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# A PRACTICAL FARM ROOT CELLAR



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## A PRACTICAL FARM ROOT CELLAR

The proper facilities for the storing and preservation of vegetable produce are a valuable asset to the farm. There are different ways to store vegetables, but the root cellar has proved to be one of the most practical means under prairie conditions where low winter temperatures are common.

The root cellar, if properly constructed, will preserve vegetables in a fairly natural condition for consumption purposes. A costly structure is not necessary and old lumber and materials on hand may be utilized wherever possible. Low cost and simplicity of construction are the factors deserving greatest consideration in a root cellar for general use.

Most of the loss and waste of vegetables in storage occurs through moisture and decay. These losses can be prevented to a large degree by the proper construction and management of root cellars.

The following are several important factors upon which the success of storing vegetables will depend.

*Location.*—The ideal location for a root cellar is on the side of a hill. This will ensure proper drainage away from the cellar and prevent water from accumulating in the cellar during run-off periods. By having a south entrance to the cellar, sunshine and air may be admitted which will help to keep the vegetables in a dry condition. Vegetables, especially potatoes, should not be exposed to very much light as it tends to injure them for table use.

*Temperature.*—The best temperature for the storage of vegetables is between 35° and 40° F. It has been found, however, in the case of potatoes, that a much more successful storage is obtained where the temperature during the first two weeks of storage is kept somewhat higher than this, around 60° F. At such temperatures, tissue injury that may have occurred at harvesting will heal over more readily. The greatest danger under prairie conditions, is the possible freezing of the vegetables during the cold winter months. The root cellar should be constructed so that this may be avoided, as freezing will seriously affect the quality of the vegetables and also their storing ability. The freezing point of potatoes is about 28° F. At temperatures below this, injury from frost may be expected. The temperature to maintain is one at which the tubers may remain in a firm and unsprouted state. Such a temperature will do much to keep fungous and bacterial diseases in check.

*Humidity.*—Humidity is an important factor, as an excess of moisture within the cellar will tend to spoil the quality of the stored vegetables. This condition can be detected by the condensation of moisture on the walls and ceiling within the cellar. On the other hand, too dry an atmosphere can be harmful. Experience has shown the best condition to be one where a fairly high degree of humidity is maintained, but yet not sufficiently high to bring about any accumulation of moisture.

*Ventilation.*—Proper ventilation is one of the prime requisites of a good root cellar. The lack of air circulating in the cellar will soon result in spoiled vegetables. Proper circulation of air in the root cellar prevents the condensation of moisture on the walls and the ceiling, resulting in firmer vegetables, provided the temperature is maintained at the proper level. Ventilation is especially important during the cold weather when the doors must be tightly closed to prevent freezing. One of the most common practices is to have the air drawn in at one end and out the other by means of intake and outlet ventilator stacks. Some provision should be made to control the ventilation as it may be found necessary to partially close off the ventilators during extremely cold weather.

