

Freezing Foods

*Vegetables, Fruits,
Meats*

Issued by
The Extension Service
Agricultural and Mechanical College of Texas and
The United States Department of Agriculture
H. H. Williamson, Director, College Station, Texas

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Vegetables, Fruits, Meats

by

Winifred Jones, Specialist in Food Preservation
Hazel Phipps, Specialist in Food Preparation
Roy W. Snyder*, Animal Industries Specialist
Texas A. and M. College Extension Service

Quick freezing and storing in freezer lockers is the most desirable method of preservation for most foods because more of the original flavor, texture, color, and nutritional value of the fresh product is retained. As in all methods of preservation, the first thing to remember is to start with

good quality food and work fast to prepare it for preservation. Other factors contributing to a successful frozen product are proper handling in preparation; good airtight, moisture - vapor - proof containers or wrapping; quick freezing; and storage at near zero temperature with correct humidity.

Freezing Vegetables

Kind and Variety of Vegetables:

Vegetables which are most desirable in frozen lockers are: peas, spinach, lima beans, asparagus, sweet corn, and snap beans. Vegetables that yield good products but which are less frequently frozen are: carrots, beets, turnips, squash, broccoli, cauliflower, and okra. Some varieties are better than others for freezing. Suitable varieties should be planted if freezing is to be one method of preservation. Follow variety list on chart on page 6.

Selection and Preparation:

Select fresh tender products at the right stage for eating. Corn, peas, beans, and asparagus change rapidly in the garden. When they reach maturity they should be harvested and frozen without delay.

The preparation of vegetables for freezing is similar to that required for canning. Wash well, drain, sort, trim and cut the vegetables as for eating or canning.

Steam or Scald Then Cool:

Steam or scald the vege-

*On leave of absence as professor and head of the meats laboratory, Texas A. and M. College.

tables to stop enzyme action or chemical changes which take place as soon as the vegetables are gathered. Blanching or scalding also shrinks the food. It brightens the green color in vegetables. It further cleans the product and destroys some bacteria.

Arrange a large kettle of boiling hot water. Keep water boiling during the whole process. Use sufficient water so that it does not chill when a small amount of vegetables are blanched at a time. Five-gallon lard cans, a canning kettle, or wash boilers may be used. Put prepared vegetables in a wire basket with small mesh or a thin cloth bag. Dip into boiling water and hold the correct time for each vegetable. Immerse the vegetable immediately in a large container full of cold water until cool. The scalding time for each vegetable is found on page 6. It is very **important** that the vegetables are not scalded too long because minerals, vitamins, and flavor are destroyed. The immediate cooling stops the scalding action. Drain the vegetables well after cooling.

Pack in Brine

Brine pack is desirable because it protects the product on warm days when it is carried to the locker. A frozen brine pack thaws more slowly than a plain one. The color, texture, and flavor are retained better in brine. To

make brine solution, dissolve 4 level teaspoons salt in 1 quart of water. This is two per cent brine. Enough brine is added to just cover the product. The brine pack is advised for all vegetables except spinach and other greens. For these foods the plain pack, without liquid or salt, can be used. Cut corn and lima beans may be packed in plain pack. As the vegetables are packed they should be placed in a refrigerator or very cool place until ready for freezing.

Containers for Storage

Glass jars, tin cans, cardboard box with cellophane lining may be used for vegetables and fruits. Paper cartons should be strong and rigid to prevent crushing. They should be moisture-proof to avoid excess drying, and liquid-tight to prevent leaking. A special container with a coating of parafin inside and which resembles an ice cream carton is very satisfactory. Plain ice cream cartons are not moisture-proof. Glass jars have to be handled more carefully to prevent jars breaking, and they take up more room in the locker. The greatest disadvantage of using glass is that food has to be almost completely thawed before it can be removed. Wide mouth jars are better to use. One advantage of jars is that they may be used many times. Tin cans, if available, are very suitable.

