the above address, which details prices of publications inclusive of surface mail, as well as airmail rates. Individual filmstrips cost US \$ 10.00 (add \$ 1.50 airmail postage for a single filmstrip and \$1.00 for each additional filmstrip within North, Central and South America; or \$ 2.00 for a single filmstrip and \$ 1.50 for extra filmstrips within Africa, Asia, Europe and Oceania). Payment should be made by US dollar cheques or bank drafts.

1060 Africa Book Services, Ltd.

Quran House, Mfangano St., P.O. Box 45245, Nairobi, Kenya, Africa.

A distributor of VITA and other publications.



- I061 Agribookstore, IADS, Inc.**
1611 North Kent St., Arlington, Virginia 22209, USA (tel. 703 525-9455).

The North American distributor for most of the publications of the International Agricultural Research and Development Centres (such as CIAT, CIP, CIMMYT, ICRISAT, IRRI). A price list is available on request.

- I062 APICA.**
Association pour la Promotion des Initiatives Communautaires Africaines: B.P. 5946, Douala Akwa, Cameroun.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

- I063 ATDA.**
Appropriate Technology Development Association: (Communications), P.O. Box 311, Gandhi Bhawan, Lucknow -226 001 UP, India.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

- I064 ATOL.**
Aangepaste Technologie Ontwikkelingslanden (Study and Documentation Centre on Appropriate Technology in Developing Countries): Blijde Inkomststraat 9, 3000 Leuven, Belgium.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

- I065 BTC.**
Botswana Technology Centre: Private Bag 0082, Gaborone, Botswana.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

- I066 CAMARTEC.**
Centre for Agricultural Mechanization and Rural Technology: P.O. Box 764, Arusha, Tanzania.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1067 CCTA.

Comisión de Coordinación de Tecnología Andina: Apartado 477, Cusco, Peru.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1068 CEMAT.

Centro de Estudios Mesoamericano sobre Tecnología Apropriada: Apartado Postal 1160, Guatemala Ciudad, Guatemala.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1069 CETAL.

Centro de Estudios en Tecnología Apropriada para América Apropriado: Apartado Postal 1160, Guatemala Ciudad, Guatemala.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1070 CORT.

Consortium on Rural Technology: E-350 Nirman Vihar, New Delhi 110 092, India.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1072 CSV.

Centre of Science for Villages: Magan Sangrahalaya, Wardha 442 001, India.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1073 Dian Desa.

P.O. Box 19, Bulaksumur, Yogyakarta, Indonesia.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

I074 Editorial Agropecuaria Hemisferio Sur S.R.L.

Casilla de Correo 1755, Montevideo, Uruguay (tel. 954454).

Regional distributor of CIP publications.

I075 ENDA Caribe.

Apartado 21000 Huacal, Santo Domingo, Republica Dominicana.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

I076 ENDA Tiers Monde.

Environnement et Développement du Tiers Monde: B.P. 3370, Dakar, Sénégal.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

I077 GRET.

Groupe de Recherche et d'Echanges Technologiques: 213 Rue Lafayette, 75010 Paris, France.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

I078 Intermediate Technology Publications.

9 King St., London WC2E 8HN, UK.

Distributes VITA publications.

I079 Jozef Margraff Verlag.

Raffaisenstr. 24, D-6070 Langen, Federal Republic of Germany.

An international bookseller which has recently taken over TRIOPS Tropical Scientific Books (see I092), a distributor of numerous international publications on tropical agriculture. A catalogue listing all publications is available upon request, prices are exclusive of postage and package. Payment can be made in US dollars, Swiss Francs, and pounds sterling. Customers outside Europe will receive a proforma invoice for pre-payment.

1080 Oxford Book and Stationery Company.

Scindia House, New Delhi 110 001, India.

Regional distributor of IRRI publications.

1082 PCATT.

Philippine Center for Appropriate Training and Technology: Manila Suite, 1416 F Felipe Agoncillo St., Ermita, Metro Manila, 2801 Philippines.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1083 Publishers International Corporation.

2nd Newfield Building, 42-3 Ohtsuka 3-Chome Brunkku, Tokyo 112, Japan.

Regional distributor of IRRI publications.

1084 SEAMO-BIOTROP.

P.O. Box 17, Tajur, Bogor, Indonesia.

Publisher and distributor of publications on biology and agriculture in the tropics.

1085 Self-Sufficiency Supplies.

Shop 3, Cnr. Clyde & Forth Streets, Kempsey, N.S.W. 2440, Australia.

Distributes VITA and other publications.

1086 SEMTA.

Servicios Múltiples de Tecnologías Apropriadas: Casilla 20410, La Paz, Bolivia.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1087 SIBAT.

Sibol ng Agham at Akmang Teknolohiya (Spring of Science and Appropriate Technology): P.O. Box 375, Manila, Philippines.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

1088 SKAT.

Swiss Center for Appropriate Technology: Varnbuelstrasse 14, 9000 St. Gallen, Switzerland.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies. It also distributes VITA publications.

1090 TARU Books and Journals.

Umang, G-159, Pashchim Vihar, New Delhi-110 063, India.

Subscription agents and exporters of Indian books and journals.

1092 TRIOPS Tropical Scientific Books GmbH.

Until recently, this international bookseller distributed publications from all major international agricultural research institutes, several important universities in Europe and the USA, and from other international organizations. TRIOPS was taken over by Jozef Margraff Verlag (see I079) in 1988.

1093 WCC-CCPD.

World Council of Churches, Commission for Churches' Participation in Development: B.P. 66, 1211 Geneva 20, Switzerland.

One of the regional book shops within the SATIS network (see I045), which distributes publications and information on appropriate technologies.

CHAPTER 5: INFORMATION ABOUT PESTICIDE MISUSE AND OVERUSE (including environmental hazards and health risks).

Information about crop protection techniques and methods is scarce in many tropical and subtropical countries, especially for rural communities, small farmers, field workers and local extension staff. Most of the available information arises from sources such as pesticide shop keepers, company representatives and salesmen and is almost exclusively oriented on chemical control. This information is often over-simplified and biased towards commercial interests, therefore tending to give only the positive aspects of pesticide use.

Information about the environmental hazards and health risks associated with pesticide use is usually unavailable to individual farmers. This chapter provides an overview of information material (section J) about the negative aspects of pesticide use in Third World countries, and descriptions and addresses of organizations (section K) active in this work, in an attempt to balance the lack of information provided by pesticide industries.

The information provided here may help local organizations stimulate better regulations and legislation on pesticide use. Some materials may also prove useful when discussing the advantages and disadvantages of IPM.

Section J: Materials

J001 Safe pest control: an NGO action guide.

L. Malaret, ELC, 1985, 70 p., (21 x 15 cm), 17 black & white illustr., references, addresses, English (also available in French and Spanish).

Handbook intended as an action and resource guide for organizations and individuals active in the field of pesticide safety. Names and addresses of institutions working on this topic are provided, and existing programmes and literature for improving the safety and welfare of the pesticide user are described. Suggestions for new approaches and methods are also suggested. Suitable for NGOs and individuals involved with reducing risks to pesticide users in the Third World.

Available from ELC (see K004), free of charge to NGOs working on related issues, otherwise for US \$ 3.50; add \$ 2.00 for surface postage or \$ 4.00 for airmail.

J002 Problem pesticides, pesticide problems: a citizen's action guide to the International Code of Conduct on the distribution and use of pesticides.

G. Goldenman & S. Rengam, 1987, 133 p., (30 x 21 cm), more than 50 references and addresses, English, ISBN 967-9973-20-4.

Handbook intended as an aid for organizations and individuals involved with improving international regulations for trading in pesticides. The history of FAO's Code of Conduct is described, its major principles and deficiencies are analysed, and ways and strategies of improving the Code are suggested. Suitable for organizations, groups and individuals concerned with the international trade in toxic products.

Available from IOCU (see K009); or PAN regional centres (see K015) for US \$ 10.00, excluding postage.

J003 Breaking the pesticide habit: alternatives to 12 hazardous pesticides.

T. Gips, IASA, 1987, Publication no. 1987-1, 370 p., (27 x 21 cm), references, glossary, English.

A comprehensive handbook concerned with reducing the use of pesticides, especially the 'dirty dozen', a group of 12 pesticides considered to be the most dangerous. A long background section on pest control and sustainable agriculture is included, which gives a history of chemical pest control, an example of an IPM programme, and principles and aspects of sustainable agriculture. The second section relates to the 'dirty dozen' campaign. Two further sections deal with suggested action, and resources for further information. Suitable for groups, organizations and individuals

active in the field of environmental protection, sustainable agriculture and reduction of pesticide use.

Available from IASA (see I027) for US \$ 8.95; add \$ 3.00 for overseas airmail. Cheques should be payable to IASA in US dollars, drawn on a US bank.

J004 A growing problem: pesticides and the Third World poor.

D. Bull, OXFAM, 1982, 192 p., (21 x 15 cm), 35 black & white illustr. and photographs, more than 250 references, English, ISBN 0-85598-064-8.

Handbook providing a thorough study of the problems and risks associated with pesticide use in Third World countries. Chapters deal with the influence of pesticides on natural enemies, resistance, pesticides and vector control, human poisoning, residues in food, environmental problems, balancing costs and benefits with effects on the poor, promotion of pesticides, IPM, and the need for better control. Suitable as a basic text for groups and individuals fighting pesticide misuse in Third World countries.

Available from OXFAM (see K014) for £ 4.95; add £ 0.80 per copy for postage and handling.

J005 Paying the price: pesticide subsidies in developing countries.

R. Repello, 1985, 27 p., references, index, English, ISBN 0-915825-12-0.

Brochure analysing the effects of the widespread practice of subsidizing sales of pesticides to untrained Third World farmers. Despite the enormous costs, Third World countries are the largest spenders on pesticide subsidies, without determining whether or not these subsidies are beneficial. Alternatives and strategies are suggested to help curb these practices, and to ease the economic and environmental burden. Suitable for organizations and individuals active in reducing pesticide misuse and overuse in Third World countries.

Available from WRI (see K020) for US \$ 10.00, quoting order no. 715; add \$ 2.00 for postage and handling of the first copy and \$ 0.50 for each additional title.

J006 A better mousetrap: improving pest management for agriculture.

M.J. Dover, 1986, 80 p., illustrated, English, ISBN 0-915825-09-0.

Introduces the latest approaches and technologies for pest control, and attempts to analyse those that can be used in safer and more effective crop protection systems. The book includes specific recommendations for

improving IPM through research, extension, regulation, and international assistance. Suitable for extension workers, pest control operators and agricultural workers primarily in the USA, but also in other geographical regions.