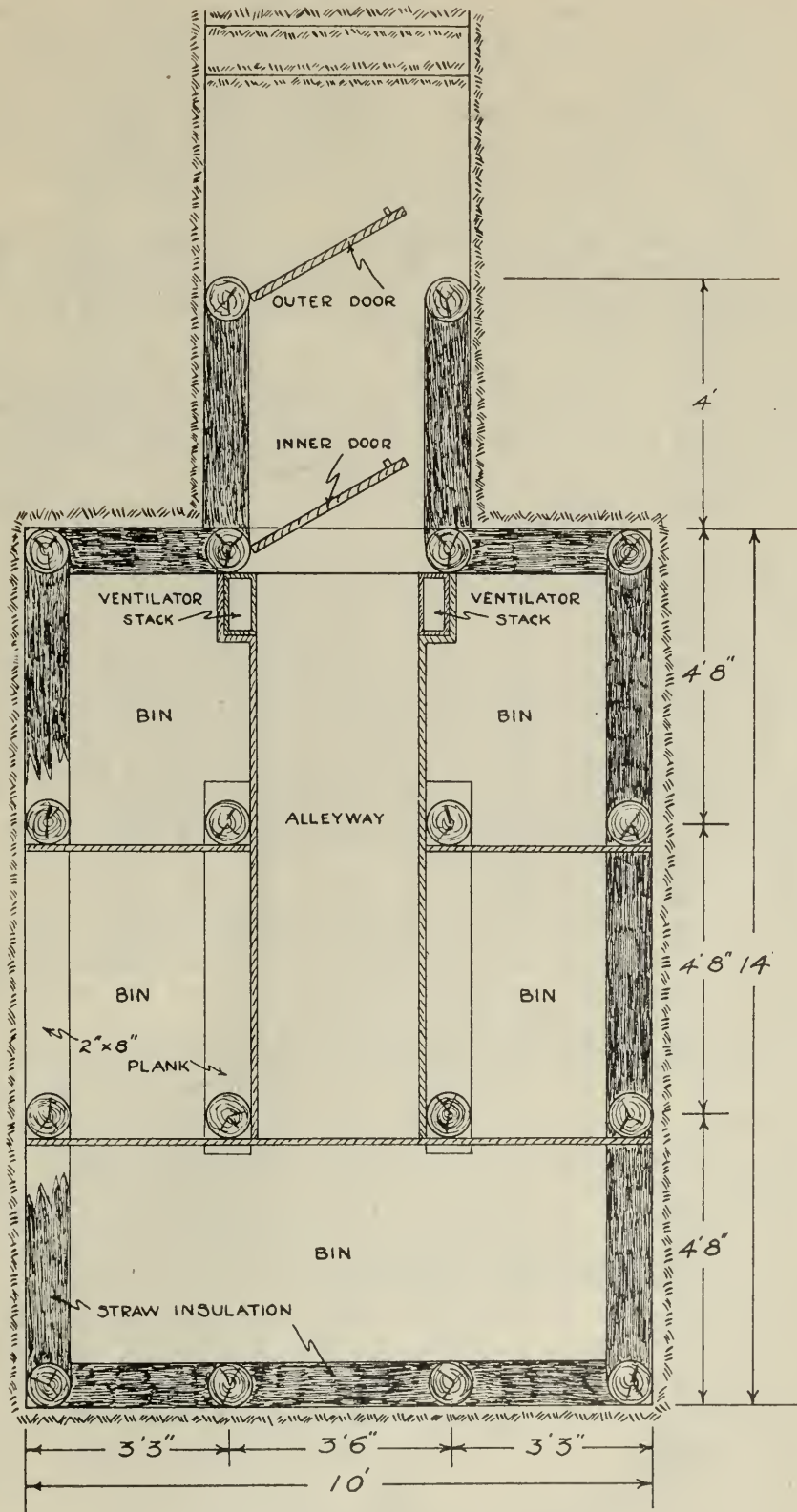


FIG. 1.—Plan of farm root cellar.

## CONSTRUCTION

The size of root cellar will depend upon the farmer's particular needs. It should, in any case, be built sufficiently large to easily accommodate the vegetable produce to be stored. A root cellar where the space is cramped is not so efficient in keeping the vegetables in a firm and fresh condition as one in which there is ample space. For the average farm where vegetables are stored principally for the family table use, a root cellar of 10 x 14 feet, inside measurement, is usually large enough. The cellar may be built larger according to the needs of the family. Where vegetables are grown and sold on a commercial scale, a much larger storage may be required.

The root cellar may be of a design which will make it possible to utilize any particular building materials on hand. The illustrations in this bulletin indicate one method by which the root cellar may be built and may be modified to suit any individual needs or conditions.

To ensure against the temperature in the root cellar becoming too low during the winter and too high during the summer, the excavation should be at least six feet deep and a thick and well insulated roof should be provided. A small slip scraper will greatly aid in making most of the excavation. The soil from the excavation should be kept near at hand for backfilling and roof insulation.

The wall upright posts, plate and ridge poles can be made quite easily from six- or eight-inch poles and posts where these are available or can be made from 8 x 8-inch stock lumber. It is advisable to utilize any material on hand which is suitable for the purpose as the use of dimensional stock lumber will add to the cost of the cellar. The illustrations show a root cellar 10 x 14 feet, using two 18-foot ridge poles, two 14-foot poles for the plate, ten 7-foot posts and eight 5½-foot posts. This cellar is quite typical of the root cellars built at the Experimental Station at Swift Current and the Val Marie, Maple Creek, and Eastend Irrigation Projects in southwestern Saskatchewan. These cellars are giving good service in the storing of vegetables.

