

## OUTDOOR VEGETABLE STORAGE

Vegetables that require cool to cold, moist surroundings can be stored in any one of several types of outdoor storages. Earthen storages, from simple mounds to more elaborate root cellars, provide naturally cool, moist, dark, and even conditions for a fairly long period of time. All outdoor storages have the disadvantage of sometimes being inaccessible and are often subject to damage by rodents and other vermin.

To be successful, any outdoor storage must have thorough drainage. A storage into which water backs up or settles will not keep fruit and vegetables well and may result in their total loss. In soils that are not naturally well-draining, provision must be made for the removal of excess water.

Some vegetables can be stored in the garden where they grew, or in mounds, pits, or buried containers. Usually the produce must be insulated for protection from frost and fluctuating temperatures. Insulating materials commonly used are straw, hay, dry leaves, corn stalks or wood shavings, and some soil. Be sure that the insulating materials used are not contaminated with pesticides.

### In-Garden Storage

It is possible to leave some root crops, such as carrots, turnips, and parsnips in the garden where they grew for part or all of the winter. The secret of winter gardening is to take advantage of late-maturing varieties of vegetables that can tolerate a fair amount of freezing, then help them along with careful mulching.

When the ground begins to freeze in the late fall, cover them with a heavy mulch of straw, hay, or dry leaves. The produce can be difficult to dig out of the frozen ground, but it will not be adversely affected by heavy frosts.

Other crops, such as beets, cabbage, Chinese cabbage, cauliflower, celery, endive, lettuce, kale, leeks, and onions can withstand the early frosts and can be stored for several weeks under a heavy mulch.

Parsnips, horseradish and turnips are improved in flavor by light freezing (at temperatures between 28-34 ° F, starch will change to sugar). Mulching will make mid-winter digging easier.

To assure a large supply of these frost-resistant vegetables, plant in mid-summer so they will mature in late fall, and in a location where they will be accessible for winter removal.

## **Insulating Materials**

Straw, dry leaves, wood shavings, hay, corn stalks, and soil may be used.

## **Surface Storage**

Mounds or pits are a very economical way to store cabbage and root crops (carrots, beets, celeriac, kohlrabi, rutabagas, turnips, and winter radishes). Root crops withstand autumn frosts and are better off in the garden until nights are cold enough to permit proper storage temperatures.

Select a well-drained location, make a shallow excavation (from 6-10" deep) and line it with insulating material. Placing the produce partly below the surface ensures better frost protection but increases the danger of excess water. A ditch around the perimeter of storages will help to remove surface water.

The vegetables should be placed in storage just before freezing weather. The mound or pit should be covered with insulating material early in the morning after being cooled by the night air. The final covering of soil is added only when frost protection is needed.

Some ventilation is needed, even in small pits, if they are covered with soil. This can be accomplished by extending a small section of the insulating material up through the soil to form a small flue. A weighted down cover over the flue keeps out precipitation. For larger mounds, an inverted hamper can be placed at the top, or boards or stakes can be inserted through the pile of vegetables and covered at the top to keep moisture from entering. This ventilation is most necessary in the late fall before extreme cold weather has set in.

Protection against rodents should be considered in pits or trenches but it is even more important in outdoor storage cellars and buried containers where rodents might seek shelter, as well as food supply. If the vegetables are stacked on 1/4" hardware cloth, this will deter winter feasting by rodents. Tin snips and leather gloves are necessary for handling hardware cloth.

Vegetables keep very well in pits and mounds, but once they are opened, it is desirable to remove the entire contents. If only part of the produce is removed, care must be taken to pack the insulating material well into the opening and to supply produce for a certain period of time, one or two weeks at most, as the produce will not keep as long after removal from storage as will freshly harvested produce. Root crops can be mixed but should be separated with mulch to prevent cross-transfer of odors.

Before snow cover, surface storages can be covered with material such as burlap, an old rug, or canvas to make removal easier in winter. Locate storages in a different place each year as they can become contaminated with spores or bacteria.

## **Trench Storage**

A plank-sided trench is suitable for storing celery, cabbage, Chinese cabbage, and root crops. A trench deep enough to hold the crop is dug in well-drained soil. The bottom can be sloped toward one end for drainage. Line the sides with planks, and line the bottom and between different kinds of vegetables with layers of insulating material. Then cover the trench with planks and compact the soil where the top meets the sides to provide a good seal. Roofing paper or plastic over the top helps keep out water and dirt. As the danger of freezing weather approaches, a 2-3 feet layer of insulating material should be placed over the top with some dirt to hold it in place.

When placing celery and Chinese cabbage in trenches, pack them close together, leaving considerable soil attached to the roots. Water the roots when they are in place and avoid getting water on the leaves. Unless the soil is very dry at the time of storage, or extended warm weather should follow, it will not be necessary to add more water.

## **Buried Containers**

An insulated box or other container can be buried in a well-drained area. Buried containers are more easily opened and closed than mounds and trenches. This type of storage could be located in a breezeway, shed, or garage for easier access and greater frost protection. However, if you plan to store food in or near a garage, it must be more carefully wrapped and protected from car fumes, which are easily picked up by produce.

A 20-gallon trash can, buried in the ground, makes a convenient and economical storage for many kinds of vegetables. Metal cans are more rodent proof than plastic. Several holes should be made in the bottom to facilitate drainage. A wooden barrel, steel drum, or several pieces of drain tile may also be used. The container must be free of material that might impart off-flavor to the produce. Never use drums or containers that might have contained pesticides or other chemicals, including petrochemicals.

Select an area where the ground is well drained and dig a hole slightly larger than the container. A few bricks or stones under the container will aid drainage. Place the produce in the container in layers with enough straw or similar material to separate layers. Layering is especially important if more than one kind of vegetable is to be stored in the same container. Many crops can be stored over the winter in various ways right out in your garden. A few crops, namely parsnips, salsify, horseradish, carrots, beets, and rutabagas, can actually be left right where they grew. Leave them in the ground with a heavy cover mulch. This will keep the ground soft enough to dig. Be sure to mark the ends of the rows, so when you go out to dig some of your crops, you can find them.

Carrots, beets, rutabagas, cabbage, and kohlrabi can be easily stored out of doors in

pits or trenches. These crops store best at temperatures between 34 degrees F. and 40 degrees F. with high humidity. At temperatures above 45 degrees they sprout new tops and resume growth, becoming very woody. As these crops can withstand Light frosts, they can be left in the garden until temperatures are consistently cold, then they can be prepared for storage. To do so, dig root crops carefully, and remove all but 1/2 inch of the tops. Washing isn't necessary before placing them in the pit storage area.

Pit storage does not mean a hole in the ground. Pits are mounds of insulating material protecting the vegetables. To form the pit, spread a 4-6-inch layer of straw, leaves or other bedding material on the ground. Stack the vegetables in a shallow layer on the straw. Do not stack large cabbage heads. Cover the vegetables with another 4-6 inches of straw or bedding material; then cover the entire pile with a 4-6-inch layer of soil. Pack the soil firmly over the pit. Dig a shallow drainage ditch along each side of a row or pit or around a conical pit storage quantity of these same crops can be store in the garage. Layer the produce in a clean garbage can or other large container which has been lined with straw or clean leaves.

Michigan State University Extension: Home Storage of Fruits and Vegetables

The **Master Gardener Hotline** is open from April to October, Monday through Friday. Lines are available 9:00 am to noon and 1:00 pm to 4:00 pm at 888-678-3464

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