Available from WRI (see K020) for US \$ 10.00, quoting order no. 716; add \$ 2.00 for postage and handling of the first copy and \$ 0.50 for each additional title.

J007 Getting tough: public policy and the management of pesticide resistance.

M. Dover & B. Croft, 1985, 80 p., illustrated, English, ISBN 0-915825-03-1.

Explores the increasingly serious problem of pesticide resistance, including losses in crop production, threats to human health, and damage to the environment. The concept of resistance management is explained, and actions are recommended to form part of a resistant management programme. Although primarily oriented on the USA, the information is relevant to other geographical regions. Suitable for agricultural students, NGOs and policy makers.

Available from WRI (see K020) for US \$ 10.00, quoting order no. 724; add \$ 2.00 for postage and handling of the first copy and \$ 0.50 for each additional title.

J008 The pesticides handbook: profiles for action.

IOCU, 1986, rev. ed., approx. 170 p., English.

The 1984 edition of this handbook provides a set of basic resources for action against pesticide misuse and overuse. The first section provides data sheets on 44 pesticides, giving important characteristics in condensed form. Section 2 describes the known hazards of selected pesticide groups. Section 3 provides background reading, and section 4 lists addresses of the Pesticide Action Network and groups participating in this network. The last section gives information sources. Suitable for NGOs and individuals in industrialized countries active in the field of reducing pesticide use.

Available from IOCU (see K009) for US \$ 12.00 for non-profit making groups or US \$ 24.00 to others, excluding postage.

J009 FAO guidelines (several titles).

FAO, 1979 - 1986.

The following publications are particularly relevant:

The use of FAO specifications for plant protection products, 1981, FAO Plant Production and Protection Paper no.13;

- Report of Second Government Registration on international harmonizations of pesticide registration requirements, Rome, 11-15 October 1982;
- Codex guidelines on good practice in pesticide residue analyses, 1984;
- Guidelines on good agricultural practices in the use of pesticides: guide to codex recommendations concerning pesticide residues, 1984;
- Guidelines on efficacy data for the registration of pesticides for plant protection, 1985;
- Guidelines on environmental criteria for the registration of pesticides, 1985;
- Guidelines on crop residue data, 1985;
- Codex recommended national regulatory practices to facilitate acceptance and use of Codex maximum limits for pesticide residues in foods, 1985;
- Guidelines for the registration and control of pesticides (including a model scheme for the establishment of national organizations), 1985;
- Guidelines for the packing and storage of pesticides, 1985;
- Guidelines on good labelling practice for pesticides, 1985;
- Guidelines for the disposal of waste pesticides and pesticide containers on the farm, 1985;
- International code of conduct on the distribution and use of pesticides, 1986.

A series of useful guidelines and guides designed to help countries develop effective pesticide regulatory mechanisms.

Most of these publications are available free of charge from FAO (see I020).

J010 Pills, pesticides and profits: the international trade in toxic substances.

R. Norris (ed.), 1982.

Handbook providing a carefully documented overview of products banned or restricted in the USA which are exported to other countries.

Available from PEAP (see K016); or IOCU (see K009), price unknown.

J011 Circle of poison: pesticides and people in a hungry world.

D. Weir & M. Schapiro, 1981, 99 p., (21 x 14 cm), 10 black & white photographs, notes, references, English (also available in Spanish and French, see J018), ISBN 0-935028-09-9.

A classic text which describes how pesticides which are banned or restricted in their countries of origin, later return as residues in imported foodstuffs. Action is suggested which may result in strengthening of international regulations.

Available from IFDP (see K008) for US \$ 3.95, excluding postage.

J012 Escape from the pesticide treadmill: alternatives to pesticides in developing countries.

M. Hansen, 1987.

Book using several case-studies of successful non-chemical crop protection projects in different geographical regions, in order to promote alternative crop protection methods.

Available from the Institute of Consumer Policy Research, Consumers Union, 256 Washington St., Mt. Vernon, NY 10553, USA, price unknown.

J013 Pesticide dilemma in the Third World: a case study of Malaysia.

SAM, 1984.

Book describing the present pattern of pesticide use in Malaysia, emphasizing the need to prohibit sales of hazardous pesticides banned in other countries.

Available from SAM (see K017) for US \$ 8.00, including airmail; or \$ 5.50 for surface mail.

J014 Poison swirls across the Third World: pesticides, multinational concerns, international control and the Third World.

R. Gerrits, 1983, Ecoscript 21, 74 p., (30 x 21 cm), 12 black & white illustr., 65 references, English (also available in Dutch), ISBN 90-71111-32-6.

Handbook dealing with the international trade and use of pesticides, which explains how and why Third World countries import large amounts of pesticides leading to many dangerous and adverse consequences. It provides an overview of the international pesticide market, the driving force of the pesticide industry's patenting system, consequences of pesticide use in the Third World, and the role of international organizations in pesticide trading. Suitable for NGOs and individuals active in this sphere in industrialized and developing countries.

Available from SMA (see K018) for Dfl. 17.50, excluding postage and packing, quoting order no. 21E.

J015 Drins and related insecticides: toxicology, use and alternatives (with special reference to Latin America and South-East Asia).

J. van de Waerdt, 1983, Ecoscript 23, 176 p., (30 x 21 cm), 10 black & white illustr., tables, 140 references, English, ISBN 90-71111-35-0.

Handbook dealing with the group of drins and related pesticides, which are known for their high persistence and accumulation in food webs. Comprehensive information is provided about the properties of these organochlorine insecticides, and the current production, drin usage, and ecological problems resulting from their use is described. The last part of the study deals with alternatives to drins, and the potential for IPM in some important crops. Suitable for NGOs and individuals active in this sphere throughout the world.

Available from SMA (see K018) for Dfl. 17.50, excluding postage and packing, quoting order no. 23E.

J016 Pests & pesticides (part 1, 2 and 3).

C Dorfman (ed.), OUTREACH, 1987, nos. 31, 31 & 32, 67 p., (28 x 22 cm), illustr., English.

A series of 3 of the OUTREACH newsletters. These issues contain short articles, games, playscripts, and comic strips about pests, pesticides, and the hazards and safe use of pesticides. Although primarily oriented at North America, the information may be relevant to other geographical regions. Suitable for school children, with short instructions and suggestions for teachers.

Available from OUTREACH, Science Education Program, 933 Shimkin Hall, N.Y. University, 50 West 4th St., New York NY 10003, USA, price unknown.

J017 Pestisida, mitos dan kenyataan.

KRAPP/PAN Indonesia, 1987, Seri 1 buku TEROMPET (Teropong Masalah Pestisida), 74 p., (21 x 15 cm), 2 black & white illustr., Bahasa Indonesian.

Book containing several articles about pesticides, hazards and risks of pesticide use, pesticides and small farmers, international agrochemical industries, prevention of and action against misuse and overuse of pesticides, and a description of PAN International's 'dirty dozen' campaign. Suitable for individuals and organizations in Indonesia involved with prevention of pesticide misuse and overuse.

Available from PAN Indonesia, Jalan Anggrek Garuda D4/60, Jakarta 11480, Indonesia, price unknown.

J018 Pesticides sans frontières.

D. Weird & M. Schapiro, 1982, 109 p., French.

A French edition of 'Circle of poison' (see J011).

Available from Centre Europe Tiers-Monde (CETIM), Quai Wilson 37, CH 1201, Geneva, Switzerland, price unknown.

J019 Les pesticides au Sénégal: une menace?

P. Germain & A. Thiam, 1983, ENDA Série Etudes et Recherches no. 83-83, 64 p., (22 x 14 cm), 15 black & white illustr., 19 references, French.

Book dealing with current pesticide use in Senegal, which aims to increase awareness about the dangers of pesticide use under poorly controlled conditions. Adverse practices and human poisonings by pesticides are discussed, and statistics on current agrochemical use in Senegal are provided. Suitable for general readership.

Available from ENDA-PRONAT (see K005), price unknown.

J020 Silent spring.

R. Carson, several publishers, 1963, 304 p., (18 x 11 cm), references, index, English (also translated into several other languages).

A classic text on the dangers of pesticide use, which helped form a turning point in public concern about pesticides, and may have initiated many ecological movements. Although the problems described have been largely overcome in the last 25 years, the book is still of value historically and as an introductory text. Suitable for general readership.

Available from most bookshops, price unknown.

J025 Bitter harvest: pesticides and the third world.

ICCE & ELC, 1987, 60 coloured slides, script, cassette, 22 minutes, English (also available as a video cassette, see J035, or filmstrip).

A series of slides dealing with the problems and dangers associated with pesticide use in developing countries. Resistance to pesticides, resurgence, and the development of secondary pests are described, and the need for IPM is stressed. Part of the series deals with health risks, and the legislation and international regulations controlling pesticide exports from developed countries to the Third World (although oriented on European legislation, the information has international relevance). Suitable for farmers, extension workers, pest control operators and agricultural students.

Available from Conservation Education Services Ltd. (ICCE), Greenfield House, Guiting Power, Cheltenham, Glos. GL54 5TZ, UK, for £ 14.45; add 25% to each order for packing and airmail postage. Payment must accompany the order, with pound sterling cheques or postal orders made payable to Conservation Education Services Ltd. The equivalent of £ 6.00 should be added to cheques in other currencies, to cover bank exchange surcharges.

J026 Bahaya pestisida dan cara menghindarinya.

KRAPP/PAN Indonesia, 1987, series of slides, Bahasa Indonesian.

Provides examples of misleading information used in pesticide advertisements, examples of dangerous and improper practices in pesticide use, and guidelines for safe and efficient pesticide use. Suitable for farmers, and a general audience in Indonesia.

Available from PAN Indonesia, Jalan Anggrek Garuda D4/60, Jakarta 11480, Indonesia, price unknown.

J030 Dangers of pesticides.

IOCU, single poster, English.

Suitable for a general audience.

Available from IOCU (see K009), price unknown.

J031 Circle of poison.

IOCU, single poster, English.

Illustrates the danger that pesticide residues may be present in food crops. Suitable for a general audience.

Available from IOCU (see K009), price unknown.

J032 Pesticides don't know when to stop killing.

PAN North America, 1985, series of posters, English.

Series of posters warning against the risks and hazards of pesticides. Suitable for a general audience in North America.

Available from PAN North America, PEAP (see K016), price unknown

J033 Awas! Racun! Hati-hati dalam Pemilihan.

PAN Indonesia, 1987, colour poster, (60 x 45 cm), Bahasa Malay.

