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Leona S. Davis

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HOME PRESERVATION BY FREEZING

by  
Leona S. Davis

Freezing as a method of food preservation is rapidly increasing in popularity. This aroused interest is due in part to the rapid development of cold storage lockers in many parts of the state. Farm families have been storing meat products and poultry for a number of years and are now turning attention to the possibilities of freezing other food products. The rapid freezing of certain kinds of fruits and vegetables is now a well established commercial practice. The family food supply may be made more interesting in variety and flavor when supplemented by frozen foods.

The freezing method for farm family use is comparatively new and developments are constantly being made. Therefore the farm family will be ever alert to the up-to-date trends and practices. Methods presented here may change as more information becomes available.

Advantages and Disadvantages

Home produced foods may be frozen at a time when quality is at its best and storage may take place at a time when the supply is plentiful and market value is low. Many farm families take advantage of the locker service the year around, storing meats in the winter time and fruits and vegetables in the summer and fall when the meat supply is low. Freezing preserves the fresh color, flavor and palatability of certain foods better than other methods of preservation. One of the chief advantages to the farm family is to distribute the enjoyment of fresh home-produced foods over a longer period of time.

There are some disadvantages to the locker system. Among the disadvantages are: the inconvenience of securing the products from the locker at the time when products are greatly desired; the cash outlay for the service which may be greater than the savings affected depending upon the volume of products stored by each family; the lack of qualified inspection of animals killed for home consumption; and the difficulty in holding products after they are removed from the locker. Unless efficient home refrigeration is available, only small quantities can be removed at a time.

Thoroughness and speed in preparation of foods to be frozen cannot be over-emphasized. This is particularly true in the handling of vegetables and meats. Accessibility to the cold storage locker is a problem not to be overlooked.

Freezing and Storage

Results from research work carried on at various institutions indicate that the most successful results are obtained when the product is frozen rapidly. Ten degrees below zero° F. is generally accepted as the preferred temperature for the "sharp" freezing of foods. At this temperature freezing is comparatively rapid, producing smaller ice crystals and likewise less damage to cellular structure. Products should be frozen in the sharp freezer before being packed away in the storage locker.

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It is now proposed that the storage locker rooms be maintained at zero° F. This temperature is especially desired for vegetables. Flavor and quality are impaired if temperatures are allowed to fluctuate.

#### Containers for Frozen Products

An effective container must be moisture proof and air proof. Containers recommended are glass, tin, and fiber board. Tin cans may be used satisfactorily if people will remember that the sealed tinned product is frozen and not canned. Laquered tin cans are probably best for most fruits. The ordinary tin can which is sealed or a friction top type may be used.

Glass fruit jars may also be used. An airtight container is desirable for some products and a glass jar sealed with a rubber is satisfactory. If an airtight seal is unnecessary, merely applying the lid without a rubber is all right. Head-space of at least one inch for expansion of the product during freezing should be allowed in order to prevent breakage of glass jars if a brine solution is used. Paraffined paperboard cups, parchment paper, moisture-proof cellophane bags may also be used for certain products. The moisture-proof cellophane bags may be sealed by folding the top of the bag over and pressing with a small flat iron. The important thing is to protect the product from direct contact with the air.

The size of containers may vary according to the product and family needs. Products do not keep long upon removal from storage so consideration should be given to the amount convenient for family use.

For the storage of meats, a heavy deodorized oiled kraft paper has been found to be a successful wrapping. Some waxed papers have been unsatisfactory as the wax is apparently soluble in the meat fat. Some people recommend a first wrapping in heavy parchment paper and a second wrapping in heavy butcher paper to prevent drying out of the meat and freezer burns.

#### Freezing of Fruits

A frozen food can be no better than the raw material used. Thus a high quality frozen fruit can only result from a high quality fresh fruit. Unripe fruit does not give desirable texture, flavor, aroma or color. Immature fruit may taste sour and somewhat bitter. Fruits for freezing are prepared in the same manner as for table use or canning. Strict cleanliness in handling will help reduce the number of bacteria and improve the quality of the frozen product. When a sugar syrup is used, both the syrup and the product must be cold.

#### Without Sugar

A few fruits may be frozen whole without sugar after being sorted and washed. Fruits which may be handled this way are raspberries and plums.

#### Packed Whole with Sugar

One method which is used extensively is to combine the whole fruit and sugar. The sugar draws out the fruit juice forming a syrup without the addition of water. Strawberries, raspberries, blackberries, cherries, currants and other small fruits may be packed this way.

#### Slicing and Packing with Syrup

Larger fruits such as peaches and plums, which if packed whole with sugar would not make a syrup, may be sliced and covered with a heavy syrup and allowed to stand in a cool room before freezing.



