University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Historical Materials from University of Nebraska-Lincoln Extension

Extension

1940

EC9920 Revised 1940 Home Preservation by Freezing

Follow this and additional works at: http://digitalcommons.unl.edu/extensionhist

"EC9920 Revised 1940 Home Preservation by Freezing" (1940). *Historical Materials from University of Nebraska-Lincoln Extension*. 2889.
http://digitalcommons.unl.edu/extensionhist/2889

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

S
85
E7 # 9920 c.1
EC. 9920-40
I-1

Nebraska
COOPERATIVE EXTENSION WORK
IN AGRICULTURE AND HOME ECONOMICS
Revised 1940 — Ext. Cir. 9920-40
U. of N. Agr. College & U. S. Dept. of Agr. Cooperating
W. H. Brokaw, Director, Lincoln

HOME PRESERVATION BY FREEZING

The storage of meats, fruits and vegetables in a frozen condition for serving at any time of the year has made marked progress in Nebraska in the last three years.

There has been a rapid development of cold storage lockers in many parts of the state. Meat products and poultry have been stored by farm families for a number of years, and now a widespread interest is being shown in the possibilities of freezing fruits and vegetables. Thus, the family food supply may be made more varied and the diet better balanced than heretofore.

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, vegetables and poultry 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. Meat and vegetables must be overcooked by canning in order to insure keeping. 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 saving effected 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. Special care must be taken to secure proper varieties of vegetables and fruits for freezing, to gather them at their peak of perfection and get them into the locker promptly. Poultry may be fattened at one time and a quantity put into the locker at one time.

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. A sharp freeze room is desirable to insure rapid freezing. A temperature of 0° F or lower should be used in freezing foods for storage lockers. The average size packages should remain in the sharp freezer for at least 12 hours. If a sharp freezer is not available, arrange to keep food items separated or scattered, and use a fan to keep the air in motion.

It is now proposed that the storage locker rooms be maintained at 0°F. and never higher than 5°F. Flavor and quality are impaired if temperatures are allowed to fluctuate. Some air circulation in a locker room is necessary to maintain this uniformity in temperature.

Containers for Frozen Products

To keep frozen food similar in quality to fresh foods it is necessary to keep the moisture in and the air out. Containers should be selected with those principles in mind. The containers should be of a size that meets the needs of the family. Usually, average size containers (pints or quarts) are best for a quick freeze. Square containers save space in the locker.

Glass fruit jars may be used. An airtight container is desirable and a glass jar sealed with a rubber is satisfactory. 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. Glass jars must be piled and handled carefully in lockers because of the danger of breakage.

Tin containers may be used if care is taken to be sure they are air tight.

Fiberboard cups and boxes may be used for many products but it is necessary that they be moisture proof and vapor proof. Paraffined folding cartons with waterproof cellophane or paraffined lining bags are proving very successful as containers for many frozen products. The liners are heat sealed.

Preparation and Freezing of Fruit

Not all fruits have been successfully frozen. These varieties which are grown in Nebraska are recommended:

1. Cherries--Montmorency, Early Richmond, English Morello
2. Strawberries--Senator Dunlap, Beaver, Blakemore, Premier, Wayseta, (everbearing)
3. Plums--Damson, Omaha, Wauneta
4. Gooseberries--Carrie, Downing, Champion
5. Peaches--Elberta, Champion, Hale Haven, Rochester
6. Apricots--Blenheim, Moorpark
7. Rhubarb--Ruby, McDonald, Linnaeus
8. Raspberries--Lanthanchief, Cumberland

Blackberries, grapes and pears are not suited to freezing and often do not give satisfactory products.

A high quality frozen fruit can only result from a high quality fresh fruit. Select fully ripe, sound fruit. Unripe fruit does not give desirable texture, flavor, aroma or color. It is likely to 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 help to give a good quality of frozen product.

Sirup Pack. Larger fruits such as peaches, apricots and plums which if packed whole with sugar would not make a sirup, may be sliced and covered with a heavy sirup. The sirup helps preserve the color of light-colored fruits by preventing access of air. Strawberries and raspberries may also be frozen in a sirup.

A 40% to 60% sirup may be used. A 40% to 45% is best suited to sweet fruits and mild flavored fruits while a 50% sirup may be used for sour acid fruits.

40% sirup — 2 3/4 cup sugar to 4 cup water.
50% sirup — 4 cup sugar to 4 cup water
60% sirup — 6 cup sugar to 4 cup water

The sirup does not need to be cooked or heated, just stir until dissolved. Be sure it is cool before being added to the fruit.