Warns about the misuse and overuse of pesticides by portraying a person

spraying the field, a leaching knapsack sprayer, dead animals and a skull. Suitable for a general audience in Indonesia and Malaysia.

Available from PAN Indonesia, Jalan Anggrek Garuda D4/60, Jakarta 11480, Indonesia, price unknown.

J035 Bitter Harvest: pesticides and the Third World.

D. Bull & P. Steele, ICCE & ELC, 1987, video-cassette (PAL standard in VHS or Betamax), 30 minutes, colour, script, English (also available as a slide set or filmstrip).

An edited version of the slide set of the same title (see J025), which deals with the problems and dangers associated with pesticide use in developing countries. The need for IPM is stressed and part of the video deals with the legislation and international regulations controlling pesticide exports from developed countries to the Third World (although oriented on European legislation, the information has international relevance). Suitable for extension workers, pest control operators and agricultural students worldwide.

Available from Conservation Education Services Ltd. (ICCE), Greenfield House, Guiting Power, Cheltenham, Glos. GL54 5TZ, UK for £ 14.95; add 25 % to each order for packing and airmail postage. Payment must accompany the order, with pound sterling cheques or postal orders made payable to Conservation Education Services Ltd. The equivalent of £ 6.00 should be added to cheques in other currencies, to cover bank exchange surcharges.

J036 Profits from poison.

J. Hartzell, TVE, 1987, video-cassette (PAL system in U-Matic or VHS), 45 minutes, colour, English (a background brochure is also available).

Video aimed at a wide audience which deals with the dangers, health risks and environmental problems resulting from misuse of pesticides in developing countries. Examples of misuse are given, and pest resistance to pesticides is explained. The video also shows examples of cultural and biological control measures as potential elements of an IPM system. Suitable for extension workers, pest control operators, agricultural students and a general audience.

Available from Television Trust for the Environment (TVE), 46 Charlotte St., London W1P 1LR, UK, price unknown.

J037 Bhopal: beyond genocide.

S. Shaikh, S. Mulay & T. Bose, 1985, video-cassette (U-Matic or VHS), 79 minutes, colour, English (also available on 16 mm film).

Indian-made video about the events surrounding the Bhopal tragedy, which resulted from an accident at the Union Carbide pesticide factory and failed safety precautions. A cloud of methyl isocyanate escaped, killing over 2,000 people (see J044 and J045). Suitable for agricultural students, policy makers, and a general audience.

Available from The Other Cinema, 79 Wardour St., London W1V 3TH, UK, price unknown.

J038 The cost of cotton.

D. Temple & L. Argueta, 1979, video-cassette (available in all formats), 30 minutes, colour, English (also available in Spanish and as a 16 mm film).

Shows the excessive use of pesticides in Central American cotton fields. US and multi-national corporations use Guatemala as a dumping ground for pesticides that are restricted in the USA. The result is poisoned workers, contaminated crops and water, and pesticide-resistant insects. Suitable for extension workers, pest control operators, agricultural students, policy makers and a general audience in the USA and Central America.

Available from Cinema Guild, 1697 Broadway, New York, NY 10019, USA, price unknown.

J039 For export only: pesticides and pills.

R. Richter, 1982, 2 video-cassettes (U-Matic or VHS), 55 minutes each, colour, English (also available in Spanish or as a 16 mm film).

A disturbing video concerned with double standards: pesticides and drugs outlawed or restricted in the USA and Europe are produced for export to developing countries, where restrictions tend to be lax or non-existent. Warnings on the products are often inadequate and are rarely translated into the local language. According to the chemical companies, many improvements have been made since this film was produced. Suitable for extension workers, agricultural students, policy makers and a general, international audience, especially in the USA and Europe.

Available from Icarus Film Distribution, 200 Park Ave. South, New York, NY D003, USA, price unknown.

J040 A growing problem.

T. Strassburg, Scope Films for Channel 4 Television, 1983, video-cassette (available in all formats), 45 minutes, colour, English (also available on 16 mm film).

Argues the need for IPM when growing cash crops (tea and coffee) in Kenya. Because of the economic importance of these crops and the need to maintain yields, Kenya has to import pesticides, some of which are banned for use in the exporting countries. Pesticide resistance has been discovered and dangerous pesticide residues have been found in the blood of farmers. The book of the same title (see J004) is not directly related to the film, but is valuable when discussing pesticides and the Third World. Suitable for extension workers, pest control operators, agricultural students, policy makers and a general audience.

Available from Channel 4 Television, 60 Charlotte St., London W1P 2AX, UK, price unknown.

J041 A matter of taste: the food multinationals and the Third World.

L. Boeken, Belbo Film Productions & NOVIB, 1981, video-cassette (U-Matic or VHS), 50 minutes, colour, English (also available in Spanish and Dutch).

Deals with the growing influence of Western agro-business on developing countries, highlighting the Philippines. Massive plantations of cash crops destined for export are squeezing out small farmers producing staple crops. Increasing quantities of expensive chemical fertilizers and pesticides are used in production of the cash crops. Suitable for agricultural students, policy makers and a general audience.

Available from Nederlands Film Instituut, Steijnlaan 8, 1217 JS Hilversum, The Netherlands, for approx. Dfl. 180.00, excluding postage.

J042 The million murdering death.

A. Nisbett, BBC, 1982, video-cassette (U-Matic or VHS), 50 minutes, colour, English.

Describes malaria control in Sri Lanka, including a detailed report on the development of pesticide resistance in the mosquito. Strategies to overcome this problem are provided. Suitable for pest control operators, agricultural students, policy makers and a general audience.

Available from BBC Enterprises, Education and Training, Sales Dept., Woodlands, Wood Lane, London W12 0TT, UK, price unknown.

J043 Nature's revenge.

S. Jarl, 1983, video-cassette (U-Matic or VHS), 83 minutes, colour, English (also available in Swedish).

Deals with whether nature's capacity to absorb the continuing input of pesticides and chemical fertilizer is overloaded. Increased use of these chemicals has enabled world food production to keep pace with population growth. Evidence of links between agricultural chemicals, certain cancers and incidences of genetic deformity is presented. Suitable for extension workers, pest control operators, agricultural students, policy makers and a general audience.

Available from Film Centrum, P.O. Box 2068, 10312 Stockholm, Sweden, price unknown.

J044 Who shall we tell?

A. Alcazar Ové, Anancy Film Production, 1985, video-cassette (U-Matic or VHS), 64 minutes, colour, English subtitles.

An independent production about the Bhopal tragedy (see J037 and J045), when over 2000 people were killed by a poisonous cloud resulting from an accident in the Union Carbide factory in Bhopal, India. The film shows the aftermath of the tragedy and survivors tell their stories. Suitable for extension workers, agricultural students, policy makers and a general audience.

Available from Channel 4 Television, 60 Charlotte St., London W1P 2AX, UK, price unknown.

J045 Bhopal: a licence to kill.

R. Mohan, S. Sadagopan & R. Palit, 1985, film with sound, English.

A documentary about the Bhopal tragedy (see J044), which traces events preceding and following the disaster over a period of 9 months. It raises questions about how the tragedy occurred, what is being done for the victims, assessing responsibility for the accident, and the dangers and safety precautions of other chemical plants. Suitable for extension workers, policy makers and a general audience.

Available from Gossner Mission, Handjerystr. 19-20, Berlin, Federal Republic of Germany, price unknown.

J046 Unser taglich gift gib uns heute.

F. Füllgraf, 1985, film with sound, 44 minutes, colour, German.

Depicts the disturbing pesticide practices used in Brazil. Aerial applications of insecticides and fungicides are made, regardless of the fact that unprotected farm labourers are working in the field. Despite sick people and still-born or deformed children, officials and company

representatives are unwilling to reply to accusations that this may be the result of pesticide abuse. Suitable for farmers, extension workers, pest control operators, and a general audience in Brazil.

Available from EZEF/Matthias-Film, Evangelische Medienzentralen, Gansheidestrasse 67, 7000 Stuttgart, Federal Republic of Germany, price unknown.

J047 Kampf dem kaffee rost.

GTZ, 1980, 16 mm film, optical sound, 13 minutes, colour, German.

Deals with the control of coffee rust (*Hemileia vastatrix*) in Central America, and the relationship between industrialized and developing countries in this work. Suitable for farmers, extension workers and a general audience in Central America.

Available from GTZ (see I024) or DFS Filmaservice, Schwanthalerstrasse 41, 8000 München 41, Federal Republic of Germany, price unknown.

J048 The wrath of grapes.

United Farmworkers, 1986, video-cassette, 14 minutes, English (also available in Spanish).

Examines contamination of table grapes by pesticides, and poisoning of farm workers. Suitable for plantation workers, pest control operators, agricultural students, and a broad audience worldwide, but particularly the USA.

Available from United Farmworkers, P.O. Box 62, Keene, CA 93531, USA, price unknown.

J049 No promise for tomorrow: Bhopal.

Highlander Center, 1985, video-cassette, 58 minutes, colour, English.

Deals with the health and environmental implications of the Bhopal disaster for US pesticide production. Suitable for agricultural students, policy makers and a general audience worldwide, but particularly the USA.

Available from Highlander Center, Route 3, Box 370, New Market, USA, price unknown.

Section K: Organizations

K001 ADGF.

Acao Democratica Feminia Gauche: Rua Miguel Tostes 694, Porto Alegre, Rio Grande do Sul, Brazil (tel. 0512-32-8884).

Brazilian women's organization advocating pesticide reform.

K002 AMEDC.

Asociacion Mexicana de Estudios para la Defensa del Consumidor: Apartado 27-060, Mexico 7, D.F., Mexico. (tel. 523-7342).

Carries out research, policy formation and issues Spanish educational materials.

K003 EAP.

Ecological Agriculture Projects: Box 225, McDonald College, Ste. Anne de Bellevue, Quebec H9X1C0, Canada (tel. 514 457-2000 ext. 190).

Canada's leading centre for research and education on sustainable agriculture.

K004 ELC.

Environment Liaison Centre: P.O. Box 72461, Nairobi, Kenya. (telex 23240 ENVICENTE; tel. 24770).

An international NGO concerned with development and environmental protection, which serves as a link between other NGOs and the United Nations Environmental Programme (UNEP). ELC has 232 member organizations and contacts over 7000 groups. It publishes 2 periodicals ('ECOFORUM' and 'News alert'), proceedings, reports and several practical booklets such as 'Safe pest control' (see J001). In 1987, ELC released a slide-pack and a video entitled 'Bitter harvest: pesticides and the Third World'.

K005 ENDA/PRONAT.

