

Root Cellars Sizing
- DRAFT -
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Being able to store food is a critical link in home food production systems. But how much room do you need? The short answer is: as much space as you can. Especially since secondary uses for tornado shelter and summer cool spot will be extremely valuable.

But what should you expect for the minimal amount of space needed? The book "Forgotten Arts" volume three recommends a 10'x15' size floor space for a typical family. The classic book "Root Cellaring" by Mike & Nancy Bubel does not discuss sizing much, but offers homestead examples built in the early 1900's that were 10'x12'x6' and 12'x'14'x7'.

In Central Texas sweet potatoes are an excellent high calorie crop. Sunflower seeds, pecans, peanuts, along with dried and canned goods are bulky items most likely to be stored in a cellar.

Below are some volume estimates for various food supplies.

Sweet Potatoes:

5 lbs. of unpacked sweet potatoes measured 16"x10"x2.5" which is 400 cu.in., or 0.23148 cu.ft. These are raw sweet potatoes with no packing. For actual storage, the potatoes are typically packed in hay and stacked in boxes or crates. From my experience, the volume necessary after packing materials are included is about three times. For example, 5 lb. of packed sweet potatoes would take approximately $3 \times 400 \text{ cu.in.} = 1,200 \text{ cu. in.}$ or 0.6944 cu.ft.

1 lb. of packed sweet potatoes requires 240 cu.in. or 0.1389 cu.ft.

Sweet potatoes have 375 kCal per lb. (see John Jeavon's "How To Grow More Vegetables").

If a person needs 2200 calories per day, then the total caloric need for a year is

2,200 kcal x 365 days = 803,000 kCal is the total caloric need for one person for a year.

The space to store a person-year worth of calories in sweet potatoes is:

$$\frac{803,000 \text{ kCal} / \text{yr} * 0.1389 \text{ cu.ft.} / \text{lb.}}{375 \text{ kCal} / \text{lb.}} = 297 \text{ cu.ft. storage space needed.}$$

This is a little less than 1 cu.ft. of space per day.

Pecans:

Pecans and peanuts store in-shell for much longer than hulled.

50lb. bag of pecans (in-shell) measured 22"x30"x10".