### Slicing or Crushing and Packing with Sugar

Juicy fruits may be sliced or crushed and mixed with sugar. In this method the flavor is not diluted with water. Before freezing, fruits prepared with sugar should be allowed to stand a few hours in a cool place in order to allow the sugar to penetrate the fruit.

### Proportions for Syrup

Syrups for fruits which are to be frozen may be prepared in this way: Heat the sugar and water together until the sugar is dissolved, then cool before adding to the fruit. To make a 40% syrup use 2½ c. sugar to 4 c. water  
50% syrup use 4 c. sugar to 4 c. water  
60% syrup use 6 c. sugar to 4 c. water

The following syrups are suggested:

Apricots - - - - -	40-50% syrup
Blackberries - - - - -	45-55% syrup
Cherries - - - - -	50% syrup
Grapes - - - - -	40-50% syrup
Italian prunes - - - - -	40-50% syrup
Peaches - - - - -	50% syrup
Raspberries - - - - -	50-60% syrup
Strawberries - - - - -	50-60% syrup

### Freezing of Vegetables

Vegetables which are to be frozen should be harvested when in prime condition. The product should be graded for uniformity in maturity and size. It should be thoroughly cleaned and prepared as for cooking. Perhaps it is well to attempt to freeze only those types of vegetables in which freshness is the principal factor of quality; those which lose color or flavor in canning; those which are not bulky and those which do not keep well by other food storage methods.

Vegetables which are to be frozen must be promptly scalded or blanched immediately after picking, and cooled at once. This process is necessary to stop enzymic action, otherwise the ripening processes continue and color, flavor and quality are impaired.

If possible use soft water for this process as some vegetables such as asparagus and peas are toughened by the calcium in hard waters.

To scald, dip the vegetables in boiling water. To blanch, dip the vegetables in water that is very hot but below the boiling temperature.

To blanch or scald the product, place the vegetable in a cheese cloth square, gathering up the four corners to form a sack. Immerse the sack in boiling water for the required length of time as given below, then dip in ice water or in cold running water until the temperature is below 100° F. This cooling is important in order to prevent spoilage.

The product is then ready to be packed in the containers either dry or in brine and should be taken at once to the cold storage plant and frozen at 10 degrees below zero F. The shorter the time between harvesting and the time the product is placed in the sharp freezer the better the product.

Vegetables are frequently packed in a two per cent brine solution which is prepared by adding 1 teaspoon of salt to one cup of water. The brine should be cold when added to the product.



### Specific Preparation for Vegetables

Asparagus: Carefully sort and grade for tenderness. Wash thoroughly. The stalks may be left whole or cut up. Scald for 2 to 4 minutes and cool quickly in cold running water. Pack in 2% brine and seal in air tight containers.

Snap Beans: Use only fresh tender beans. Clean, wash and cut into desired length. Scald for 2 to 4 minutes. Cool in cold water. Pack in 2% brine solution in airtight containers.

Lima Beans: Shell immediately and wash thoroughly. Scald 2 or 3 minutes according to size. Cool promptly. Pack dry in airtight containers.

Sweet Corn: Select corn as for table use. (1) Whole kernel corn: Husk, silk and wash. Scald 4 to 5 minutes. Cool as rapidly as possible and cut kernels off cob after cooling. Pack dry or in 2% brine. (2) Corn on cob: Blanch 7 minutes. Cool and pack in plain one-gallon tin cans with lids off either dry or in 2% brine. When frozen, place lids and store.

Peas: Hull at once, discarding over-ripe pods. Wash thoroughly. Blanch for 2 to 3 minutes. Cool rapidly and pack in airtight containers either dry or in 2% brine solution.

### Varieties Adapted to Freezing

Some experimentation has been done to find varieties of vegetables adapted to freezing. It has been found that some varieties produce a better frozen product than others. No doubt further experimentation will be done along this line. Varieties found to be good are:

Asparagus - Washington varieties.

Beans - Snap: Giant Stringless Green Pod, Asgrow Stringless Green Pod  
Round Pod Kidney Wax, Kentucky Wonder.

Lima: Henderson's Bush.

Peas - Thomas Laxton, Asgrow 40, Alaska, Perfection.

Sweet Corn - Golden Cross Bantam, Golden Bantam, Tendergold, Narrow Grain  
Evergreen, Stowell's Evergreen.

(White varieties are less attractive in color when frozen)

### Preservation of Meats by Freezing

Meats may be successfully frozen and held for some time. Results indicate that well fattened beef, lamb and poultry keep better than pork. It is now recommended that the family manage their pork supply so that it is not held in storage longer than three or four months. The pork may be slaughtered in the late winter instead of early winter. The pork fat has a tendency to become strong or rancid upon long storage.