Environnement et Developpement du Tiers Monde/Programme pour la Protection Naturelle des Cultures: B.P. 3370, Dakar, S n gal.

PRONAT carries out research into environmental aspects of plant protection, including the effects of pesticides in Senegal, and works towards the introduction of non-chemical methods of plant protection. One of their publications is the irregular French newsletter 'Nouvelles de PRONAT'.

K006 FOE.

Friends of the Earth: 377 City Rd., London, UK (tel. 837-0731);
530 7th St. SE, Washington DC 20003, USA (tel. 202-543-4312).

An organization actively involved with education and policies related to the environment, with an emphasis on hazardous pesticides. It also networks with other organizations (see SAM, K017).

K007 Fundacion Natura.

Casilla 243, Quito, Ecuador (tel. 239-177).

Ecuador's leading environmental organization, which serves as the PAN Latin America regional centre, and produces a variety of publications.

K008 IFDP.

Institute for Food and Development Policy: 1885 Mission St., San Francisco, CA 94130, USA.

IFDP is a NGO which conducts valuable research on the general theme of global food security. One specific project related to the use of pesticides and the export of banned or severely restricted pesticides to the Third World, and resulted in the book 'Circle of poison' (see J011 and J018).

K009 IOCU.

International Organization of Consumers Unions: P.O. Box 1045, Penang, Malaysia (tel. 04-20391).

IOCU has a membership of more than 130 consumer organizations in some 50 countries. This leading advocate for safe food issues key reports and educational materials about pesticides, and plays a major role in policy formation. It also serves as the PAN Asia/Pacific Regional Centre.

K010 IRPTC.

International Register of Potentially Toxic Chemicals (UNEP): Palais des Nations, 1211 Geneva 10, Switzerland.

The IRPTC's objective is to compile available information on potentially hazardous chemicals and existing policies for control and regulation, and to ensure that the data is readily available. IRPTC is one of the major information sources about production, use, toxicity, environmental effects, treatment for poisoning, and waste management of pesticides. A query-response service is provided, and the 'IRPTC bulletin' is published triannually in English, French, Spanish and Russian. The bulletin is available for network partners, national and international research institutes, national correspondents, NGOs, and interested individuals.

K011 KRAPP.

Indonesian Network Against the Misuse of Pesticides: c/o WALHI, s/n Penjernihan 1/15 Komp. Keuangan, Jakarta 10210, Indonesia (tel. 586820).

An active PAN participant in research and education.

K012 NCAMP.

National Coalition Against the Misuse of Pesticides: 530 7th St., SE, Washington, D.C. 20003, USA (tel. 202 543-5450).

NCAMP acts as a policy watchdog and clearing house for publications concerning pesticides. In its role as educator, NCAMP holds an annual conference, and issues publications including the informative newsletter 'Pesticides and you'.

K013 NCAP.

Northwest Coalition for Alternatives to Pesticides: P.O. Box 1393, Eugene, OR 97440, USA (tel. 503 344-5044).

An effective citizen's group which produces the highly-regarded 'Journal of pesticide reform'.

K014 OXFAM.

274 Banbury Rd., Oxford, OX2 7DZ, UK (tel. Oxford 56777).

OXFAM is a non-governmental development agency and a founding member of PAN. It has carried out research into IPM and encouraged its use in development programmes. The OXFAM Public Affairs Office conducted research into pesticide use in the Third World, resulting in the book: 'A growing problem: pesticides and the Third World poor' (see J004). This study presents a concise and lucid account of the problems associated with pesticide use in developing countries.

K015 PAN.

Pesticide Action Network: North America – Pesticide Education and Action Project, P.O. Box 610, San Francisco, CA 94101, USA (see K016); Europe – PAN Europe, Bollandistenstraat 22, B-1040 Brussels, Belgium; Asia/Pacific – International Organization of Consumers Unions, (see K009); Africa – Environmental Liaison Centre (ELC), P.O. Box 72461, Nairobi, Kenya (see K004); Latin America – Fundacion Natura, Casilla 234, Quito, Ecuador (see K007).

PAN has 5 regional centres and is composed of more than 300 NGOs worldwide. It is involved with prevention of pesticide abuse, and the

stimulation of improved international standards and regulations for pesticide use and exports. National and regional PAN members publish and co-publish several important books on pesticide problems and hazards. PAN is active in the 'dirty dozen' campaign, and in the implementation and improvement of the FAO Code of Conduct on pesticide exports.

K016 PEAP.

Pesticide Education and Action Project: P.O. Box 610, San Francisco, CA 94101, USA (tel. 415 771-7327).

PEAP serves as the North American regional office of PAN, formulates policy, and produces the 'PAN North America newsletter' and educational materials.

K017 SAM.

Sahabat Alam Malaysia (Friends of the Earth Malaysia; Asia-Pacific Peoples Environmental Network): 37 Lorong Birch, 10250 Pulau Penang, Malaysia (tel. 04-37-69-30).

SAM actively promotes pesticide policy reform through its conferences, newsletters and other publications. Their quarterly regional newsletter 'Asian-Pacific environment' and the bimonthly journal 'Environmental news digest' present information about worldwide environmental problems. A publications price list, with ordering information, is available on request.

K018 SMA.

Stichting Mondiaal Alternatief (Foundation for Ecological Development Alternatives): P.O. Box 168, 2040 AD Zandvoort, The Netherlands (tel. 02507-16296).

SMA is a PAN member which actively campaigns at national and international level for a more ecologically-sound approach to agriculture. It produces research reports ('Ecoscripts') on a wide range of development topics, including pesticide abuse worldwide. SMA is one of the Dutch NGOs that initiated the study resulting in this catalogue.

K019 VFLU.

Verein zur Förderung von Landwirtschaft und Umweltschutz in der Dritten Welt (Organization for the Promotion of Agriculture and Environmental Protection in the Third World): Mainzer Str. 14, D-6501 Stackeden-Elsheim 2, Federal Republic of Germany.

This association publishes the German quarterly 'VFLU um welt zeitung.'

It also supports several Nicaraguan projects, including an organic crop protection project.

K020 WRI.

World Resources Institute: 1735 New York Ave. NW, Washington, D.C. 20006, USA. (tel. 202 638-6300).

WRI is a policy research centre focusing on environmental, developmental, population and resource issues. It produces numerous major reports on pesticides and sustainable agriculture, which although oriented at an American audience are also relevant to the Third World.

Publications are available from WRI Publications, Box 620, Homes, PA 19043-0620, USA.

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International Group of National Associations of Manufacturers of Agrochemical Products	I023
International Institute of Tropical Agriculture	H042
International Organization for Biological and Integrated Control of Noxious Animals and Plants	H046
International Organization of Consumers Unions	K009
International Plant Protection Center	I032
International Potato Center	H024
International Red Locust Control Organization for Central and Southern Africa	I034
International Register of Potentially Toxic Chemicals (UNEP)	K010
International Rice Research Institute	H048
International Soybean Program	H045
INTSOY	H045
IOBC	H046
IOCU	K009
IPPC	I032
IRAT-CIRAT	I033
IRCT	H047

IRLCO-SA	I034
IRPTC	K010
IRRI	H048
Jozef Margraff Verlag	I079
Jute Agricultural Research Institute	H049
KRAPP	K011
L'Institut du Sahel	I035
Malaysian Agricultural Research and Development Institute	H050
MARDI	H050
National Biological Control Research Centre	H053
National Cereals Research Institute	H051
National Coalition Against the Misuse of Pesticides	K012
National Crop Protection Center	I037
National Root Crops Research Institute	H052
NBCRC	H053
NCAMP	K012
NCAP	K013
NCPC	I037
Nigerian Institute of Oil Palm Research	H054
Northwest Coalition for Alternatives to Pesticides	K013
OCLALAV	I038
ODNRI	I039
OICMA	I040
OILB	H055
OIRSA	I041
Organisation Commune de Lutte Anti-acridienne et de Lutte Anti-aviaire	I038
Organisation Internationale Contre le Criquet Migrateur Africain	I040
Organisation Internationale de Lutte Biologique et Integree Contre les Animaux et les Plantes Nuisibles.	H055
Organismo Internacional Regional de Sanidad Agro-pecuaria	I041
Organization for the Promotion of Agriculture and Environmental Protection in the Third World.	K019
Overseas Development Natural Resources Institute	I039
OXFAM	K014
Oxford Book and Stationery Company	I080
Palm Oil Research Institute of Malaysia	H056
PAN	K015
PCATT	I082
PEAP	K016
Perception and Management of Pests and Pesticides	I043
Pesticide Action Network	K015
Pesticide Education and Action Project	K016
Philippine Center for Appropriate Training and Technology	I082
Pineapple Research Institute of Hawaii	H057
PLC	I042
PMPP	I043
PRIFAS	I044
Programa Internacional de la Soya	H045
Programme International pour le Soja	H045
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Rubber Research Institute of Sri Lanka	H060
Rubber Research Institute of Nigeria	H059
Rubber Research Institute of Malaysia	H058
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SAM	K017
SATIS	I045
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SEAMO-BIOTROP	I084
SEAWIC	I046
Self Sufficiency Supplies	I085
SEMTA	I086
Servicios Múltiples de Tecnologías Apropriadas	I086
SIBAT	I087
Sibol ng Agham at Akmang Teknolohiya	I087
Silwood Centre for Pest Management	H062
SIRIC	I047
SKAT	I088
SMA	K018
Socially Appropriate Technology International Information Service	I045
Sociedad Colombiana de Control de Malezas y Fisiología Vegetal	H031
South African Sugar Association Experiment Station	H063
South Pacific Commission, Plant Protection Office	I048
Southeast Asian Weed Information Centre	I046
Soybean Insect Research Information Center	I047
SPC	I048
Stichting Mondiaal Alternatief	K018
Sugar Industry Research Institute	H065
Sugar Industry Research Institute	H064
Sugarcane Breeding Institute	H066
Sugarcane Research Institute	H067
Swiss Center for Appropriate Technology	I088
Swiss Center for Appropriate Technology	I089
Taiwan Sugar Research Institute	H068
TARU Books and Journals	I090
TDRI	I049
Tea Research Institute of Sri Lanka	H069
Technical Centre for Agricultural and Rural Cooperation	I012
Technical Development Developing Countries	I050
Technische Ontwikkeling Ontwikkelingslanden	I050
Tobacco Research Board	H070
Tobacco Research Institute	H072
Toeklai Experimental Station	H073
TOOL	I050
TPI	I052
TRIOPS Tropical Scientific Books GmbH	I092
Tropical Development and Research Institute	I049
Tropical Product Institute	I052
Tropical Stored Product Centre	I053
TSPC	I053
University of California	I003

UPASI Tea Experimental Station	H074
Verein zur Förderung von Landwirtschaft und Umweltschutz in der Dritten Welt	K019
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Volunteers in Technical Assistance	I054
WARDA	H075
WCC-CCPD	I093
West Africa Rice Development Association	H075
World Bank	I055
World Council of Churches, Commission for Churches' Participation in Development	I093
World Neighbors	I056
World Resources Institute	K020
WRI	K020

Index N: Crops – geographical regions

Geographical regions refer to the area on which materials are primarily targetted, and are not intended to exclude usefulness for other regions.

