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Home Freezing of Foods

By Mary E. Loughead
Extension Nutritionist

Freezing is another desirable method of preserving food. Families having a home-size freezing cabinet, or the services of a freezer-locker plant, can freeze some of their home grown foods to add to the year around food supply.

Frozen foods at their best closely resemble the original fresh product in flavor, food value, texture and appearance. However, if good methods are not followed in selection, preparation and storage, changes may take place in the frozen food which make the quality less desirable than that of the original fresh product. These changes are caused by:

(1) Bacteria, yeasts, and molds
(2) Chemical action of enzymes, or ferments
(3) Ice formation during freezing
(4) Surface drying or “freezer burn”
(5) Unfavorable storage conditions or too long a storage period

Successful freezing of foods depends on preventing these changes to the greatest extent possible. Methods which will help are:

1. Select foods of good quality that are most suitable for freezing.
2. Package in air-tight, moisture-proof containers and wrappings that will not discolor or change the flavor of the food.
3. Freeze and store at right temperatures.
4. Prepare for freezing by methods best suited to the product.
5. Handle and prepare food properly after it is removed from the freezer.

**CHOICE OF FOODS FOR FREEZING**

Fresh foods of good quality, just right for table use, is the first rule for selecting foods to be preserved by freezing. Freezing does not improve the quality of food. All foods are not equally satisfactory when frozen. Products which have been found most suitable for freezing include:

1. Meats, poultry, fish
2. Fruits: apples, apricots, berries, cherries, guavas, figs, mangos, nectarines, peaches, pineapples, and some varieties of plums and prunes
3. Vegetables: asparagus, beets, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, green edible soybeans, lima
beans, mushrooms, okra, peas, snap beans (green or wax),
sweet corn, sweet peppers, spinach, sweet potatoes, greens.
4. Eggs
5. Butter

Products not so satisfactory for freezing, include:
1. Tomatoes
2. Vegetables which are usually eaten raw, such as lettuce,
cabbage, celery, cucumbers, and radishes
3. Some fruits—including watermelons and pears.

Some of the products not recommended here for freezing have
been frozen satisfactorily commercially or in laboratories by meth­
ods which are not practical for home freezing. Further research
and experimental work may lead to methods which are suitable
for freezing these foods in home freezing cabinets or freezer­
locker plants.

It may not be practical to freeze some foods, such as carrots
and apples, which store successfully.

Other important factors in the choice of foods for freezing,
such as varieties of fruits and vegetables and age of meat animals,
are discussed more fully under the directions for selection and
preparation of each type of product for freezing.

PACKAGING

Containers and Wrappings

The kind of packaging material used is an important item in
the keeping quality of frozen foods. To protect the food from
drying (freezer burn) and some other changes which lower qual­
ity during storage, containers and wrappings must be moisture­
vapor proof and seal tightly. Packaging materials should also
have the following qualities:
1. Easy to fill, seal, label, handle
2. Not discolor or change flavor of food
3. Economical in price and storage space
4. Not break or puncture easily at low temperatures
5. Easy to empty—before or after thawing

So far no one container or wrapping material possesses all of
these qualities. Types of containers in common use are illustrated
in figure (1) below.

Glass jars properly sealed are moisture-vapor proof. They are
easy to fill and seal but require sufficient head space to prevent
breakage. They use more storage space than some other types of
containers and must be handled carefully to prevent breakage. Unless wide-mouth jars with straight sides are used, food must be thawed before removing from the jar. This is a distinct disadvantage with foods that are better cooked while still frozen.

**Tin containers.** Either friction top, slip-on top or sealed, as in canning, are good and may be used repeatedly if they do not rust. Fruits and berries will discolor, and brined vegetables will rust the cans unless lacquer-lined tins are used.

**Moisture vapor-proof cartons** of heavily waxed paperboard or fiber, are available and very practical. Some have straight sides and tight lids; others have special linings. The usual pasteboard box and ice cream carton are not satisfactory unless they contain a bag of cellophane or specially treated paper.

**Special cellophane** gives almost as good protection as glass or tin and is ideal for frozen storage. Rolls of this cellophane are made in convenient widths, suitable for wrapping meat, poultry; stalky vegetables such as broccoli or asparagus, and corn on the cob. Pliofilm, similar in appearance to cellophane, is excellent.