Beef and lamb which are well finished may be aged or ripened before freezing. The meat is more tender and has greater flavor if allowed to ripen. The length of time which a carcass can be aged depends upon the quality. The well finished carcasses may age from 7 to 14 days before putting it into the locker. Ripening does not take place in the frozen meat. Freezing tends to fix the quality as it was before freezing.

Locker plants frequently have rooms where the temperature is maintained at 36° F. Here carcasses may be hung and allowed to ripen. Another room is usually provided where the plant butcher may cut up the meat into sizes convenient for family use.

While meat may be stored over a period of months, with this new type of service available, it is no longer necessary to slaughter large quantities at one time but rather only amounts convenient to handle at one time.



How to Wrap Meat for the Freezer Locker

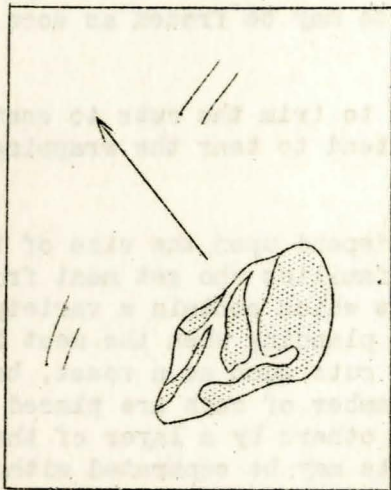


Fig. 1 - Lay the cut of meat in the lower right hand corner. The arrow indicates the direction of the wrap.

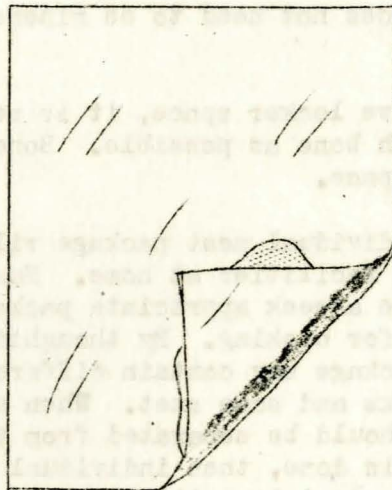


Fig. 2 - Fold over the lower right hand corner.

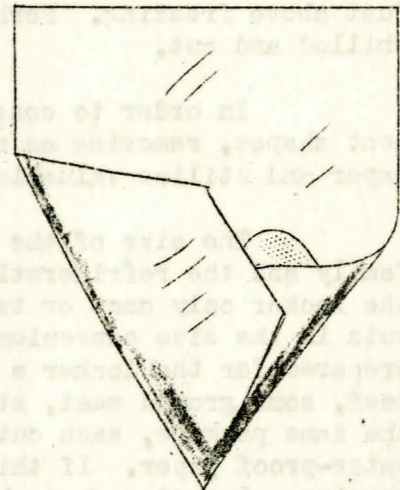


Fig. 3 - Fold over the lower left hand corner snugly so as to leave no opening in the corner.

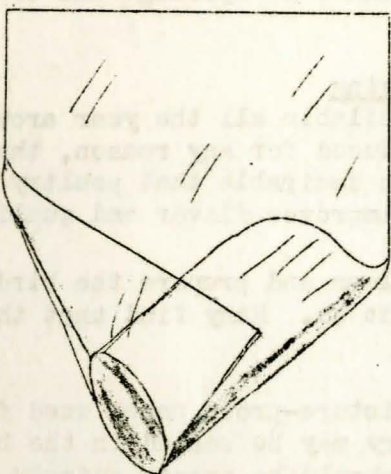


Fig. 4 - Roll the package forward one turn.

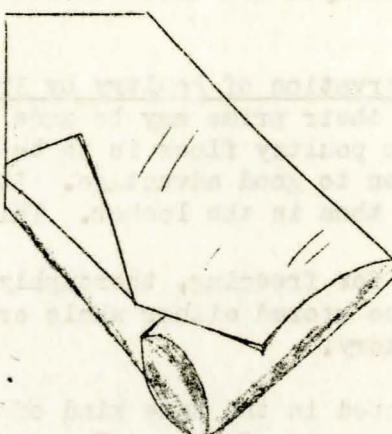


Fig. 5 - Fold in the upper right hand corner neatly and tightly.