General materials dealing with no specific crop or ten or more crops are listed separately at the end of the index.

Alfalfa (also see Fodder)

- Argentina: B332, B333
- USA: B315, B320, B322

Almond

- USA: B186

Apple

- Brazil: B222

Bananas

- no region specified: B180, B181, G008, G052
- Latin America: H002
- tropics in general: A050

Barley (also see Cereals)

- no region specified: B104, G053
- North Africa: B105
- USA: B109

Beans (also see Legumes)

- no region specified: B031, B122, C030, C032, C033, C036, C037, C038, C039, C040, C042, C043, C044, C045, C046, C047, C048, G014, G018, G027, H019
- Africa: B117, C049
- Burundi: B154
- Central America: C076
- Latin America: B127, C034, C035
- Nicaragua: B129
- North Africa: B123, B124
- Philippines: B272
- Sahel region: I035
- Senegal: D032
- South-East Asia: B272
- Togo: B126
- tropics in general: A030
- USA: B125

Cabbage (also see Vegetables)

- Asia: H006
- Central America: C078
- Sahel region: D033
- Togo: B149
- tropics in general: G065
- USA: B150

Cassava (also see Root and Tuber Crops)

- no region specified: B040, B041, B042, B043, B044, B045, B049, B050, C050, C052, C053, C054, C055, C056, C057, C058, C059, G010, G014, H019
- Africa: B046, D008, G028, H042
- Burundi: E001
- Colombia: B048
- Philippines: B047
- Sahel region: D034
- Senegal: D032
- West Africa: B226

Cereals (also see Barley and Wheat)

- no region specified: B107, H035
- Argentina: B333
- Dominican Republic: B242
- Nigeria: H051
- North Africa: B316
- tropics in general: A024, A059
- USA: B315

Chickpea (also see Legumes)

- no region specified: B134, G035, H038
- tropics in general: A030

Chili

- Central America: C079



Citrus

- Central America: C070
- India: B184, B185
- tropics in general: A050
- USA: B182, B183

Cocoa

- Africa: H039
- Dominican Republic: B229
- Ghana: H027
- Nigeria: H028
- tropics in general: A018, A020, A050

Coconut

- Sri Lanka: H029
- tropics in general: A018, A050

Coffee

- no region specified: J040
- Africa: H039
- Central America: J047
- India: H013
- Kenya: H030
- tropics in general: A018, A020, A050

Corn, see Maize

Cotton

- Africa: B163, B164, P168, D007, H047
- Argentina: B173, B333
- Burundi: D006
- Central Africa: B169
- Central America: B162, J038
- Dominican Republic: B242
- India: B170, H014
- Kenya: B166
- Philippines: B160
- Sahel region: B346, D033
- tropics in general: A018, A020
- USA: B167, B172, J038
- West Africa: B174
- West Indies: B174
- Zambia: B165

Cowpea (also see Legumes)

- no region specified: B136, G062, H036, H042
- Africa: B115, B117, B128, B135, C077, G028, H042

- Niger: D009
- Sahel region: D033, D036
- tropics in general: A030

Cucurbits (also see Vegetables)

- North Africa: B316
- Senegal: D032

Fodder (also see Alfalfa and Pastures)

- no region specified: C083

Gomba (also see Vegetables)

- Togo: B149

Groundnut (also see Legumes)

- no region specified: B122, B138, B139, B140, B143, G034, H038
- Sahel region: D033, D034
- Senegal: B323
- tropics in general: A030, A059
- USA: B142
- West Africa: B226

Jute

- Bangladesh: H007
- India: H049

Legumes (also see Beans, Chickpea, Cowpea, Groundnut, Lentil, Pea, Pigeon Pea and Soya bean)

- no region specified: B116, B120, B122, B270, G024, G062
- Africa: B115, B117
- Asia: B118, B119
- Dominican Republic: B229, B242
- Malaysia: G047
- North Africa: B119, B316
- Philippines: B330
- tropics in general: A024, A030, A035, A059

Lentil (also see Legumes)

- no region specified: G044

Lettuce (also see Vegetables)

- USA: B150

Lupine

- Peru: B317

Maize

- no region specified: B080, B089, B090, B093, B270, E011, H023, H036, H042
- Africa: B083, B084, G028, H042
- Argentina: B333
- Central America: C075
- Dominican Republic: B229
- Ivory Coast: B036
- Mexico: B085
- Nicaragua: B081
- North Africa: B315
- Philippines: B086, B087, B330
- Sahel region: D034, D036, I035
- Tanzania: B253
- tropics in general: A020, A059, B082
- USA: B088, B092, B315
- West Africa: B226

Mango

- Pakistan: B187
- Philippines: B188
- Thailand: B318

Millets

- no region specified: B099, G057, H038
- Niger: B100, D001
- Nigeria: B101
- Sahel region: D033, D034, D036, I035
- tropics in general: A059
- West Africa: B226

Oil Palm

- Malaysia: H056
- Nigeria: H054

Onions (also see Vegetables)

- no region specified: B156

Pastures (also see Fodder)

- no region specified: B233, C080, G014, H019
- Dominican Republic: B242
- Latin America: C022
- tropics in general: C106, C107

Pea (also see Legumes)

- USA: B137

Peanut, see Groundnut**Pigeon Pea (also see Legumes)**

- no region specified: E003, G037, H038
- tropics in general: A030

Pineapple

- Hawaii: H057
- tropics in general: A050

Plantains, see Banana**Potato (also see Root and Tuber Crops)**

- no region specified: B052, B053, B054, B055, B056, B057, B059, B060, B059, B263, C072, C073, G015, H024
- Chile: B066, B067, B068
- Colombia: B063
- developing countries in general: B264, B265
- Europe: B062
- India: H016
- Morocco: B070
- Peru: B058
- Senegal: D032
- USA: B064, B065

Rice

- no region specified: B013, B014, B015, B025, B027, B270, C001, C002, C003, C004, C005, C006, C007, C008, C009, C010, C012, C013, C014, C015, C016, C017, C018, C019, C020, G014, G038, G042, G045, H019, H042, H048
- Africa: B007, G028, H042
- Asia: B001, B002, D014, D015
- Bangladesh: H008
- Dominican Republic: B229
- India: B005, B022, H017
- Indonesia: E010
- Ivory Coast: B036
- Latin America: B019, B024, C022, C023, C024, C026, G006
- Malaysia: B020, B028, B029, B030, B032, B033, B034, B035, B234, G047
- Philippines: B008, B023, B330

- Peru: B006
- Sahel region: D033, D034, D036
- South-East Asia: B012
- tropics in general: A018, A020, A05C, A059, B010, E010
- USA: B016
- West Africa: B003, B004, B009, B226, G066, G067, H075

Root and Tuber Crops (also see Cassava, Potato and Sweet Potato)

- Africa: B073
- India: H018
- Nigeria: H052
- tropics in general: A024, A035, A059, B072

Rubber

- India: H044
- Malaysia: H058
- Nigeria: H059
- Sri Lanka: H060

Sorghum

- no region specified: B095, B096, B099, G057, H036, H038
- Argentina: B333
- Dominican Republic: B229
- Nicaragua: B081
- Sahel region: D033, D034, D036, I035
- tropics in general: A059
- USA: B098, B315
- West Africa: B097, B226

Soya Bean (also see Legumes)

- no region specified: B122, G040, G058, G062, H042, H045, I047
- Africa: B117, G028, H042
- Argentina: B133, B333
- Asia: H006
- tropics in general: A030, A059, B130, G065
- USA: B132, B315

Stored Products: no product specified

- no region specified: B245, B246, B250, B255, B256, B258, B259, B260, B262, B267, B338, C090, D012, E012, F004, G020, I039

- Africa: B248, B249
- Cameroon: B275
- Ethiopia: B254
- Philippines: C089
- Tanzania: B252
- tropics in general: B247, B266, B337

Stored Products: beans

- no region specified: C032, C033
- Philippines: B272
- South-East Asia: B272
- Togo: B126

Stored Products: cowpea

- Niger: D009

Stored Products: groundnut

- no region specified: B143

Stored Products: legumes

- no region specified: B270

Stored Products: maize

- no region specified: B270, E011
- Tanzania: B253

Stored Products: potato

- no region specified: B059, B060, B263
- developing countries in general: B264, B265

Stored Products: rice

- no region specified: B015, B270, C003
- Indonesia: E010
- Malaysia: G047
- tropics in general: E010

Stored Products: soya bean

- tropics in general: B130

Sugarcane

- no region specified: B342
- Australia: H010
- Bangladesh: H067
- Central America: H064
- Dominican Republic: B229, B242
- India: H043, H066
- Ivory Coast: B036

- Malaysia: G047
- Mauritius: H065
- South Africa: H063
- Taiwan: B318, H068
- tropics in general: A018, A020, A050

Sweet Potato (also see Root and Tuber Crops)

- Africa: G028, H042
- Asia: H006
- Burundi: D005
- Papua New Guinea: D017
- South-East Asia: B075
- USA: B074

Tea

- no region specified: J040
- India: H073, H074
- Sri Lanka: H069
- tropics in general: A018, A050

Tobacco

- Taiwan: H072
- Zimbabwe: H070

Tomato (also see Vegetables)

- no region specified: B157
- Asia: H006
- Sahel region: D033, D036
- Senegal: D032
- USA: B152

Vegetables (also see Cabbage, Cucurbits, Gomba, Lettuce, Onion, and Tomato)

- no region specified: B158, B270, G012
- Africa: B153
- Asia: H006
- Dominican Republic: B229, B242
- Malaysia: G047
- Martinique: D040
- Mauritius: B155
- Philippines: B330
- Senegal: B146, B147, B148, B159, D032
- tropics in general: A024, A036, G065
- USA: B145

Wheat (also see Cereals)