Dry-Sugar-pack. One method which is extensively used is to combine the whole or sliced fruit with dry sugar. The sugar draws out the fruit juice forming a sirup without the addition of water. Strawberries, raspberries, cherries and other small fruit may be packed this way. The proportion is usually one pound of sugar to three or four pounds of fruit. Distribute the sugar evenly throughout the product so that it dissolves quickly.

Dry-Pack without sugar. When fruit is covered with a sugar sirup or when dry sugar is put on to form a sirup from the juice of the fruit, less air comes in contact with the fruit. This is desirable because when oxidation of fruits by air takes place it results in discoloration and unpleasant changes in flavor.

Some fruits have been successfully frozen without the addition of sugar or liquid. Fruits which may be handled this way are certain varieties of raspberries and strawberries and rhubarb. Most dry-packed fruits are more suitable for making pies, marmalades and other cooked products than they are for dessert use.

Fruit Juices and Fruit Pulps

Fruit juice and tomato juice may be frozen but for most juices this process is not perfected to give a product equivalent to fresh juices. (Exceptions are cider, cherry and pineapple juices.)

Pulps and purees may be made from fruits with bright colors and pronounced flavors. These make delicious flavor bases for ice creams and other frozen desserts and toppings for sundaes and shortcakes.

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; the shorter the time between harvesting and the time the product is placed in the sharp freezer, the better the product.

Some vegetables that when frozen taste much like fresh vegetables, are peas, young lima beans, asparagus, sweet corn, broccoli, spinach, and green and yellow string beans. Experiments have shown that certain varieties of vegetables are better adapted to freezing than others. Some varieties of vegetables grown in Nebraska, found to be good for freezing are:

Asparagus -- Washington Varieties

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

Lima: Henderson bush

Broccoli -- Italian Green Sprouting

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

Spinach -- Bloomsdale Savoy (Planted before March 1), Bloomsdale Long Standing, Giant Nobel

Sweet Corn -- Golden Cross Bantam, Golden Bantam, Tendergold, Narrow Grain Evergreen. (White varieties are less attractive in color when frozen)

Vegetables which are to be frozen must be promptly scalded immediately after preparation. Scald a very small quantity of vegetables at a time in a large quantity of boiling water. A wire basket or a cheese cloth sack may be used for immersing the vegetables in the boiling water. Cool the vegetable quickly to at least 60°F. in running cold water, drain well and pack. Freeze at once.

Brine Pack. Most commercially packed vegetables are packed without liquid, but for home use many prefer to pack vegetables in a 2% salt solution which later can serve as part of the cooking water. This brine solution is prepared by adding one teaspoon of salt to one cup of water. The brine should be cold when added to the product.

Preparation of Specified Vegetables

Asparagus: Carefully sort and grade for tenderness. Wash thoroughly. The stalks may be left whole or cut up. Scald for 3½ minutes, very large stalks for 4½ minutes and cool quickly in running water. Pack in air tight containers.

Beans: Snap: Use only fresh tender beans. Clean, wash and cut into desired length. Scald for 2 minutes. Cool in cold water. Pack in air tight containers. Snap beans are hard to keep for any length of time unless stored at a very low temperature.

Beans: Lima: Shell immediately and wash thoroughly. Scald small beans one minute, medium sized beans 1½ minutes, large beans 2 minutes. Cool promptly in running water. Pack dry in air tight containers.

Broccoli: Cut head into pieces not thicker than one inch. Wash carefully. Scald in boiling water, small pieces 3 minutes, medium pieces 4 minutes, large pieces 5 minutes. Cool in cold running water. Pack dry in air tight containers.

Peas: Wash the shelled peas and scald small peas 45 seconds, large peas one minute. Cool in cold running water. Pack dry in moisture-vapor-proof containers.

Spinach: Wash carefully in running water, taking care to eliminate all sand and earth. Discard thick stems. Scald a small amount at a time for 2½ minutes in rapidly boiling water. Cool immediately in cold running water. Drain and pack in moisture-vapor-proof containers.

Sweet Corn: On the cob. Sort the husked corn and select as for table use. Scald small ears $6\frac{1}{2}$ minutes, medium ears $8\frac{1}{2}$ minutes, large ears $10\frac{1}{2}$ minutes. Cool immediately in very cold running water. Wrap cooled ears in moisture proof paper and freeze.

Sweet Corn: Whole Kernel. Cut corn from cob of scalded corn after cooling. Wash in cold water to eliminate any bits of cob. Drain corn and pack in moisture-vapor proof cartons.