**Special wrappings should always be used for meat.** Ordinary waxed paper and regular butcher paper are not satisfactory. Use cellophane or tough, moisture vapor-proof paper made for this purpose for meats, poultry, fish, butter, and cheese.

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1The Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture does not recommend tin cans for frozen vegetables.
Eggs are best frozen in small containers—glass or cartons recommended.

Filling and Sealing Containers

Foods expand when they freeze. When packing foods for freezing, enough space must be left in the package to allow room for expansion without breaking the seal, or the package. Sufficient head space is a "must" if tin cans or glass jars are used.

In carton or cellophane bag, leave 1/2 inch head space for fruits or vegetables, packed without liquid, that pack tightly, such as peas, corn, berries, peaches. One inch head space for fruits packed in sirup, purees, or vegetables packed in brine.

In glass jars or tin cans, leave 11/2 inches head space for all products that pack tightly, such as purees, or products packed in sirup or brine.

No head space is needed for products that pack loosely, such as cauliflower and broccoli.

After filling containers, wipe all sealing surfaces with a clean cloth to remove moisture or food particles that would interfere with a tight seal. Press out all air possible from bags before sealing.

A warm or moderately hot iron should be used in sealing heat-sealed bags or cartons. Too hot an iron may melt the cellophane or special coating, making an imperfect seal.

Glass jars and tin cans are sealed completely before freezing.

Wrapping Meats, etc.

Trim meat, poultry and other products to be wrapped so that they will be free of sharp corners or edges that might puncture the wrapping material. Make into a compact form or shape to save storage space, wrapping paper, and make it easier to wrap.

Wrap carefully, pulling the paper tight to force out the air. Fold in all edges so that no air can reach the meat. Tie with cord or seal with special tape.

Labeling

Label each package or container clearly with date, name or kind of product, and any other information that would help in identifying the contents. Careful labeling helps to prevent leaving foods too long in storage, one of the causes of loss of quality in frozen foods.
Size of Package

Frozen foods must be used promptly after thawing to prevent spoilage. Unless the package of frozen food can be separated before thawing and part of it kept frozen, meal size packages are preferable.

FREEZING AND STORAGE

Freezing Temperature

Freezing foods quickly at a temperature of zero or below seems to give best results. At a given temperature, food will freeze more slowly in still air than in a rapid air stream. Other factors which affect rate of freezing are: size and shape of package, thickness of wrapping, contact between food and cooling coils or plates, amount of food placed in freezer at one time. Overloading the freezing space is one of the most common mistakes in home freezing.

Quick freezing causes less damage to animal and vegetable fiber than slow freezing because of less ice formation during freezing. Freezing does not sterilize the product, but it slows down or stops, for the time being, the action of organisms (bacteria, yeasts, and molds) that cause spoilage. Molds stop growing at temperatures below 15 degrees, but enzymes that ripen meat and cause changes in fruits and vegetables continue to work at temperatures nearer zero. Packages or containers of food should not be stacked together until they are completely frozen. Otherwise, food in the center of the stack may freeze too slowly.

Storage

Zero degrees F. is considered the most practical single temperature for storage. The storage temperature should not vary more than 4 degrees. Variation in temperature may cause drying and absorption of odors and flavors from other foods.

The length of time products will keep satisfactorily in the locker will depend on the extent to which the container or wrapper is moisture-vapor proof, on the temperature of the locker room or storage compartment, and on the quality and freshness of the food when frozen.
It is not possible to say what is the shortest or greatest length of time any food will keep in good condition at any temperature. The following table indicates the possible safe storage period for good quality foods, well-wrapped and stored at zero degrees F.