- no region specified: B102, B103,

B104, B106, D002, D003, G053, H023

- North Africa: B105
- USA: B108

Yuca, see Cassava

General no crops or ten or more crops specified

- Africa: A019, A048, A049, B194, B203, B206, B207, B230, B235, B248, B249, B339, C074, C088, D019, D025, D030, D033, D038, D039, E004, E005, E006, G002, G028, G029, I033
- Argentina: H004
- Asia: G003, H034
- Australia: I043
- Bangladesh: B213, H009
- Brazil: B190, B193, B238, B287, B288, B289, B290, B319, B327, C135, D024, J046
- Cape Verde: D028
- Cameroon: B275
- Central Africa: B324, I034
- Central America: A025, B236, C060, C062, C063, C064, C065, C066, C067, C068, C069, C084, C085, C086, C087, C102, C103, C115, C118, C119, C130, C132, C133, C134, D004, D033, G001, G009, G046, G050, H012, I042
- Colombia: H005, H031
- developing countries in general: A070, B298, J001, J004, J005, J007, J012, J014
- Dominican Republic: B294
- East Africa: B329, D018, I015
- Ethiopia: B254
- Europe: A004, A010, D030, H046, H055, J039
- Guatemala: H003
- India: H015
- Indonesia: A023, J017, J026, J033
- Iran: B228
- Latin America: A038, B328, E002, G064, H040, J015
- Malaysia: B212, B214, B215, B216, B326, C092, F001, F007, F008, H050, J013, J033



- Morocco: A049, B227, B304, B305, B325
- Mexico: B273, B274, B303, I010
- Niger: D037
- Nigeria: B209, B353
- North Africa: B228, H034
- Northern America: A062, C136, F006
- Pacific Islands: B302, B343, G003
- Panama: B328
- Philippines: B210, B293, C089, C093, C094, D010, D029, E009, F003, I037
- Polynesia: B221
- Sahel region: B192, B195, B196, B197, B202, B208, B346, B346, B346, B346, B350, D034, D035, D036, F002, I014
- Senegal: J019
- South America: I008
- South-East Asia: A023, B203, B292, B299, I046, J015
- Southern Africa: I034
- Sudan: B295
- Tanzania: B252, B347
- Thailand: B200
- Togo: B349
- tropics in general: A022, A026, A027, A042, A056, A039, B225, B232, B235, B239, B247, B266, B337, G005, G048, G060, A037, A057, A064, B224, B300, B354, G063, H053, I009
- Turkey: B228
- USA: A006, A033, I003, I004, I005, J006, J007, J016, J048, J049, C134, J039
- West Africa: B237, I038, I040
- Yemen Arabic Republic: B243
- Zambia: B220

Index O: Crops – groups of pests and diseases

General materials dealing with no specific crop or with ten or more crops are listed separately at the end of the index.

Alfalfa (also see Fodder)

- bacterial diseases: B322
- diseases in general: B315, B320
- fungal diseases: B322
- insect pests: B315, B320, B322, B332, B333
- nematode pests: B322
- nutritional deficiencies: B322
- viral diseases: B322
- weeds: B315, B320

Almond

- diseases in general: B186
- pests in general: B186
- nutritional deficiencies: B186
- weeds: B186

Apple

- weeds: B222

Banana

- no pests or diseases specified: A050, G008, G052, H002
- diseases in general: B180, B181
- insect pests: B180, B181
- nematode pests: B180
- nutritional deficiencies: B181
- vertebrate pests: B180
- weeds: B180

Barley (also see Cereals)

- no pests or diseases specified: G053
- diseases in general: B104, B109
- insect pests: B104, B105, B109
- nematode pests: B109
- nutritional deficiencies: B109

Beans (also see Legumes)

- no pests or diseases specified: A030, B122, B272, G014, G018, G027, H019, I035
- bacterial diseases: B117, B125, C042
- diseases in general: B117, B124,

- B125, B127, C036, C037, C038, C039, C040, C042, C043, C044, C045, C046, C048, C049, D032
- fungal diseases: B117, B125, C036, C037, C040, C043, C044, C045, C046, C048
- insect pests: B031, B123, B125, B126, B127, B129, B154, C032, C033, C034, C035, C076, D032
- nematode pests: B125, C047
- nutritional deficiencies: B125, B127
- viral diseases: B117, B125, C038, C039
- weeds: C030

Cabbage (also see Vegetables)

- no pests or diseases specified: G065, H006
- caterpillar pests: D033
- diseases in general: B150, C078
- insect pests: B149, B150, C078, D033
- nutritional deficiencies: B150
- weeds: B150

Cassava (also see Root and Tuber Crops)

- no pests or diseases specified: H019, H042, G010, G014, G028
- bacterial diseases: B043, B047, C055
- diseases in general: B041, B043, B044, B045, B047, B050, C054, C055, D032, D034
- fungal diseases: B043, B047, C054, C055, D034
- insect pests: B041, B042, B044, B045, B046, B047, B049, B050, C056, C057, C058, D008, D032, E001
- mealybugs: B046, D008, E001
- mite pests: B042, B046, B047, B049, C053, D008
- nutritional deficiencies: B040, B041, B044, C050, C052
- viral diseases: B043, C054, C055, C058, D034

- weeds: B048, B226, C059

Cereals (also see Barley and Wheat)

- no pests or diseases specified: A024, A059, H035, H051
- bacterial diseases: B107, B316
- diseases in general: B107, B315, B316
- fungal diseases: B107, B316
- insect pests: B315, B316, B333
- mite pests: B316
- nematode pests: B316
- viral diseases: B107, B316
- weeds: B242, B315

Chickpea (also see Legumes)

- no pests or diseases specified: A030, G035, H038
- diseases in general: B134
- nutritional deficiencies: B134

Chili

- diseases in general: C079
- pests in general: C079

Citrus

- no pests or diseases specified: A050, C070
- diseases in general: B182, B183, B184, B185
- insect pests: B182, B183, B184, B185
- nematode pests: B182, B183
- nutritional deficiencies: B183
- vertebrate pests: B183
- weeds: B182

Cocoa

- no pests or diseases specified: A018, A020, A050, H027, H028, H039
- weeds: B229

Coconut

- no pests or diseases specified: A018, A050, H029

Coffee

- no pests or diseases specified: A018, A020, A050, H013, H030, H039, J040
- rust disease: J047

Corn, see Maize

Cotton

- no pests or diseases specified: A018, A020, H014, H047, J038
- bacterial diseases: B172
- boll worms: B166, D007, D033
- diseases in general: B163, B167, B168, B169, B172
- fungal diseases: B172
- insect pests: B160, B162, B163, B164, B165, B166, B167, B168, B169, B170, B172, B173, B174, B333, B346, D006, D007, D033
- mite pests: B167, B173
- nematode pests: B167, B172
- nutritional deficiencies: B168, B172
- vertebrate pests: B167
- viral diseases: B172
- weeds: B167, B226, B242
- whiteflies: B170, D007

Cowpea (also see Legumes)

- no pests or diseases specified: A030, B136, G028, G062, H036, H042
- bacterial diseases: B117, B128
- bruchid pests: D036
- caterpillar pests: D036
- diseases in general: B117, B128, B135
- fungal diseases: B117, B128
- insect pests: B115, B128, B135, C077, D009, D033, D036
- nutritional deficiencies: B128
- thrips pests: D033
- viral diseases: B117, B128
- weeds: B128

Cucurbits (also see Vegetables)

- diseases in general: B316, D032
- insect pests: B316, D032
- mite pests: B316
- nematode pests: B316
- nutritional deficiencies: B316

Fodder (also see Alfalfa and Pastures)

- diseases in general: C083

Gomba (also see Vegetables)

- insect pests: B149

Groundnut (also see Legumes)

- no pests or diseases specified: A030, A059, B122, G034, H038
- aphids: D033
- bacterial diseases: B142
- diseases in general: B138, B139, B140, B142, D034
- fungal diseases: B139, B140, B142
- insect pests: B138, B142, B143, D033
- leaf spot: B140
- nematode pests: B138, B142, B323
- nutritional deficiencies: B142
- rust diseases: B139
- vertebrate pests: B138
- viral diseases: B142, D034
- weeds: B138, B226

Jute

- no pests or diseases specified: H007, H049

Legumes (also see Beans, Chickpea, Cowpea, Groundnut, Lentils, Pea, Pigeon Pea, and Soya bean)

- no pests or diseases specified: A024, A030, A035, A059, B122, G024, G062
- bacterial diseases: B117, B316
- diseases in general: B116, B117, B119, B120, B316, G047
- fungal diseases: B117, B316
- insect pests: B115, B116, B118, B120, B270, B316, B330, G047
- nematode pests: B116, B316
- nutritional deficiencies:
- vertebrate pests: B116
- viral diseases: B117, B316
- weeds: B116, B120, B229, B242

Lentil (also see Legumes)

- no pests or diseases specified: G044

Lettuce (also see Vegetables)

- diseases in general: B150
- pests in general: B150
- nutritional deficiencies: B150
- weeds: B150

Lupine

- diseases in general: B317

- insect pests: B317

Maize

- no pests or diseases specified: A020, A059, E011, G028, H023, H042, I035
- bacterial diseases: B080, B088, B092, B316
- diseases in general: B080, B083, B084, B086, B088, B092, B093, B315, B316, D034
- fungal diseases: B080, B088, B092, B316, D036
- insect pests: B036, B081, B082, B083, B084, B085, B086, B087, B088, B090, B093, B253, B270, B315, B316, B330, B333, C075, H036
- nematode pests: B084, B088, B316
- nutritional deficiencies: B086, B088, B089
- rodent pests: B086
- viral diseases: B080, B088, B092, B316, D034
- weeds: B084, B086, B093, B226, B229, B315

Mango

- diseases in general: B188
- insect pests: B187, B188, B318
- slugs and snails: B318
- weeds: B318

Millets

- no pests or diseases specified: A059, G057, H038, I035
- bacterial diseases: B099
- fungal diseases: B099, D034, D036
- insect pests: B100, B101, D001, D033, D036
- stalk and stem borers: D001, D033, D036
- viral diseases: B099
- weeds: B226

Oil Palm

- no pests or diseases specified: H054, H056

Onions (also see Vegetables)

- diseases in general: B156

- pests in general: B156
- weeds: B156

Pastures (also see Fodder)

- no pests or diseases specified: G014, H019
- insect pests: C080, C082
- weeds: B233, B242, C106, C107

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- diseases in general: B137
- nutritional deficiencies: B137
- pests in general: B137

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Pigeon Pea (also see Legumes)

- no pests or diseases specified: A030, G037, H038
- caterpillar pests: E003

Pineapple

- no pests or diseases specified: A050, H057

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Potato (also see Root and Tuber Crops)