The upright posts should be set on planks or flat stones to prevent them from sinking into the ground and should be suitably braced. The ridge poles and the poles for the plate are set along the top of the upright posts which are recessed on top to receive the poles. The floor plan of the cellar as shown in figure I indicates the arrangement of the upright posts.

It is quite important that the walls be well insulated in order to prevent the vegetables at or near the walls from becoming frosted. A cheap method of providing insulation is to use a tight packing of chaffy straw held in place by chicken wire netting or page wire fencing. The wire is stapled to the inside of the wall upright posts and the straw packed in tightly between the wire and the wall of the excavation. An insulation of about eight inches will be obtained in this manner which is necessary to give good protection against frost.

The bins may be arranged as desired to suit any particular requirements. There should, however, be an adequate alleyway running through the centre of the cellar between the bins to facilitate the handling of the vegetables. In building the walls of the bins, a space should be left between the boards for the purpose of allowing air to pass through the bins and thus aid in supplying fresh air to the vegetables. This is illustrated in figures 2 and 3. Slatted floors in the bins will also help the air to circulate around the stored vegetables, and if these can be installed without too much additional expense, it is wise to put them in as they will add to the efficiency of the root cellar.

The roof can be boarded in with lumber of fairly heavy stock to support the weight of the heavy roof insulation. Another method of closing in the roof, which has the advantage of being very inexpensive, is to use small poles laid tightly together across the width of the roof with a matting of willows or brush placed immediately over the poles. To provide for ventilation an air intake