Preservation of Meat by Freezing

Beef, lamb and pork, can all be stored in a freezer locker for some time. Healthy well conditioned young animals slaughtered when in prime condition furnish the best meat. Well-fattened beef and lamb increases the desirability of the meat and protects the lean from drying during the freezing. Beef and lamb keep better than pork. Research shows that frozen pork can be kept in good condition at 15° F. for only 2 months, at 10° F. for 3 months and becomes rancid shortly afterward; at 0° F. pork will keep free from rancidity for at least 8 months.

In handling meats insure cleanliness by having clean hands, utensils, clothing and equipment. Beef and lamb may be aged to develop flavor and tenderness but recent experiments indicate that the longer they are aged the sooner they become rancid in the storage lockers. The temperature of the chill room could be around 36° F. Pork is not aged but packaged and frozen as soon as thoroughly chilled (36 to 48 hours.)

In order to conserve locker space, it is well to trim the cuts to convenient shapes, removing as much bone as possible.

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 the 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 meat should be packaged in a moisture-vapor-proof paper. In order that meat be palatable after being kept several months in a freezer locker proper packaging and wrapping materials are most important. A moisture-vapor-proof paper is one that will prevent moisture vapor from passing through it. After wrapping, the package is then tied carefully or sealed with gummed tape. It should 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.

How to Wrap Meat for the Freezer Locker

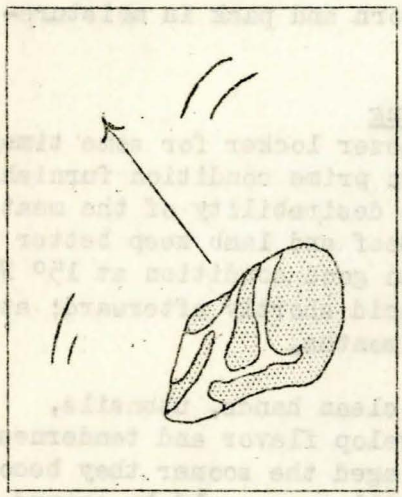

Fig. 1 - Lay the cut of meat in the lower right hand corner. The arrow indicates the direction of the wrap.

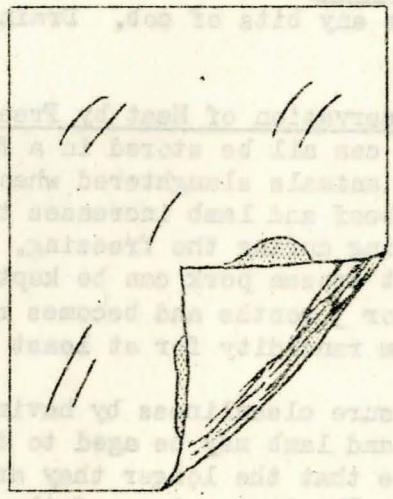

Fig. 2 - Fold over the lower right hand corner.

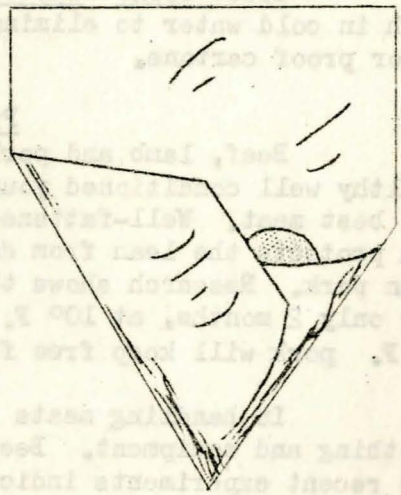

Fig. 3 - Fold over the lower left hand corner snugly so as to leave no opening in the corner.

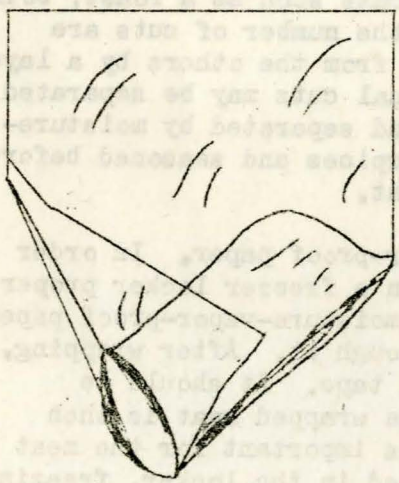

Fig. 4 - Roll the package forward one turn.

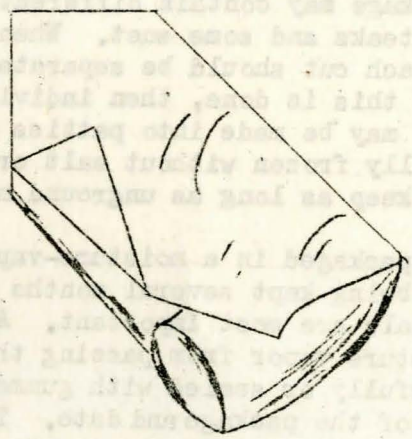

Fig. 5 - Fold in the upper right hand corner neatly and tightly.