<table>
<thead>
<tr>
<th>Product</th>
<th>Normal storage period (months)</th>
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<tbody>
<tr>
<td>Sausage and other ground meat</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Fresh pork</td>
<td>3 - 6</td>
</tr>
<tr>
<td>Fish</td>
<td>3 - 6</td>
</tr>
<tr>
<td>Lamb</td>
<td>6 - 9</td>
</tr>
<tr>
<td>Veal</td>
<td>6 - 9</td>
</tr>
<tr>
<td>Beef</td>
<td>6 - 12</td>
</tr>
<tr>
<td>Poultry</td>
<td>6 - 12</td>
</tr>
<tr>
<td>Eggs</td>
<td>6 - 12</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>6 - 12</td>
</tr>
<tr>
<td>Fruits</td>
<td>12 or more</td>
</tr>
<tr>
<td>Vegetables</td>
<td>12 or more</td>
</tr>
</tbody>
</table>

The locker room should be clean and as free as possible from odors. Never put smoked meat in a locker without first wrapping and quick freezing as for fresh meat. Do not let tobacco smoke get into a locker room. The odor of smoke is hard to remove.

**Power Failure or Freezer Trouble**

If the power should fail, or mechanical difficulty develops, which interrupts the service, do not open the storage room door. Food in a home-size freezer will usually stay frozen a couple of days, depending on the temperature of the cabinet, how well it is insulated and how full it is. If the storage temperature were kept at zero or below, food in the storage cabinet would stay frozen longer than if the temperature were held at 10° above zero. If the storage cabinet were full of frozen food, it would stay in a frozen condition longer than if it were only half full.

If the cabinet will be out of operation for more than two days, some provision should be made to care for the frozen food, either by removing the food to another freezer storage room or by using dry ice. Fifty pounds of dry ice in a 20 cubic foot cabinet, distributed so that there is some in each compartment, should hold
the temperature for three or four days if the cabinet is about full
and two or three days if it is half full or less.

In a well-constructed locker plant, operating at a temperature
of zero or below, food will probably remain in a frozen condition
for several days if the doors are kept closed.

PREPARATION FOR FREEZING

The right kind of equipment and plenty of good clean water
to prepare food will aid in successful freezing. The following pieces
of equipment will be found useful: Household scales; wide-mouth
funnel for filling containers (fruits and vegetables); pans and
bowls made of non-corroding material for washing and holding
prepared food; stainless knives; cutting boards; measuring cups;
large spoons and ladles; large kettle of aluminum or enamel, with
closely fitting lid for blanching vegetables; large utensils for
cooling vegetables after blanching; crayon or marking pencil for
labelling packages; notebook for records. Figure 2 below shows
some simple equipment used in home freezing.

![Figure 2. Simple equipment used in preparation of food for freezing.
(1 and 2) utensils for washing and holding fruits and vegetables; (3)
deep vessel with tight fitting cover for blanched vegetables; (4) wire
screen sieve for washing fruit or blanching vegetables; (5) cheesecloth;
(6 and 7) measuring cups; (8) fruit sieve; (9) stainless steel knife; (10)
measuring spoons; (11) kitchen shears; (12 and 13) funnels for filling
containers; 14 and 15 irons for sealing heat sealed cartons.

Fruits and Berries

Select firm, ripe fruit, in perfect condition for eating. Sort,
wash, peel and pit or slice if necessary. Handle carefully to avoid bruising. Pack with sirup, dry sugar, or plain, according to the kind of fruit and the way it will be used. Freeze at once. If it cannot be frozen immediately, store in a very cool place. Some varieties of fruits seem to give better results than others. (See table p. 22 for recommended varieties for Montana.)

**Sirup Pack**—Fruits to be eaten as a sauce retain color, flavor, and texture more like the fresh product when packed in sirup than by other methods. The sugar may be mixed with hot or cold water and stirred until it is dissolved. The sirup need not be cooked and it must be cool when added to the fruit. Sirup made with equal parts of sugar and water is of medium sweetness and suitable for most fruits. Very heavy sirup will not freeze solidly and may ooze out if the container is not completely sealed or gets broken.

**Dry Sugar Pack**—Mix the sugar evenly through the fruit; then pack, and freeze. The sugar draws juice from the fruit to form a sirup. This method is not suitable for fruits that discolor easily such as peaches, unless treated to prevent darkening.