Use plain tin for everything except New Zealand spinach, rhubarb, and asparagus. Enamel cans are better for these foods. The size of the container should be suited to the family. Usually the amount for one meal should be in one carton. Sizes range from one-half pint to one-half gallon. Some containers may be reused if they are thoroughly clean. Paper cartons should be cleaned and aired or sunned. New cellophane linings should be put in paper boxes.

If cartons are not available cellophane bags can be used, sealed, and wrapped with several layers of wrapping paper. If bags alone are used, they are easily broken.

Headspace

Foods expand in freezing; therefore, leave headspace. Allow about $\frac{3}{8}$ inch headspace for half-pints, $\frac{1}{4}$ inch for quarts, and $1\frac{1}{2}$ inches for half-gallon paper or tin cartons. For glass jars allow 1 to $1\frac{1}{2}$ inches for pints and quarts. Larger jars should not be used.

Seal

Use rubber on jars. Seal tin cans as for canning. Cellophane-lined cartons may be sealed by hot curling irons or pressing the folds together with a medium hot iron. Airtight seals are important to prevent drying of food and exchange of flavors. Never place any food in the locker without first putting it in a

tight container or wrapping well and sharp freezing it.

Label Products

Name of pack, owner's name, and date of packing should be on the label. It is also valuable to mark those of good quality and the variety of the product, and indicate whether it is packed with brine or with sugar, etc. If owner keeps a notebook or record of each container or package placed in freezer locker, he may just number the package and put the above information with the corresponding number in the notebook.

Freezing and Storing

Managers of locker plants usually handle the freezing of the food. Remember the better the quality of food frozen the longer it can be kept stored without loss of flavor or food value. The lower the temperature in the storage room the better and longer the product keeps without undesirable changes. Another factor contributing good results in frozen foods includes the use of proper containers. Since food is more likely to dry out in small units, it is especially important that airtight containers be used. Freezing the food for 8 to 48 hours immediately after the food is prepared is important. Food retains its original flavor and texture better when the sharp freeze room temperature is about -20 to

SUGGESTIONS FOR PREPARATION OF VEGETABLES FOR FREEZING

To make a 2 per cent brine solution, dissolve 4 level teaspoons salt in one quart of water. Read general directions on pages 3-7 in this bulletin.

Vegetable and Variety	Special Suggestions for Each Vegetable	Scalding time; Cool Immediately	Pack
Asparagus: Mary Washington	Tender stalk—cut even length, work fast in preparation.	3 minutes	dry pack or brine
Beans, shelled Lima-speckled lima Henderson Bush Fordhook	Half mature, free from starch. Shell and grade for size.	2 or 3 minutes	dry pack or brine
Beans, snap Blue Lake Tender Green Yellow Wax	Select when seed just begins to form. Cut in lengths or leave whole.	2 to 4 minutes	brine
Broccoli Italian Green Sprouting	Separate large bunches. Trim all woody fiber on large stems.	3 to 5 minutes	brine
Cauliflower Snowball	Use white even colored vegetable. Separate flowerettes.	3 to 4 minutes	brine
Carrots, turnips, kohlrabi	Cut in ½ inch slices or dice.	2 minutes	brine
Corn Sweet Igold	Kernels should be milky, juicy, sweet. Prepare as for table use.	4 to 6 minutes, before cutting from cob	brine or dry pack
Peas, English Thomas Laxton Other shelled peas	Small tender green peas, shell and grade. Work fast.	1 to 1½ minutes	dry pack brine (best)
Peppers, Wonder Sweet California	Select tender deep green with glossy skin. Remove seeds.	2 minutes	brine
Okra	Medium pods. Leave whole.	1 to 2 minutes	brine
Spinach, other greens	Use only young tender leaves, handle quickly. Remove stems.	2 minutes	dry pack
Squash	Select firm, fully colored, well matured. Cook tender as for eating. Do not season.	no	dry pack

—25 degrees Fahrenheit. If food is then stored at 0 degrees temperature in the locker, it will keep much better. When the temperature is 5 to 10 degrees, as in some

small home units as well as commercial plants, the food should be used in four to six months. Under the most favorable conditions good quality products will keep a year or more.