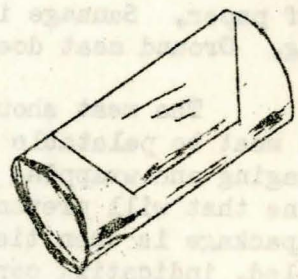

Fig. 6 - Continue to roll the package forward tightly. This makes a tight package which needs to be tied one way only. Tie and seal with gummed tape.

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. Sometimes, broilers and frying chickens are wrapped and stored in large, friction-top tin cans for freezing.

Preservation of Fish by Freezing

All fish to be frozen should be placed on ice or in a refrigerator as soon as possible after catching. Fish should never be allowed to become warm. Before freezing it should be cleaned ready for cooking. If the clean fish is immersed in 10% salt solution for 20 to 30 seconds, the leakage or "weep" is reduced when the fish is thawed. It is then frozen as described for meat. Fish may be glazed after freezing to prevent drying out. To do this dip the fish quickly into very cold water and put into the sharp freezer. The glaze must be renewed from time to time.

PREPARING FROZEN FOODS FOR THE TABLE

Care in Handling Frozen Foods After Removal from the Freezer Locker.

When removed from the freezer locker, refrigeration is desirable for frozen foods. They may be kept for several days in the freezing compartment of a mechanical refrigerator. They may keep at 40° F. for 2 days but when only an ice refrigerator is available they should not be held longer than 24 hours after thawing. For use on the trip from locker to home, an insulated box may be improvised to delay the thawing somewhat.

Cooking Frozen Vegetables

Frozen vegetables need not be thawed before cooking. If they are partially defrosted, however, the large frozen pieces may be broken up easily when the vegetables are put on to cook. The cooking process is similar to the method used for fresh vegetables. Use a small amount of water, and begin to count the time when the water boils again. Cook approximately for one half to two-thirds of the time required for cooking fresh vegetables. Leave the cover on until the vegetables begin to boil, then remove the cover to prevent discoloration. Salt to taste may be added to the water or when the vegetables are half done. Save and use the water the vegetables were cooked in, as it contains much of the flavor, minerals and vitamins.

Corn-on-the-cob is an exception to the rule that vegetables do not require thawing. If it is not thawed before cooking the kernels will be over-cooked before the center of the corn is hot. When served thus the cooked corn will cool too quickly.

Cook thawed vegetables within 12 hours after thawing as they do not keep well. In any case, keep thawed vegetables in a refrigerator.

Serving Frozen Fruit

Frozen fruits are similar to fresh unfrozen fruits that have stood in sugar. When served like fresh fruit they are most palatable if served containing a few ice crystals.

Cooking Frozen Meats

It is not necessary to thaw meat before cooking. There is no difference in the flavor. The most satisfactory method of thawing is in the refrigerator for a day or two. Do not thaw in water as this draws out the meat juices. Cook as quickly as possible when thawed. Frozen meat after thawing spoils more readily than fresh meat not frozen.

If meat is not thawed, extra time will be needed for cooking. Experiments have shown that the shape of a roast influences the cooking time. A boned rib roast requires approximately 20 minutes more per pound when cooked without thawing (35 and 55 minutes). A roast without bones requires a longer cooking time, than one with bones, (approximately 10 to 15 minutes longer per pound). A meat thermometer is useful for accuracy in meat cooking. To use it, make a hole in the meat with a skewer. Insert the thermometer in the largest or thickest part of the meat to the center. Ordinarily we cook frozen steaks and chops approximately twice as long as fresh unfrozen ones.

Vitamin Values of Frozen Fruits and Vegetables

Recent studies on the vitamin values of frozen food products indicate that frozen fruits lose very little of their vitamin B and vitamin C content during freezing or freezer storage if kept at very low temperatures. Frozen fruits, eaten as soon as taken from storage contain more vitamins than canned fruits. Frozen vegetables stored at very low temperatures retain vitamin A and vitamin B. The vitamin C value of frozen vegetables is conserved by freezing but may be decreased between the harvesting and freezing and during the scalding and cooling in preparation for freezing. When frozen vegetables are cooked vitamin C values may be conserved if a small amount of water is used if the vegetables are not over-cooked and the water is served with the vegetable or in some other form.

(Revised by -- Mabel Doremus. Acknowledgement is made to Miss Matilda Peters, and to Dr. Rebekah Gibbons of the Home Economics Department of the University of Nebr. for their assistance in the preparation of this circular)

19617nb-9/40