**Freezing Fruits with Less Sugar**

White corn sirup or honey may be used in place of part of the sugar with some fruits as given in the following table:
## Suggestions for Using Less Sugar

<table>
<thead>
<tr>
<th>Kind of Fruit</th>
<th>Amt. of fruit</th>
<th>Proportions for Dry Sugar Pack&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Proportions for Sirup Pack&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sugar Only</td>
<td>Sugar and Corn Sirup</td>
</tr>
<tr>
<td>Strawberries</td>
<td>4 lbs. (10 cups)</td>
<td>2½ c. Sugar</td>
<td>1½ c. sugar and 1½ c. corn sirup</td>
</tr>
<tr>
<td>Huckleberries</td>
<td>5 lbs. (15 cups)</td>
<td>2½ c. Sugar</td>
<td>Same as above</td>
</tr>
<tr>
<td>Cherries, red, Sour, pitted</td>
<td>4 lbs.</td>
<td>2½ c. Sugar</td>
<td>Same as above</td>
</tr>
<tr>
<td>Cantaloupe, firm but ripe—cut in small pieces</td>
<td></td>
<td>1½ c. sugar and ¾ c. corn sirup</td>
<td>No sugar, 1½ c. honey</td>
</tr>
<tr>
<td>Raspberries or Sweet cherries, pitted</td>
<td>4 qts.</td>
<td>3¾ c. Sugar</td>
<td>1½ c. sugar and 2½ c. corn sirup</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 c. water</td>
<td>1 c. honey</td>
</tr>
<tr>
<td>Peaches, sliced or Apricots, halved</td>
<td>4 qts.</td>
<td>4½ c. Sugar</td>
<td>2½ c. sugar and 3¾ c. corn sirup</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 c. water</td>
<td>1½ c. honey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 c. water</td>
<td></td>
</tr>
</tbody>
</table>

(1) Taken from War Emergency Circular prepared by Montana Agricultural Experiment Station, Montana State College.

(2) Place washed fruit in a suitable pan and sprinkle the sugar over it. Let sugar dissolve on the fruit for 3 or 4 minutes. Then pour sirup or honey over the fruit. Turn the mixture several times with a spoon until each berry or piece is coated. Pack into containers for freezing.

(3) All sirups must be cold when added to fruits. Sirups need not be cooked.

### Dry Pack

Some fruits are good when frozen without sirup or sugar. Rhubarb, cherries and huckleberries for use in pies, marmalade, or other cooked dishes may be packed and frozen plain. Loganberries, raspberries, cranberries and possibly others are good frozen without sweetening. Most fruits, however, have better flavor and texture if sweetened some before freezing.

### Apricots

Select firm, ripe fruit, showing characteristic yellow color, no green, gives slightly when pressed with thumb, not soft or mushy.

Sort, wash, halve and pit. (Scald and peel first if desired but not necessary). Pack either raw or blanched. To blanch, scald halves 3 minutes in stream, water or sirup...
made with 1 cup sugar to 1 quart water. Cool quickly in water or air.
Pack into containers and cover with cold sirup made of equal measures of sugar and water. To prevent darkening, treat in the same manner as recommended for peaches below.

**Cherries**—Harvest while color is still bright red. Overripe (sour) cherries may be too dark and soft. Underripe cherries lack color and flavor, bruise readily. Wash, stem, pit.
Mix 5, 4 or 3 pounds of pitted cherries with 1 pound sugar (2 1/4 cups) and pack. May be frozen without sugar or sirup.

**Cherries**—Fully tree-ripened, a little riper than for fresh use (sweet) but not soft. Cherries that are naturally quite soft when fully ripe should be frozen as crushed pulp or puree.
Stem, wash, pit if desired.
Pack whole cherries into container and cover with cold sirup made of equal parts sugar and water. Mix pitted cherries, 4 or 5 pounds with 1 pound sugar (2 1/4 cups).

**Peaches**—(Freestone)—Select fully ripened but not soft fruit. Peel, cut in halves, remove pits. The skins on fully ripened peaches may be loosened by scalding 15 to 30 seconds in boiling water. Drop into cold water immediately to prevent further heating.
**Packing**—Peaches may be packed as halves, slices or crushed pulp. To prevent, or reduce darkening:

1. Drop slices or halves of peaches immediately into cold sirup to cover—3 cups sugar to 4 cups water. Then pack into containers and seal.

   (or)

2. Dissolve 1/4 teaspoon citric acid in 1 quart water. Drop prepared peaches in solution for one to two minutes. Pack in dry sugar (1 cup of sugar to 4 1/2 to 6 cups prepared fruit), or in sirup to cover (3 cups sugar in 4 cups water).