- no pests or diseases specified: B263, B264, B265, G015, H016, H024
- bacterial diseases: B052, B053, B055, B057, B064
- diseases in general: B052, B053, B054, B055, B056, B057, B062, B064, B065, B069, C073, D032
- fungal diseases: B052, B053, B055, B057, B064
- insect pests: B054, B055, B057, B058, B059, B060, B062, B063, B064, B065, B070, C072, C073, D032
- nematode pests: B052, B053, B054, B055, B057, B064, B065, B066, B067, B068, C073
- nutritional deficiencies: B055, B064, B065
- potato tuber moth: B057, B059, B060, B070
- viral diseases: B052, B053, B055, B057, B064, B069
- weeds: B065

Rice

- no pests or diseases specified: A018, A020, A050, A059, B001, B014, B025, B035, C002, G006, G014, G028, G038, G042, G066, G067, H008, H017, H019, H042, H048, H075
- bacterial diseases: B004, B023, B027, B029, C006
- bird pests: E010
- diseases in general: B002, B004, B007, B008, B010, B015, B016, B019, B023, B027, B030, B032, C001, C007, C008, C010, C026, D034, G045, G047
- fungal diseases: B004, B023, B27, B030, C007, D034
- insect pests: B002, B003, B005, B006, B007, B008, B010, B013, B015, B016, B019, B023, B024, B025, B028, B033, B036, B270, B330, C001, C003, C012, C013, C014, C015, C016, C017, C018, C019, C020, C023, C024, D014, D015, D033, D036, E010, G045, G047
- leaf and planthoppers: B005, B025, B033, C015, C018, C020
- nematode pests: B015, B016, B027
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- rodent pests: B008, E010, G047
- stem and stalk borers: B003, B036, C014, C018, C020, C024, D033, D036
- tungro virus: B020, B022, B032, B033, B034
- vectors of viral diseases: B020, B022, B025, B032, B033, C010, C015
- vertebrate pests: B016
- viral diseases: B004, B020, B022, B023, B025, B027, B032, B033, B034, C008, C010, C015, D034, G047
- weeds: B002, B007, B008, B009, B010, B012, B015, B016, B226, B229, B234, C001, C004, C005, C022, G045, G047

Root and Tuber Crops (also see Cassava,

Potato and Sweet Potato)

- no pests or diseases specified: A024, A035, A059, H018, H052
- diseases in general: B072, B073
- insect pests: B072, B073
- mite pests: B072
- nematode pests: B072
- weeds: B072

B266, B267, B337, C090, I039

- diseases in general: B245
- fungal diseases: B254, C089,
- insect pests: B245, B247, B249, B250, B252, B254, B255, B262, B275, B338, C089, D012, E012, F004, G020
- mite pests: B250, B262, D012,
- rodent pests: B245, B249, C089, G020

Rubber

- no pests or diseases specified: H044, H058, H059, H060

Stored Products: beans

- no pests or diseases specified: B272
- insect pests: B126, C032, C033

Sorghum

- no pests or diseases specified: A059, G057, H036, H038, I035
- bacterial diseases: B097, B098, B099
- diseases in general: B097, B098, B099, B315, D034, D036
- fungal diseases: B097, P098, B099, D034, D036
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- insect pests: B081, B095, B096, B098, B315, B333, D033, D036
- mite pests: B095
- nematode pests: B098
- nutritional deficiencies: B098
- viral diseases: B097, B098, B099
- weeds: B097, B226, B229, B315

Stored Products: cowpea

- insect pests: D009

Stored Products: groundnut

- insect pests: B143

Stored Products: legumes

- insect pests: B270

Stored Products: maize

- no pests or diseases specified: E011
- insect pests: B253, B270

Stored Products: potato

- no pests or diseases specified: B263, B264, B265
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Soya Bean (also see Legumes)

- no pests or diseases specified: A030, A059, B122, B130, G028, G040, G058, G062, G065, H006, H042, H045, I047
- bacterial diseases: B117, B132
- diseases in general: B117, B132, B315, G058
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- insect pests: B132, B133, B315, B333
- nematode pests: B132
- nutritional deficiencies: B132
- viral diseases: B117, B132
- weeds: B315

Stored Products: rice

- insect pests: B015, B270, C003, E010, G047

- rodent pests: B015, E010

Stored Products: soya bean

- no pests or diseases specified: B130

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- no pests or diseases specified: A018, A020, A050, H010, H043, H063, H064, H065, H066, H067, H068
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- no pests or diseases specified: G028, H006, H042
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- diseases in general: B074
- insect pests: B074, B075, D005, D017
- nematode pests: B074
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- weevils: B075, D017

Tea

- no pests or diseases specified: A018, A050, H069, H073, H074, J040

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- no pests or diseases specified: H070, H072

Tomato (also see Vegetables)

- no pests or diseases specified: H006
- diseases in general: B152, B157, D032
- insect pests: B152, B157, D032, D033, D036
- nematode pests: B157
- nutritional deficiencies: B152
- weeds: B152, B157

Vegetables (also see Cabbage, Cucurbits, Gomba, Lettuce, Onions, and Tomato)

- no pests or diseases specified: A024, A036, B148, B158, G012, G065, H006
- bacterial diseases: B145, D040
- diseases in general: B145, B146, B153, B155, B159, D032, D040, G047
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- insect pests: B146, B153, B155, B159, B270, B330, D032
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- bacterial diseases: B108
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- fungal diseases: B108, D002, D003
- insect pests: B102, B103, B104, B105, B106, B108
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- identification and control of diseases: B137

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- identification of diseases: B052, B053, B054, B055, B057, B062, B064, B069, C073, D032
- identification of insect pests: B054, B055, B057, B058, B062, B064, B070, C073, D032
- identification of nematode pests: B052, B053, B054, B055, B057, B064, B066, B067, C073,
- identification of nutritional deficiencies: B055, B064
- insect pest control: B057, B059, B060, B062, B063, B065, B070, D032
- integrated pest management: B059, B060, B063, B065
- natural enemies of insect pests: B058
- nematode control: B052, B053, B055, B057, B064, B066, B067, B068
- plant-derived pesticides: B058
- resistant varieties to diseases: B062
- resistant varieties to insect pests: B062
- resistant varieties to nematode pests: B066
- sampling for pests: B066, C072
- stored product protection: B059, B060, B263, B264, B265

Rice

- no methods specified: C002, G006, G014, G028, G038, G042, G045, G066, G067, H008, H017, H019, H048, H075
- biological control in general: A059, B008, G046, H042
- biological control of insect pests: B001, B005, B006, B008, B028, B330, C020, C024, D014, D015, G047
- chemical control in general: A020, A059, B015, G047
- chemical control of diseases: B002, B004, B007, B008, B015, B030, B032, C010, D034, D036
- chemical control of insect pests: B002, B003, B005, B006, B007, B008, B015, B024, B028, C003,

- C012, C014, C015, C024, D033, D036, E010, G047
- chemical control of rodents: B002, B008, B015
- chemical control of weeds: B002, B007, B008, B009, B015, B226, B234, C005, G047
- cultural control in general: A059, B015, G047
- cultural control of diseases: B004, B007, B008, B015, B022, B023, B029, B030, B032, B033, B034
- cultural control of insect pests: B003, B005, B006, B007, B008, B015, B023, B330, C019, C024, D033, G047
- cultural control of rodents: B008, B015
- cultural control of weeds: B007, B008, B015, B226, G047
- disease control: B002, B004, B007, B008, B015, B022, B023, B027, B029, B030, B032, B033, B034, C006, C007, C010, C026, D034, D036
- economic thresholds in general: B008
- economic thresholds for insect pests: B006, B008, B024, C017
- identification, miscellaneous: A050, A059, B001, B015, B027
- identification of diseases: B004, B010, B015, B019, B020, B022, B023, B025, B027, B029, B030, B032, B033, B034, C001, C006, C007, C008, C010, C026, D034, D036, G047
- identification of insect pests: B003, B005, B010, B015, B019, B023, B028, B036, C001, C003, C013, C014, C015, C016, C023, C024, D014, D015, D033, D036, G047
- identification of nutritional deficiencies: B019, B027, C009
- identification of rodents: B015
- identification of weeds: B009, B010, B012, B015, B226, B229, B234, C001, C004, C022, G047
- insect pest control: A018, B001, B003, B005, B006, B007, B008, B015, B023, B024, B036, B330,

- C003, C012, C014, C017, C019, C024, D033, D036, E010, G047
- integrated pest management: A020, B002, B008, B014, B016, B022, B024, B025, B035, C008
- natural enemies of insect pests: B001, B003, B008, B023, B024, B028, B330, C020, D014, D015
- nematode control: A050, B015, B027
- pesticides and pesticide application: A059, B013, C012
- physical control: A059, B033, B330
- plant-derived pesticides: B270, B330
- rat control: B002, B008, B015, G047
- resistant varieties to diseases: B004, B008, B022, B023, B029, B030
- resistant varieties to insect pests: B008, B023, C013, C018
- safe and proper use of insecticides: B013, C012
- sampling in general: A050, E010
- sampling for insect pests: B006, B024, C017, E010
- stored product protection: B015, B270, C003, E010, G047
- traditional practices: B270, B330
- weed control: A059, B002, B007, B008, B009, B010, B012, B015, B226, B229, B234, C001, C004, C005, C022, G047

Root and Tuber Crops (also see Cassava, Potato and Sweet Potato)

- no methods specified: H018, H052
- chemical control of pests and diseases: A024, A035, A059, B072
- cultural control of pests and diseases: A059, B072
- identification of pests and diseases: A024, A059, B072, B073
- weed control: A059, B072

Rubber

- no methods specified: H044, H058, H059, H060

Sorghum

- no methods specified: G057, H036, H038, H035

- biological control: A059, B095, B315, B333
- chemical control of diseases: B097, B098, D034, D036
- chemical control of insect pests: B081, B095, B098, B315, B333, D033, D036
- cultural control of pests and diseases: A059, B095, B333, D033, D034
- economic thresholds: B095, B315, B333
- identification of diseases: A059, B097, B098, B099, B315, D034, D036
- identification of insect pests: A059, B095, B096, B098, B315, B333, D033, D036
- identification of weeds: A059, B097, B226, B229, B315
- integrated pest management: B081, B315
- pesticide application methods and techniques: A059, B081
- sampling for insect pests: B315, B333
- weed control: A059, B097, B226, B229, B315

Soya Bean (also see Legumes)