Frozen Fruits for Variety

Kinds and Varieties of Fruit to Freeze

Fruits that are especially adapted to freezing include strawberries, cherries, peaches, apricots, pineapple, and all berries. Fruits that yield a good product but not commonly frozen are grapes, cranberries, apples, plums and figs, also fruit juices. The varieties of fruits that are suitable for canning are usually good for freezing. For peaches, J. H. Hale, Leona and Hale Haven are good varieties. Methley and Santa Rosa plums, Magnolia figs, Blake-more strawberries, and Early Wonder blackberries are very desirable for freezing.

Selection and Preparation

Select berries and cherries at the best stage of maturity—firm and ripe. Freeze as soon as possible after gathering. Never use soft or moldy fruit. If fruit is too green it has a poor flavor and is hard.

Prepare fruits as for eating or canning. Wash, drain, sort, and cut. Use stainless steel knives in paring and coring fruits. Use a solution

to prevent darkening of peaches, pears, apples and apricots. This solution may be made with the juice of one lemon in two quarts of water or two tablespoons vinegar and two tablespoons salt dissolved in one gallon of water. Leave fruit in this solution only long enough to prepare one batch of fruit for freezing. If left longer than 20 or 30 minutes the fruit begins to soften. Small slices are better for freezing. Berries and cherries may be left whole. Slice large strawberries.

Use Syrup or Sugar for Fruit

A syrup pack preserves the form as well as the flavor and color of most fruits. Fruits packed without syrup or sugar lose more vitamin C and have a less desirable flavor, color and texture. Fruits without sugar or syrup may be used for pies or preserves.

A heavy syrup is recommended for most fruits; however, light or moderate syrup may be used according to taste and availability of sugar. To make syrup, dissolve the desired amount of sugar in hot water or fruit juice and cool before using.

Heavy syrup—

1 to 1½ cups sugar to
1 cup water or fruit juice

Medium syrup—

¾ cup sugar to 1 cup
water or juice

Light syrup—

⅓ to ½ cup sugar to 1
cup liquid

Corn syrup may be substituted for part or all of the sugar. It does not have the preserving quality of cane or beet sugar. A weak honey solution may be used, but it is not as desirable because it does not freeze as readily, it thaws quickly, and it affects the flavor of the fruit.

After syrup is made and cooled, the fruit is prepared and packed in the container. Syrup is added to cover fruit. Keep fruit below liquid to retain color of top slices. As each container is packed, put in refrigerator or cool place until ready to freeze.

Preserving Meats in the Freezer Locker

The better the quality of meat put in the freezer box the better the eating when it comes on the table. Experiments indicate that freezing tenderizes beef to a small degree. Beef and lamb should have a uniform covering of fat over the carcass to make good eating. If the animals are killed on the farm, care should be taken to produce clean carcasses, as dirty bloody meat may not keep as well.

Dry packing is best for berries, cherries, and plums; but never use it for peaches, apricots, or rhubarb. Slice fruit and mix well in the dry sugar. Use 1 pound sugar and 3 or 4 pounds fruit. Rhubarb may be packed raw in a light syrup for best quality.

Fruit juices and pulp may be frozen. The juice is made as for drinking or canning. A liquid-proof container must be used. Tomatoes are not satisfactorily frozen, but tomato juice may be easily frozen. The best juices for freezing are cider, cherry, grape, and berry.

Freezing and Storing

Information on containers, headspace, seal, labeling, freezing, and storage is the same for fruits as it is for vegetables. Read pages 4-7 for these suggestions.

Ripening or Aging

Ripening or aging means hanging the meat in a refrigerated or cold place that is kept about 32° to 38° F. Beef, veal and lamb should be ripened or aged before it is cut for freezing. This has a tendency to produce a more tender and tasteful piece of meat. The fatter the animal, the longer it can hang for ripening. Veal should not be hung longer than 3 days. The aver-

age for beef is 6 to 10 days. Lamb should be ripened 3 to 7 days. Pork should not be ripened but cut as soon as the carcass is cold and firm.

