

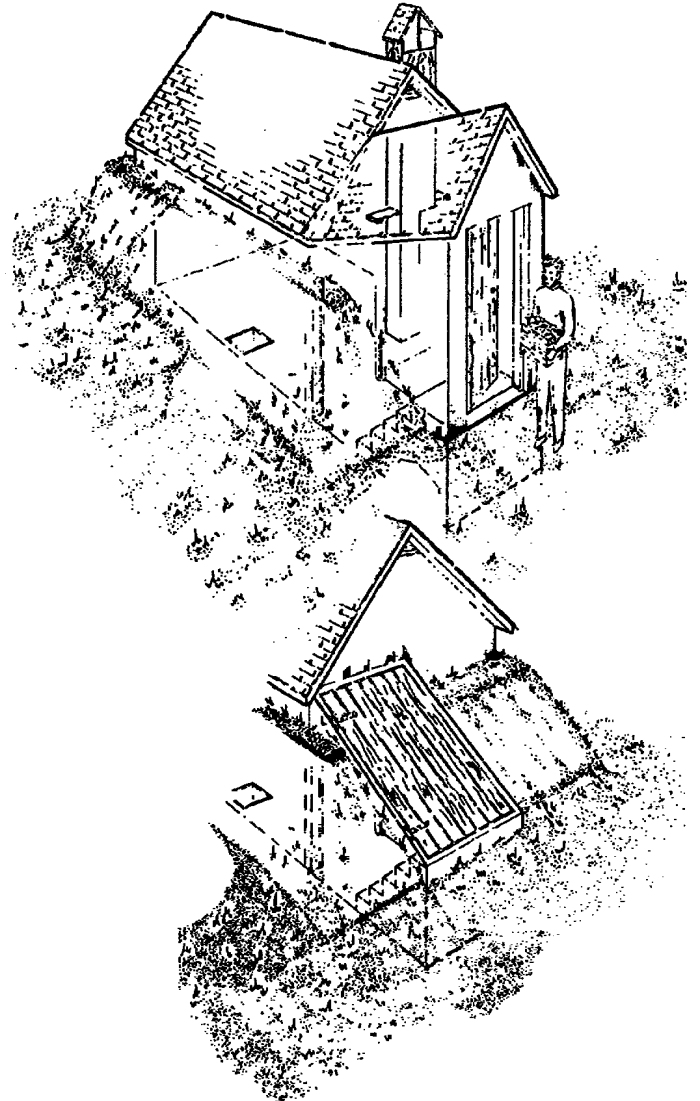


SMALL ROOTCELLAR

PLAN 6321 REVISED 2000:04

This leaflet gives information for building a small rootcellar for home storage of vegetables. Although there are a number of variations and methods of construction for root cellars, this remains one of the best methods of storing produce throughout the winter. A homeowner can consider an insulated cold room in the basement as an alternative.

Build the storage partly below ground with the earth banked up at the walls. A hillside location is best, provided surface and groundwater is drained away. Two types of entrance stairway enclosures are shown on the cover page.



Recommended storage conditions for vegetables:

Produce	Temperature (°C)	Relative Humidity
Cabbage, carrots, cauliflower, red beets, parsnip, rutabaga	0 - 2	Very high - 95%
Potatoes	Seed: 4 - 5, Table 6, Process: 8	High: 90 - 95%
Onions	2-4; (cure first at 25 - 35)	Med: 55 - 75°
Squash, marrow, pumpkin	10 - 13	Med: 55 - 75%

COMPLETE INSTRUCTIONS

Canada Plan Service, a Canadian federal/provincial organization, promotes the transfer of technology through factsheets, design aids, and construction drawings that show how to plan and build modern farm structures and equipment.

For more information, contact your provincial agricultural engineer or extension advisor.

CONSTRUCTION DETAILS: This plan provides construction details for a 3.0 x 4.2 m (10 x 14ft) rootcellar storage. Two roof types are shown; a permanent gable roof with insulated ceiling, and a cheaper earth-covered straw roof (flax straw preferred). The latter performs very well, but will likely require earlier replacement.

Walls:

Walls may be of concrete, reinforced concrete block, or preserved wood (PWF). Insulate concrete walls to at least 600 mm (2 ft) below ground level with closed-cell rigid foam insulation which in turn is protected above grade by treated plywood, steel mesh cement plaster, or similar approved method. Attachment of the insulation and protective covering should be by a construction adhesive that is recommended for the insulation. A better alternative for concrete walls is to tack the foam insulation to the inside face of the outer form with finishing nails. The concrete bonds to the polystyrene and the finishing nails then pull through the insulation.

Another good structure is a preserved wood foundation (PWF). Use pressure treated 2 x 8 studs spaced 300 mm (12 in) centres and covered outside with 15 mm pressure-treated plywood. Use only preservative treated wood that is CSA approved and stamped 'PWF'. Insulate the wall spaces with friction-fit fibreglass insulation, and apply a 8-mil vapour barrier to the inside. Sheath the inside with untreated boards or plywood; vegetables should not be stored in direct contact with preserved wood.

Another excellent construction system is insulated concrete foam forms (ICF). These are foam insulation block systems filled with reinforced concrete. Several brands are available. Follow manufacturers recommendations the same as a basement.

For ceiling insulation in a gable-roof storage, provide at least the following insulation value:

Outdoor temp: -35°C, RSI-6.5 (R-37)

Outdoor temp: -25°C, RSI-5.5 (R-31)

Insulation may be batts, cellulose or other loose-fill above a well-sealed polyethylene vapour barrier. A tight, insulated door is required for good temperature control.

Management Information:

More complete storage information is available from other publications; however, the following summary relates well to the operation of this type of rootcellar.

The table on the cover gives storage conditions for the common vegetables. Most store best near 0°C;

however potatoes should not be stored cooler than 5°C because at a lower temperature some potato starch converts to sugar. As a result, the potato may darken after boiling, or burn when deep fried. In practice, provided the humidity is kept high, most other vegetables will store reasonably well at 5°C; thus this is the best compromise for a one-room storage. During most of the winter the storage will operate at ground temperature which is near 5°C.

Ideally, a larger storage might have two compartments; one held at 6°C for potatoes, the other at 0°C for other vegetables. For a small storage like this, two compartments are not practical.

Potatoes can be stored in bulk on the earth floor. Other produce will store best in slatted bins, though beets and rutabaga can also be piled directly on the floor. Onions, marrow, pumpkin and squash do not store well in high humidity and thus will store better in a cool corner of the basement.

A rootcellar is often too warm in the fall when the soil is warm. Ventilation is required to cool the cellar and remove heat from the produce. The vent flue is therefore opened at night or during cold weather. Open the door if more rapid cooling is required. After the cellar has cooled sufficiently the vents can be loosely plugged with a sack or batts for most of the winter. Always use a reliable thermometer in the storage so you know the storage temperature.

A double ventilation flue provides the small amount of ventilation that is required. The most practical is a flue of 6 in. plastic sewer pipe wrapped with pipe or duct insulation. Walls of storage bins should be tight-slatted to allow a small amount of air through the pile. Covering with plastic reduces shrinkage loss; experiment with amount of cover that gives best results.

Storage is improved if vegetables can be harvested when soil and produce are cool, such as a cold day or early morning. Snow shovelled into the cellar is excellent for both cooling and humidifying. It is good practice to soak the floor for several days prior to harvest to keep the humidity high.

The storage should be thoroughly cleaned after each season. To control disease, it is advised to disinfect (scrub) contact surfaces with an approved fungicide, or strong bleach solution.