- no methods specified: G028, G040, G058, G062, G065, H006, H042, H045, H047
- biological control: A059, B315, B333
- chemical control of pests and diseases: A059, B133, B333
- cultural control of pests and diseases: A059, B333
- disease control: A030, B117, B130, B132, B315
- economic thresholds: B133, B315, B333
- identification of pests and diseases: A059, B117, B132, B315, B333
- insect pest control: A059, B130, B132, B133, B315, B333
- integrated pest management: B133, B315
- nematode control: B130, B132
- resistant varieties against diseases: A030
- sampling for insect pests: B315, B333
- weed control: A059, B315

Sugarcane

- no methods specified: H010, H043, H063, H064, H065, H066, H067, H068
- identification of diseases: B342
- identification of insect pests: B036, B318
- identification of weeds: B229, B242, B318
- insect pest control: A018, B036, B318, G047
- integrated pest management: A020, B318
- nematode control: A050
- weed control: B229, B242, B318

Sweet Potato (also see Root and Tuber Crops)

- no methods specified: G028, H006, H042
- cultural control of insect pests: B075, D005
- disease control: B074
- identification of insect pests: B074, B075, D005, D017

Tea

- no methods specified: H069, H073, H074
- insect pest control: A018
- nematode control: A050
- pesticide use and misuse: J040

Tobacco

- no methods specified: H070, H072

Tomato (also see Vegetables)

- no methods specified: H006
- chemical control of insect pests: D032, D033, D036
- disease control: B157, D032
- identification of pests and diseases: B157, D032, D033, D036
- integrated pest management: B152

Vegetables (also see Cabbage, Cucurbits, Gomba, Lettuce, Onion, and Tomato)

- no methods specified: G012, G065, H006
- biological control of insect pests: B153, B330

- chemical control in general: A024, B158
- chemical control of diseases: B146, B153, B155, B159, D032, D040, G047
- chemical control of insect pests: B146, B153, B155, B159, D032
- chemical control of weeds: B155, B242, G047
- cultural control of diseases: B153, D040
- cultural control of insect pests: B153, B330
- disease control: A036, B146, B153, B155, B159, D032, D040, G047
- identification, miscellaneous: A024, A036, B147, G047
- identification of diseases: B145, B146, D032, D040
- identification of insect pests: B146, D032
- identification of weeds: B229, B242, G047
- insect pest control: A024, B146, B153, B155, B159, B330, D032
- natural enemies of insect pests: B330
- nematode control: B147
- pesticides and pesticide application: B146, B148
- physical control of insect pests: B153, B330
- plant-derived pesticides: B153, B270, B330
- prevention of diseases: B153, D040
- safe and proper use of insecticides: B148
- stored product protection: B270
- traditional practices: B270, B330
- weed control: B229

Wheat (also see Cereals)

- no methods specified: G053, H023
- disease control: B106, B108
- identification of diseases: B102, B104, B106, B108, D002, D003
- identification of insect pests: B102, B103, B104, BB105, B106, B108
- identification of nutritional deficiencies: B103, B108
- insect pest control: B106, B108

Yuca, see Cassava

General -- no crops or ten or more crops specified

- agricultural experimentation: B344, B352, C096, C097, C098
- biological control in general: A001, A002, A004, A007, A009, A010, A012, A014, A015, A016, A017, A019, A022, A027, A034, A059, F003, H046, H055, I005, I006, J012, J036,
- biological control of insect pests: B335, B346, C063, F004, H020, H053
- biological control of weeds: B221, B223, H020
- chemical control in general: A001, A002, A003, A004, A007, A010, A015, A019, A020, A022, A024, A025, A027, A034, A053, A059, A063, A064, A065, A067, B246, B248, C090, D037, F003, H062
- chemical control of diseases: B245, B254, B324, B325, C089, D030
- chemical control of insect pests: B245, B250, B252, B254, B255, B300, B324, B325, B329, C089, D012, D013, D030, D033, D036, D038, E002, E012, F002, F004
- chemical control of locusts and grasshoppers: B190, B207, D026, D027, D033, F002
- chemical control of mite pests: B250, B325, D012, D033
- chemical control of rodents: B210, B211, B213, B214, B215, B245, B325, C094, C095, C089
- chemical control of weeds: B220, B221, B223, B226, B230, B232, B238, B242, D004, D034
- control of bacterial diseases: A042, A043, A044, A045, A046
- control of bird pests: B325, B340, B346, B353, C089, D033, D034, F002, I038
- control of locusts and grasshoppers: B194, B196, B199, B203, B204, D023, D025, E004, E006, I008, I009, I015, I034, I038, I040, I042, I043
- control of viral diseases: A040, A047, A048, A049, B354
- crop hygiene: A001, B215, C089
- crop loss assessment: A019, A028, A034, A070, A072, B256, B259, D038
- crop rotation: B223
- cultural control in general: A002, A004, A007, A015, A019, A027, A034, A059, G030, J036
- cultural control of diseases: B324
- cultural control of insect pests: B300, B324, D033
- cultural control of weeds: B220, B221, B223, B226, D004, D034
- disease control (also see 'control of bacterial diseases' and 'control of viral diseases'): A026, A028, A029, A032, A033, A034, A035, A037, A038, A039, A040, A042, A043, A044, A045, A046, A047, A048, A049, B245, B254, B324, B325, B346, C084, C087, C089, D030, G016, G020, G022, G032, I004, I006, I009, I014, I033, I037, I039
- economic thresholds: A019, B328, C066
- forecasting: A004, A019, A027, A028, A029, A034, A069, B205, B206, B348
- identification, miscellaneous: A022, A023, A024, A025, A026, A032, A033, A037, A038, A040, A042, A043, A044, A045, A046, A047, A048, A049, A052, A054, A057, A059, A060, A076, A039, B325
- identification of bird pests: B325, B353, C089, D033, D034, F002, F004
- identification of diseases: B324, B325, B349, B354, C087, C089, D030, F004, H026, I033
- identification of insect pests: B247, B250, B252, B262, B324, B325, B329, B339, B346, C074, C089, D012, D013, D018, D030, D033, D036, D038, E002, F002, F004, H022, I033
- identification of locusts and grasshoppers: B190, B192, B193, B194, B195, B196, B197, B198, B200, B202, B203, B204, B207, B208, D019, D023, D024, D025, D026, D027, D028, D033, E005, F002
- identification of mite pests: B250, B262, B325, D012, D033, H022
- identification of nematode pests: B325, B343, C086, H025
- identification of rodent pests: B210, B211, B213, B325, C089, C093, D029, F004

- identification of weeds: B220, B221, B223, B224, B225, B226, B227, B228, B229, B230, B235, B236, B237, B238, B239, B242, B243, C104, C105, D004, D034, F004
- insect pathogens (microbial control): A010, A013, C067
- insect pest control: A008, A014, A017, A018, A019, A022, A024, A025, A026, A074, A075, B245, B250, B252, B254, B255, B273, B300, B324, B325, B329, B335, B338, B345, B346, C062, C063, C074, C089, C117, D012, D013, D030, D033, D036, D038, F002, E012, F002, F004, G016, G033, H020, H053, I009, I015, I033
- integrated pest management: A002, A004, A005, A006, A007, A008, A009, A010, A015, A016, A017, A019, A020, A025, A027, A070, B213, B319, C064, C067, C069, C092, F003, G001, G009, G020, G046, G050, H003, H012, I003, I007, I044, J004, J006, J012, J015, J036
- natural enemies of insect pests: A009, A010, A012, A014, A017, B329, B335, B345, C063, H020, H022, H053, H055
- nematode control: A040, A052, A053, A054, C085, C086, H025
- pesticides in general: B298, B299, B338, C110, C111, C135, D037, G020, G023, G026, H062, I010, J012, J041
- pesticide application methods and techniques: A066, B293, B303, B346, C112, C116, C117, C118, C119, C120, C122, C128, F004, H062
- pesticide formulation: A062, A063, A066, A067, A068, B207, B271, B293, C113, C114, C115, D039, E007, F005
- pesticide misuse and overuse: J002, J003, J004, J005, J008, J010, J011, J013, J014, J015, J017, J018, J019, J025, J026, J031, J032, J035, J036, J037, J039, J043, J044, J045, J046, J048, J049
- plant-derived pesticides: B254, B258, B270, B271, B273, B274, B275, F003, G030, I019
- prevention: A003, B326, B354, C089, C095, C135, F004
- rat control: B210, B212, B214, B215, B216, C092, C094, C095, D010, E009, F001, F007, G020
- resistance against pesticides: A066, B247, C132, C133, J004, J007, J025, J035, J036, J042
- safe and proper use of pesticides: A025, A027, A066, A067, B281, B284, B290, B292, B293, B295, B297, B302, C089, C090, C122, C126, C128, C130, C137, D020, D026, D027, D037, I023, I032, I055, J001, J006, J009, J016, J033
- safety precautions in handling pesticides: A003, A068, B211, B280, B282, B283, B285, B286, B287, B288, B289, B290, B293, B294, B296, C090, C122, C123, C124, C125, C127, C129, C134, C135, C136, C137, D016, D022, F004, F006, I023, I032, I055, J001, J002, J003, J009, J016, J030, J033
- sampling in general: A007, A052, A069, A072, B256, B328, B348, B350, C093, F003
- sampling for insect pests: B190, B194, B207, C065, D025, D038, E012
- stored product protection in general: B245, B246, B248, B249, B254, B256, B258, B259, B260, B266, B267, B337, C089, C090, G020, I039
- stored product protection against insect pests: B245, B247, B249, B250, B252, B254, B255, B262, B275, B338, C089, D012, E012, F004, G020
- toxicity of pesticides: A001, A007, A027, A062, A063, A064, A065, A066, B271, B273, B293, B302, B303, C110, C111, C132, C136, D016, D037, D039, F005, F006, I023
- traditional practices: B258, B266, B275, B327, F004, G030
- traps and trap crops for insect pests: B275, D038, F004
- traps and trap crops for rodent pests: C094, C095, F004
- weed control: A003, A010, A017, A026, A056, A057, A058, A059, A060, B227, B229, B232, B236, B240, B346, C100, C101, C102, C104, C104, C105, C110, C111, C112, C113, C114, C116, G016, G020, G022, G032, H004, H031, I009, I032, I04

Although much information is available about Integrated Pest Management, it is not readily accessible to those working in tropical agriculture. This comprehensive catalogue has been compiled in response to the need for greater access to training and extension materials in tropical and subtropical regions. Drawn from sources worldwide, the catalogue is designed to assist all those working in crop protection to develop and implement Integrated Pest Management systems.

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