   (or)

3. Put peaches directly into sugar sirup to which has been added 1/4 teaspoon ascorbic acid for each 1 to 1 1/2 cups sirup.
(4) Use a combination of citric acid and ascorbic acid. Prepare fruit. Drop into a citric acid solution made by adding 4 1/2 tablespoons citric acid to 1 quart of water. One quart of solution will be enough to treat about one pound of peaches (4 or 5 peaches) at one time. Let peaches stand in solution 10 minutes. Remove fruit from solution and pack with sirup or dry sugar to which has been added 1/4 teaspoon ascorbic acid for each pound of fruit packed. It is suggested that fresh citric acid solution be made up for each 5 or 6 pounds of treated fruit.¹

Treatment with citric acid or ascorbic acid, or both, is recommended.

**Rhubarb**—Wash, trim cut into one-inch pieces.
Pack and cover with cold sirup of equal measures of sugar and water.

**BERRIES:**

**Huckleberries**—Sort or screen to remove all underripe or small berries, wash and drain.
Cover with cold sirup made of equal parts of sugar and water or mix 3 or 4 pounds of berries with 1 pound (2 1/4 cups) sugar and pack without sirup.

**Raspberries**—Sort, wash if necessary and drain. Handle as little as possible.
Pack and cover with cold sirup made of equal parts sugar and water or mix 5 or 4 pounds berries with 1 pound (2 1/4 cups) sugar and pack.

**Strawberries (whole)**—Cap, sort, wash and drain. Use berries of uniform size and ripeness.
Pack and cover with cold sirup made of equal parts sugar and water.

**Strawberries (sliced)**—Cap, sort, wash and drain. Cut in halves or smaller.
Mix well 4 pounds (10 cups) berries with 1 pound (2 1/4 cups) sugar. Five pounds berries can be used to 1 pound sugar if preferred.

**Other Berries**—Sort, wash and drain.
Mix 4 or 5 pounds berries with 1 pound (2 1/4 cups) sugar,

¹Suggested by Department of Home Economics Research, Montana State College.
or pack berries and cover with cold sirup of equal parts sugar and water.

**Fruit Juices** Fruits that do not discolor easily may be put and **Pulps** through a sieve to remove seeds, hard pieces, and skins.

Sugar may be added to the pulp in the proportion of 3 or 4 lbs. fruit pulp to 1 lb. sugar and the mixture frozen in small containers. Less sugar may be used during sugar shortage, or corn sirup or honey substituted as for dry sugar pack.

Fruit juice may be frozen with or without sugar. Bottles that taper up to a small neck should not be used since they sometimes break while freezing.

**Preparing Vegetables**

Select vegetables in prime condition for table use and get them ready for freezing immediately. A few hours delay in hot weather may make the product unsuitable for freezing because of the action of enzymes, bacteria, yeasts or molds. Sort carefully, wash, and prepare as for cooking. **Blanch** by heating quickly in boiling water or steam. Cool quickly and pack. **Freeze promptly.** Keep the prepared products cool until they reach the freezer.

Blanching of vegetables lessens the action of enzymes, which cause developments of off flavors and unnatural color. Blanching brightens the color of some vegetables. Blanch small quantities at a time so that the water will be boiling hot each time. If blanching in hot water, use a large kettle with plenty of water. Have water boiling rapidly and put in a quart or less of vegetables at a time. The water should return to boiling within about one minute after each addition of vegetables. Plunge into cold water immediately after removing from the scalding water or steam to prevent over-cooking. Quick cooling in cold water is essential after blanching. Drain well before packing. Corn on the cob will have a "cob flavor" unless thoroughly heated. Use stainless steel knives and avoid galvanized and iron utensils, since they cause some vegetables to discolor.

Vegetables may be packed dry or well-drained, or they may be packed in cold 2% brine (1 teaspoon salt to 1 cup cold water). The method may vary according to the product and the use to be made of it. The brine must be cold when added to vegetables. **Dry pack** is preferred when the locker temperature is kept near zero. If the temperature of the locker room is 8 or 10 degrees above zero, a few packages of green vegetables that are to be kept longest might well be packed in the brine. It seems to protect color and flavor better than dry pack at the higher temperature over a long period of time.
Certain varieties of vegetables seem better suited to freezing than other varieties. (See page 21 for recommended varieties.)