Cutting

A locker box 18 x 20 x 30 inches makes a container of $6\frac{1}{4}$ cubic feet. It will take 6 cubic feet or the average sized locker box to put about 175 pounds of beef that would grade medium to good—based on government grading standards.

Approximately 20 to 25% of a side of beef will be bone, fat, and waste that is not economical to be put in the box. Suggestion on cutting which will yield the most practical pieces for freezing is given in Texas Extension Bulletin, B-79, Killing and Cutting Beef.

The following suggestions are given for cutting a side of beef:

Hind Quarter

- Round—
 - Round steak
- Hind shank—
 - Boneless pot roast
- Loin—
 - Loin steaks cut with bone in
- Rump—
 - Pot roast with most of bone removed
- Flank and other trimmings—
 - Stew, or ground meat for hamburger, chile.

Fore Quarter

- Rib—
 - Steak or roast—boneless

Chuck—

Boneless roasts — Inside and outside chuck rolls

Neck—

Boiling beef, bone left in or ground for hamburger

Fore arm—

Roast or swiss steak — boneless

Naval and brisket (Plate)—

Short ribs or boiling beef —bone in

Fore shank—

Ground meat for hamburger or chile.

Wrapping

A special freezer paper should be used when wrapping meat to be frozen. Ordinary wax or butcher paper is not satisfactory. A number of companies now make a paper that is especially adapted for meat to be put in the locker.

A good quality paper should be tough, moisture-proof, and should prevent the absorption of outside odors or flavors. The paper should not absorb liquids such as water, blood, oil or grease. It should not crack or become brittle when in a cold temperature or impart any off odors or flavors to the meat.

Cellophane is one of the most ideal wrappers now produced. To make an ideal package, cellophane should be protected with another covering of paper. This outside wrapper may be butcher paper.

All packages should be made as air tight as possible and tied securely or sealed

with an adhesive that will not loosen when kept in a low temperature.

It is a good idea to separate steaks or chops with a piece of paper. This helps to separate pieces even before the whole package is thawed.

To simplify the locating of certain kinds of meat in a box, different colored paper or string may be used. White may be for beef, brown for fresh pork and another color for cured pork or lamb.

Labeling

All packages should be marked clearly so that the owner knows what is inside, the date packaged and the locker number. For example:

78 (Locker Number)

5 Pork Chops

March 31, 1943

Suggested Time Limit To Keep Frozen Meats

This varies according to quality of product to begin with and the mechanical operation of the freezing machinery. Pork usually cannot be held as long as beef or lamb. Pork fat has a tendency to become rancid. Cured ham keeps as good as beef. It is better to season ground meats before freezing. Some authorities vary as to the desirability of seasoning ground meat before it is frozen.

Bacon does not keep well under frozen conditions and especially when it has been sliced. Generally it cannot be kept longer than 4 months

without becoming rancid.

All meat should be frozen in a sharp freezer before placed in the storage box. A low temperature of -10° to -30° F. is desirable and frequently used in the sharp freezer. Best storage results have been obtained when the locker room is operated at about zero Fahrenheit. If higher temperatures than zero are maintained, food products should not be held so long.

The following time limits are only suggestive and may vary in different plants or home freezer boxes:

Beef—6 to 12 months

Lamb—6 to 12 months

Veal—4 to 9 months

Fresh pork—3 to 6 months

Cured ham—6 to 12 months

Cured bacon—1 to 4 months

Poultry—6 to 12 months

Suggestions on Use of Small Home Freezer Unit

Because of limited capacity of a home freezer unit such as the "barrel type" or even ice cream hardening units, care must be taken when freezing large quantities of food. This is especially true when a quarter of beef or whole beef is to be frozen.