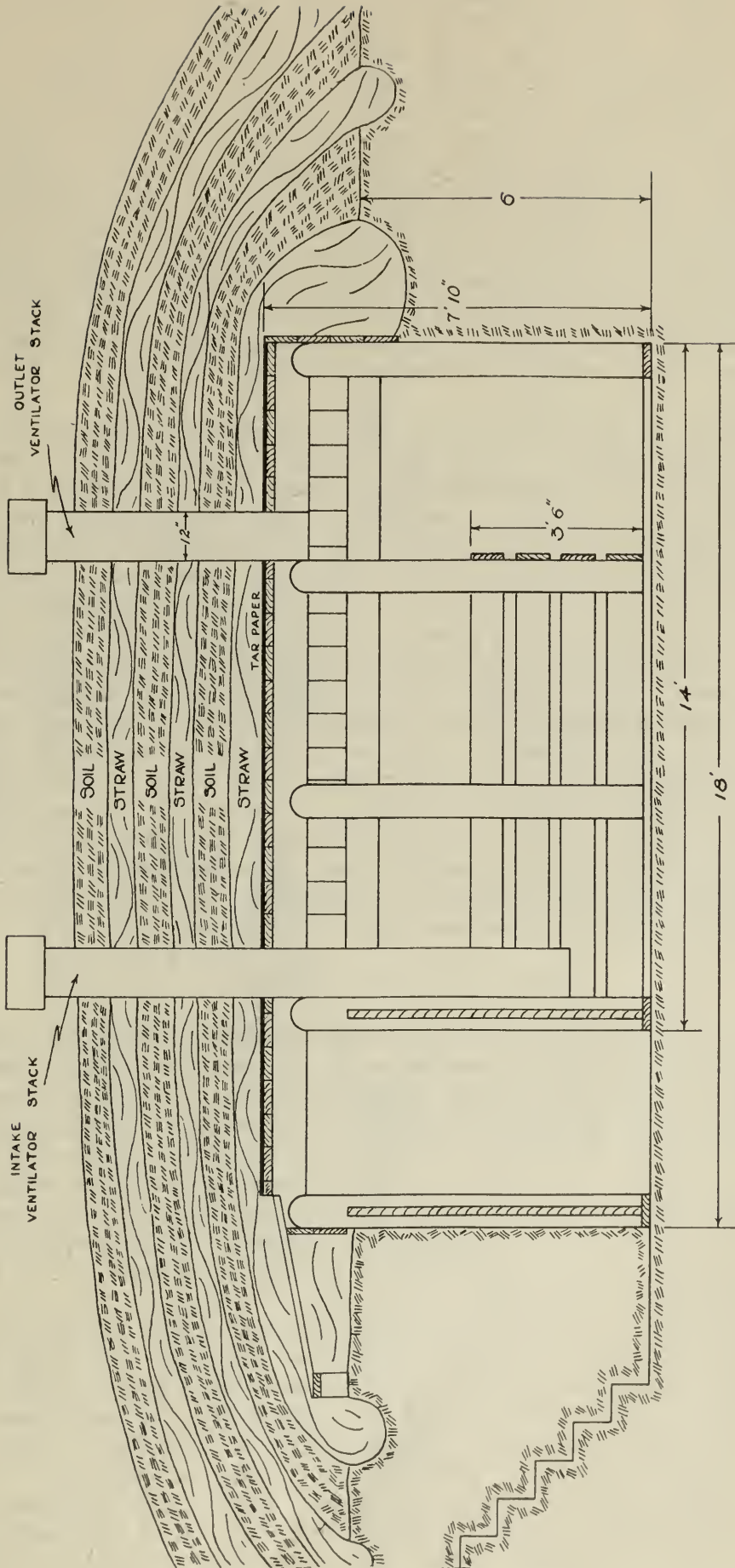


Fig. 2.—Side elevation of farm root cellar.

and air outlet, about 12 inches square for the size of cellar as illustrated, should be installed. These ventilators should be placed at opposite ends of the cellar, with the air intake at the front, and should rise about five and one-half feet above the roof boards so as to extend well above the roof insulation. The air outlet begins at the ceiling. The air intake branches just below the ceiling, one branch on each side of the alleyway and extending to about one and one-half feet from the floor. Another method of providing air intake is to install pipes, one on each side of the cellar at the opposite end to the outlet extending from above the surface down along the wall and coming out through the floor. The air intake and outlet, in any case, should be built so that they may be regulated, as it may be found necessary to partially shut off the ventilators in cold weather.

The root cellar should be provided with double doors at least four feet apart. The vestibule between the doors acts as an insulating space. The doors should be well built and large enough to allow easy passage in and out of the cellar with vegetables.

The insulation of the roof is one of the most important points in the construction of the root cellar. It is a good practice to place one or two layers of heavy tar paper over the roof boards before any further insulation is put on. Besides affording some insulation against frost, the tar paper will prevent any moisture from seeping through and falling onto the vegetables. Alternate layers of straw and soil should then be put on, the straw in layers about six inches thick when compressed and the soil in layers of from eight to twelve inches thick, until at least three and one-half feet of good insulation is secured. Where each straw layer meets the ground level, a small trough should be dug in the soil and packed tightly with straw. These troughs will break the frost line along the original surface and do much toward keeping the temperature within the root cellar from becoming too low. As illustrated in figures 2 and 3, the layers of straw and soil should be carried well out beyond the sides of the cellar in order to prevent the frost from working through at the sides. Care should be taken that the front of the cellar around the doorway is well banked. The straw in the insulation will rot in time, and when this occurs more soil should be added to the roof. If the original thickness of the insulation is maintained by the addition of more soil, the insulating qualities of the roof will not be impaired.

#### ROOT CELLAR MANAGEMENT

The farmer should inspect his root cellar frequently to make certain the ventilators are allowing a good circulation of air and preventing condensation of moisture on the walls and ceiling. During the winter there are times when it may become so cold that there is danger of freezing. At such times it is wise to shut off the ventilation for a while. As an added precaution, the use of lanterns or a small coal oil stove in the cellar may furnish enough heat to protect the vegetables from frost when the weather becomes excessively cold. A thermometer hung in the root cellar is a valuable aid in keeping the temperature at the proper level. It will eliminate the guesswork and will add to the safety of storing the vegetables.

After early spring, when the air becomes warmer, the doors and ventilators may be opened at night and closed during the daytime. By doing this the potatoes and other vegetables may be kept dormant for a longer period of time.

The potatoes in the cellar should be picked over several times before spring and any sprouts that have formed should be removed. This practice will keep the potatoes firm and minimizes the danger of spoiling.