**Asparagus** Use only tender tips. Wash. Boil 2 or 3 minutes. Cool quickly in cold water and drain. Pack dry or in brine.

**Beans (snap)** Best varieties for freezing are those having bright green or yellow pods, tender, pods of medium size. Wash, cut or break into uniform pieces. String if necessary. Boil 2 to 4 minutes. Cool in cold water and drain. Pack dry or in brine.

**Beans (lima)** Harvest when the pods are well-filled but the beans still green. Sort out any beans that have turned white as they are too mature. Wash and shell. Boil 1½ to 2 minutes. Cool in cold water and drain. Pack dry.

**Broccoli** Wash. Split large pieces lengthwise. Soak a few minutes in weak salt water to remove any bugs. Boil 3 or 4 minutes. Cool in cold water, drain. Pack dry.

**Brussels Sprouts** Prepare same as broccoli. Pack dry or in brine.

**Carrots** Bright orange color not having a hard core, tender, sweet. Wash, scrape, dice or slice ¼ in. thick. Boil 2½ to 3 minutes. Cool in cold water, drain. Pack dry or in brine.

**Cauliflower** Select compact heads, white, free from brown spots. Separate into flowerets about one inch across. Wash. Boil 2½ to 3½ minutes. Cool in cold water, drain. Pack dry or in brine.

**Corn (on cob)** Silk and trim tender well-shaped ears, even in size. Boil 6 to 9 minutes. Cool thoroughly in cold water, drain. Wrap in special cellophane or meat wrapping paper. Not over 6 to 8 ears in a package. Pack dry.

**Corn** (whole cut) Cut corn from cob and rinse quickly in cold water, skimming off silks or chaff rising to the top of the water. Pack dry.
Greens Use only tender leaves. Remove stems. Wash. Boil or steam 1½ to 2 minutes. Cool in cold water, drain. Pack dry.

Mushrooms Wash and sort. Button sizes are better than large ones. If large, cut in pieces. Boil 2 or 3 minutes. Cool in cold water, drain. Pack in brine.

Peas Harvest when pods are well-filled, with peas still green and tender. Shell and wash. Discard large, hard or starchy peas. Boil 1 to 1½ minutes. Cool in cold water, drain. Pack dry or in brine.

Peppers (sweet, green & Pimiento) Wash, cut into halves, quarters, or slices. Remove seeds. Boil 2 minutes, cool in cold water, drain. Pack in brine.

Meats

Beef, Pork, Lamb—Healthy animals, with a good finish but not too fat, should be slaughtered for freezing. Meat from poorly finished animals will lose quality more quickly than that from animals in good condition. Pork should be well-trimmed before freezing. Chill all meat promptly after slaughtering.

Beef and lamb will be a little more tender if allowed to ripen from 6 to 10 days at a temperature just above freezing—32 degrees to 36 degrees—before it is frozen. Veal and poultry will keep better for a longer period of time if cut, wrapped and frozen as soon as it is thoroughly chilled. All meat should be cut into pieces suitable for cooking and each piece carefully wrapped according to cut and wrapped in the special types of wrappings recommended for meats. Each piece of meat should be well-wrapped and the edges of the paper folded in such a manner as to make the seal as airtight as possible. Some locker operators are using a special type of wax to protect frozen meats from drying during storage. Label each package clearly. The length of time meat will keep well will depend upon the condition of the fresh product, thorough chilling before freezing, how well it is wrapped and how near zero the locker is kept. Pork is especially liable to become rancid if kept more than four months, unless the locker temperature is held at zero.

Steaks, chops or pieces of chicken will be easier to separate and thaw for cooking if two pieces of wax paper or locker paper are placed between layers of meat. Ground meat does not keep
as well as chunk meat and should not be kept in storage as long.

Cured meat may be wrapped and stored in freezer lockers to keep it sweet and free from mold. It should be wrapped and quick frozen just as any other meat before placing in the storage room.