Plan to put only small quantities of meat in the freezer at a time so that the temperature in the unit is not raised too high during the time it takes to freeze the product. It is desirable to pack the unfrozen product around the surfaces closest to the freezing coils.

Even more care should be taken in preparing, wrapping and labeling than is done in the larger commercial freezers because it is harder to maintain the low temperatures of zero and colder.

FISH

Fish should be kept cold and frozen as soon as possible. If the fish are properly wrapped and a low, even temperature maintained in the locker room, there will be no odor.

Clean and dress the fish, removing the heads. Wash, and if they are large, they should be cut into pieces suitable for one meal. They may be wrapped in the special meat paper before freezing, but are more often glazed and then wrapped. To be glazed, the fish are frozen, then each fish is dipped quickly into cold water. The zero temperature of the fish causes a thin coating of ice to form over it immediately which seals and protects it. To be well glazed the fish should be dipped several times. Wrap and store in the locker as suggested for meat.

POULTRY

Poultry is best if not fed 12 to 24 hours before killing. The fowl should be cleaned properly, dressed carefully, chilled, wrapped, and frozen as for meat. Poultry frozen for home use should be drawn when it is dressed. Ice water or cold well water may be used to chill if no other method is available. Prompt cooling and

freezing are essential as bacterial changes can take place rapidly in the moist, warm body cavity.

Poultry frozen whole for roasting may have the giblets wrapped in waxed paper and placed inside and the whole bird wrapped in the special meat paper and frozen.

Young chickens may be cut into suitable pieces for frying, chilled, and wrapped in a single package, or the pieces may be packed into an air-tight can, jar, or waxed container and frozen. Some prefer to pack the pieces into a container and cover with water or a brine solution made with 1 teaspoon salt dissolved in 1 cup water. Chicken may also be glazed before packing. (See directions for glazing fish.)

FREEZING EGGS

Fresh, chilled eggs are prepared for locker storage by breaking them into a clean bowl and beating or churning them thoroughly until the yolks are broken and well mixed with the whites. This churning prevents an undesirable coagulation of the yolk solids during storage. The whites may be separated from the yolks and packaged without churning, but the yolks should be well beaten. Tin is the most desirable container for eggs, but air-tight paper cartons may be used. If eggs are to be used for cakes or sweets add 1 teaspoon sugar or honey for each cup. If they are to be used for

scrambled eggs or salad dressing, add 1 teaspoon salt for each cup.

BUTTER IN COLD STORAGE

Butter made from pasteurized cream may be packed in pound prints and stored

at zero for six months or longer. Good butter churned from pasteurized milk will keep longer without acquiring an undesirable flavor. Butter made from sweet cream, will keep better than that made from sour cream.

Preparation and Use of Frozen Foods

MEAT

Meats can be cooked frozen or they can be thawed and then cooked. Steaks and hamburgers can be put on to cook while still frozen but a longer cooking time is required since the meat has to thaw before cooking begins. Roasts and other larger pieces can be thawed, then cooked immediately. Meat handled in this way would be prepared exactly as the same cut would be used when fresh. The important thing in all meat cookery is a low temperature, 300 to 350 degrees F.

Meat can be thawed in the refrigerator or at room temperature. It requires about one or two days to thaw in the refrigerator. The length of time depends on the size of the cut of meat and the temperature of the refrigerator.

VEGETABLES

We recommended that vegetables, while still frozen, be

put in a small quantity of boiling water to cook. They may be partially thawed and then cooked. Cook just until tender. Avoid an overcooked or mushy product. Frozen vegetables require a shorter time for cooking than fresh vegetables. Begin counting time when the vegetable thaws and reaches the boiling point.

Frozen vegetables are especially good served buttered but they may be prepared in various other ways such as creamed or scalloped.

FRUITS

Thaw fruits enough to develop the flavor. Usually fruits are better served slightly frosted. They may be used as fresh fruit served alone or with milk, cream, cereals, ice cream or used for salads, short cake and other desserts.

Although most people prefer to use them as fresh fruits, they make excellent pies or cobbles.