The root cellar is not a costly structure to build. The important points of construction should be carefully followed to ensure good vegetable storage. A good root cellar will quickly repay for the expense and time involved in construction.

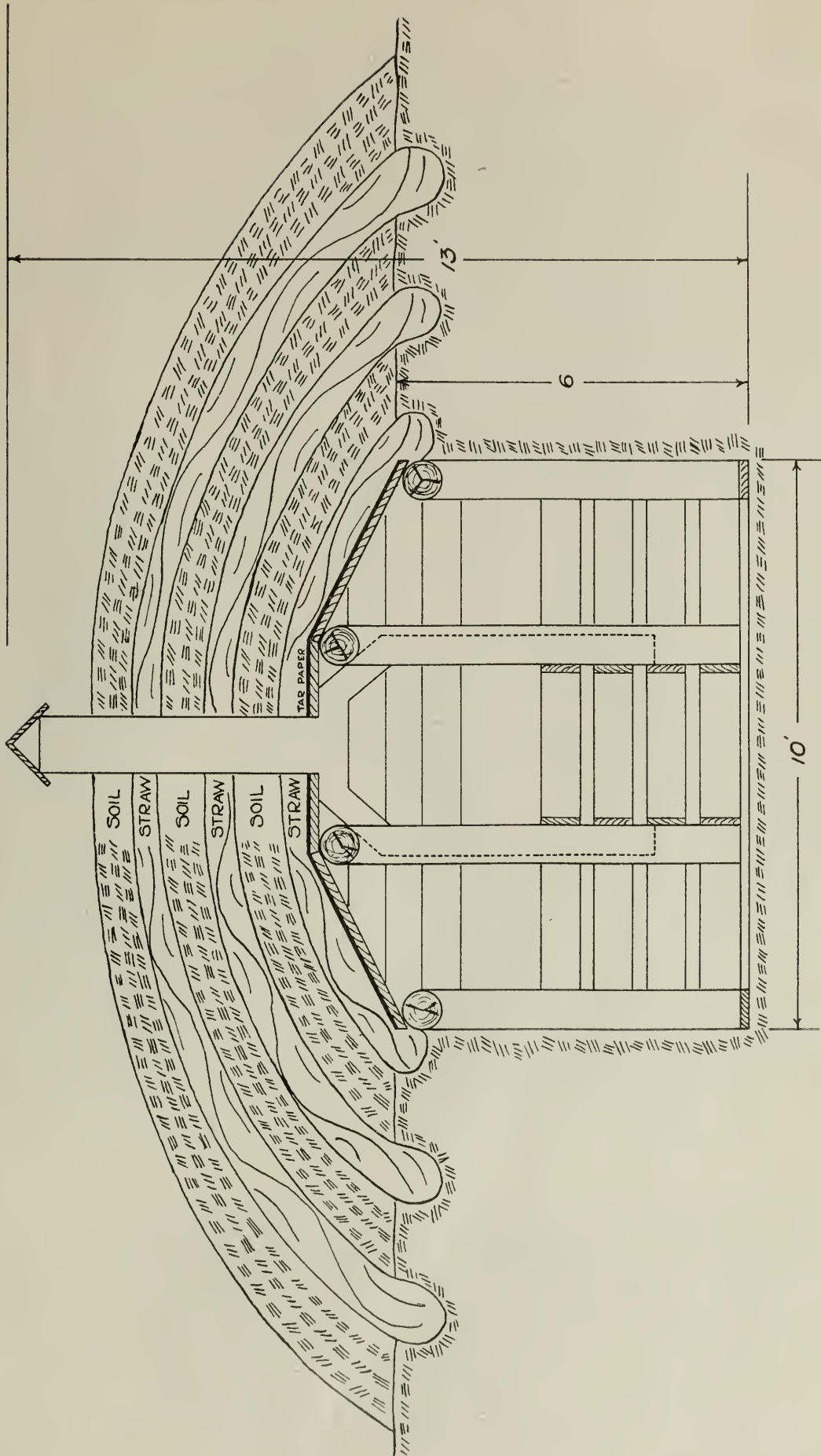


FIG. 3.—Front elevation of farm root cellar.