**Poultry**—Poultry is best if birds are kept from food long enough to empty the crop, then dressed carefully, chilled, wrapped and frozen. Birds that are not to be cooked whole should be cut into pieces before freezing. Some locker plant operators age the bird 12 to 24 hours at 32 to 36 degrees F., while others freeze as soon as all animal heat is gone and the bird is cold. Ice water or cold well water may be used for chilling if a chilling room is not available. Poultry frozen for home use should be drawn when it is dressed. Prompt cooling and freezing are essential as bacterial changes can take place rapidly in the moist, warm body cavity.

Birds are more satisfactory if dry picked or slack scalded. Very hot scalding melts the fat in and just under the skin. This causes the skin to become dry and paperlike during storage. The fat will become rancid and develop a strong flavor sooner than if it had not been melted. Water for scalding young chickens, fryers and turkeys should be 125—128 degrees Fahrenheit, and for hens over two years, 128—130 degrees. Dip the bird into the water and hold it there one minute. Keep swishing it about so water reaches all feathers but do not lift it out of the water until the end of the scalding period.

Poultry frozen whole for roasting may have the giblets wrapped in wax paper and placed inside the whole bird before freezing.

Cut young chickens into suitable pieces for frying. Chill and wrap in a single package or pack pieces into an airtight can, jar or waxed container and freeze. If packed in glass jars, be very careful not to pack too tightly or too full, especially if a narrow mouth jar is used. Chicken may also be glazed before packing. (See directions for glazing fish.)

**Fish**—Fish should be kept cold and should be frozen as soon as possible. If the fish are properly wrapped, sharply frozen 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, cut into steaks or strips. They may be wrapped in the special meat paper before freezing, but are more often glazed and then wrapped. To glaze, the fish are frozen, then each fish is dipped quickly into near freezing water. A thin coating of ice forms quickly on the fish and protects from drying. This glaze is not permanent. For further protection wrap in vapor resistant paper before storing in the locker.
Freezing Butter, Cheese And Eggs

Butter—Good butter, properly wrapped, will keep several months at zero temperature. It should be made from sweet or freshly soured cream and must be well washed and worked to remove all traces of milk. Pasteurization is not absolutely necessary but cream that has been pasteurized makes butter that is less likely to become rancid during long storage. To pasteurize cream, heat it to 145°F., stirring often. Hold at this temperature for 30 minutes, then cool quickly to 50°F. Wait at least three hours before churning.

Wrap each pound of butter in regular waxed butter paper, then wrap again in the moisture-vapor proof paper used at the locker plants for wrapping meat. Cellophane is excellent for the outer wrapping. Date each pound and use the oldest first.

Cheese—Cheese can be held at zero temperature up to six months if properly wrapped in moisture-vapor proof paper. Cheese should be frozen in pieces small enough to be used within a few days after thawing. Half-pound pieces freeze well.

Eggs—Eggs should not be frozen in the shell. They may be broken and the yolks and whites stirred together or frozen separately. Egg yolks become tough and rubbery with freezing unless stirred thoroughly. The addition of salt, sugar, corn sirup or honey will help prevent this thickening. The choice of sweetening or salt depends on the way the eggs are to be used. Freeze in small containers.

Whole eggs—Break clean, fresh eggs, measure by the cupful and pour into a bowl. Add 1 tablespoon corn sirup, honey or sugar, or 1 teaspoon of salt to each cup of egg. Mix thoroughly but do not whip air into the eggs. This amount of sweetening does not make the eggs very sweet.

Egg Yolks—Before mixing add 2 tablespoons of sugar, sirup, or honey, or 1 teaspoon salt to one cup yolks. This prevents gumminess when the yolks are thawed.

Egg Whites—Freeze whites with nothing added and without mixing.

USE OF FROZEN FOODS

Food taken from the locker should be kept frozen until ready for use. It will spoil quickly after it thaws. Vegetables should not be kept longer than 48 hours, even in a good, cold refrigerator, unless they are kept frozen.

Frozen vegetables cook quickly, usually in about half the time required for fresh ones. They may be cooked in a tightly covered
steamer, waterless cooker or pressure saucepan. If such utensils are not available, drop the frozen vegetable into a kettle containing a small amount of boiling water, 1/4 to 1/2 cup for a pint package of vegetables. Cover and heat quickly. Turn the cake of frozen material and separate with a fork when partially thawed. Green vegetables will hold their color better if kettle cover is loosened after they start to cook.