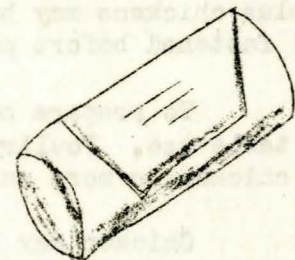


Fig. 6 - Continue to roll the package forward tightly. This makes a tight package which needs to be tied one way only. Tie and seal with gummed tape.



### Preparation of Meat

All meat slaughtered for family use should come only from healthy animals. It should be handled in the cleanest possible manner. Meat that has become contaminated by soiled hands, utensils, clothing or containers deteriorates in quality. Special care should be taken to protect meat from contamination.

Freshly slaughtered meat should be chilled within 24 hours to a temperature just above freezing. Pork does not need to be ripened so may be frozen as soon as chilled and cut.

In order to conserve locker space, it is well to trim the cuts to convenient shapes, removing as much bone as possible. Bones tend to tear the wrapping paper and utilize valuable space.

The size of the individual meat package will depend upon the size of the family and the refrigeration facilities at home. Most families who get meat from the locker only once or twice a week appreciate packages which contain a variety of cuts in the size convenient for cooking. By thoughtful planning when the meat is prepared for the locker a package may contain different cuts such as a roast, boiling beef, some ground meat, steaks and some suet. When a number of cuts are placed in the same package, each cut should be separated from the others by a layer of the water-proof paper. If this is done, then individual cuts may be separated without thawing. Ground meat may be made into patties and separated by moisture-proof paper. Sausage is usually frozen without salt or spices and seasoned before using. Ground meat does not keep as long as unground meat.

The chilled cuts should be thoroughly wrapped in tough moisture-proof paper to prevent the drying out of the meat.

After the meat is packaged, it is tied carefully or sealed with gummed tape. It should then be labeled indicating contents of the package and date. The wrapped meat is then spread out in the sharp freezer room for freezing. It is important for the meat to be frozen before it is packed in the lockers. If piled in the locker, freezing may be delayed and there is more danger of spoilage and off-flavors.

### Preservation of Poultry by Freezing

Spring chickens in their prime may be made available all the year around by freezer storage. When the poultry flock is to be reduced for any reason, the surplus chickens may be frozen to good advantage. It is desirable that poultry be well fattened before putting them in the locker. This improves flavor and quality.

To prepare poultry for freezing, thoroughly clean and prepare the bird as for table use. Poultry may be stored either whole or cut up. Many find that the cut chicken is more satisfactory.

Chicken may be wrapped in the same kind of moisture-proof paper used for meats or the cellophane moisture-proof bags. The poultry may be sealed in the bag by pressing the folded edges with a hot iron. Poultry should be frozen quickly, then stored in the locker.

### Use of Frozen Products

Frozen products are not sterile and must be used soon after they are removed from the locker. Frozen foods spoil more quickly than fresh foods, so must not be held long after removal from cold storage.



Frozen Fruits may be used either as frozen fruits or thawed. Fruits allowed to stand long after thawing become mushy, dark in color and develop off flavors. If the fruit has been packed dry without sugar and is to be used without cooking, cover with sugar while partially frozen to avoid abnormal sourness.

Fruits may be allowed to thaw:

1. At room temperature for three or four hours.
2. In food compartment of mechanical refrigerator six to eight hours.
3. In ice refrigerator four to six hours.

Frozen Vegetables may be allowed to thaw at room temperature or in the refrigerator. In any case they should be used promptly. Probably the most satisfactory method is to drop the frozen product into a small amount of boiling water and allow it to thaw during the cooking process. The cooking time for frozen vegetables is much less than for fresh products. Usually about one-half the normal cooking time for fresh products is sufficient. Vegetables frozen in a brine may be thawed first, drained and then the brine used for the cooking liquid.

Freezing does not kill bacteria, it merely renders them inactive. Therefore, when the material is thawed, bacterial growth will take place again. All vegetables should be cooked thoroughly before tasting. Cooking will decrease the danger of food poisoning and destroy harmful toxins which might have formed.

Frozen Meats and Poultry may be cooked without thawing, however a longer cooking time is required. If the meat is still frozen, it may be placed in the cooking pan and it will thaw as the cooking proceeds. Approximately twenty minutes per pound in addition to the regular cooking time should be allowed for roasts. If adequate time is not allowed, the center of the cut may be raw. A meat thermometer is convenient device to determine when the meat is done.

Meat may be thawed at room temperature, in the refrigerator or in the oven. Experimental work shows little difference in quality of meat in the cooked product. Thawed meat is always moist and provides an ideal place for development of bacteria and molds, therefore thawed meat should be cooked promptly.

Steaks and meat patties, if frozen with layers of moisture-proof paper between them, may be separated while still frozen and thawed in the cooking pan as the meat is cooked.

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