Vegetables packed in brine may be allowed to thaw in the container. Then partially drain and cook immediately or put directly into a hot kettle and drain off some of the brine as it melts.

Corn on the cob may be partially thawed before cooking. This will give the cob a chance to thaw and heat through without overcooking the corn. Thawing the corn in cold water may improve the flavor.

Fruits frozen in sirup or sugar should be served while still cold, but almost entirely thawed. Peaches and apricots may discolor quickly after they thaw, depending somewhat on the treatment given before freezing to prevent discoloration. All fruits should be thawed in the container. Thawed fruit will keep in the refrigerator about as long as very ripe fresh fruit.

Dry, frozen fruit for pies, should be poured into the pastry shell while still partially frozen and the necessary flour, sugar and seasonings added.

Meat may be thawed before cooking, or it may be put on to cook while still frozen. The cooking time for meat that is thawed first is about the same as for fresh meat. If the meat is not thawed first, a very much longer cooking time is necessary than for fresh meat or completely thawed frozen meat.

Steaks and chops brown more readily if they are first completely thawed.

Meat may be thawed slowly in the refrigerator or more rapidly at room temperature. Never soak the meat to thaw it. The whole wrapped package may be placed in water to thaw quickly or it may be placed in front of a fan. Meat will require about five hours per pound to thaw in the refrigerator or about two hours per pound at room temperature. Cook promptly after thawing.

Poultry should be thawed and cooked as fresh birds. Broilers, however, may be put on to cook without complete thawing if extra cooking time is allowed.

Fish may be completely thawed and cooked as fresh fish or they may be partially thawed and cooked more slowly and for a longer time.

Eggs are thawed in the package either in the refrigerator or at room temperature, or, when the time is short, in running water.
Eggs should be frozen in small containers so they can be used promptly after thawing. Thawed whites will keep in good condition in a refrigerator for several days but yolks, or the whites and yolks mixed, keep only about 24 hours.

The thawed eggs are used just like the fresh eggs.
1 tablespoon thawed yolks = 1 egg yolk
1½ tablespoons thawed whites = 1 egg white

When using whole eggs or egg yolks that have had salt added, remember to reduce the amount of salt called for in the recipe. The amount of sugar used in either whole eggs or yolks would probably not affect the texture or sweetness of most baked products.

MAKE GOOD USE OF FROZEN FOOD STORAGE SPACE

Keep the freezer full but don’t hoard food, is the keynote to making good use of frozen food storage space. Turnover is important. “Dead” storage is expensive and wasteful of food as well as storage space. On the other hand, too rapid a turnover is not desirable. From the standpoint of contributing to a better year-around diet, which is the chief reason for preserving food, it may not be a good practice to be using frozen asparagus for example, while there are green beans in the garden.

By good management, a variety of good quality frozen foods can be had all through the year. Good management practices include the following:

1. A written plan of the amount and kind of food to be frozen. This plan should be a part of the entire food supply plan for the family.
2. Packages labelled, before storing, with date and kind of product.
3. Records which show the date, with amount of food put in and taken out. This helps prevent dead storage caused by leaving a food in so long it has lost eating quality.
4. Plan butchering days for late fall, winter and early spring. Meat will then be going into the freezer when fruits and vegetables are coming out.

From 25 to 35 pounds or more of frozen food can be stored at one time in one cubic foot of storage space. The amount will vary according to the kind of food and size and shape of package. The rate of turnover determines the storage capacity per year. That is, if the turnover is twice a year, the storage capacity per year would be 50 to 75 pounds or more per cubic foot of storage space, instead of 25 to 35.

Both the total amount of food the family expects to preserve by freezing and the rate of turnover should be used to estimate the amount of frozen food storage space a family would need.
The practice of freezing home produced foods is rather new in Montana and it is not possible to give a complete list of varieties adapted to Montana conditions that are also best suited for freezing. This table gives a partial list.

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<tr>
<th>Vegetable Varieties</th>
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Fruit Varieties

Apples
- Wealthy
- Transparent
- MacIntosh
- Delicious

Apricots
- Blenheim
- Moorpack
- Tilton

Cherries (sweet)
- Bing
- Lambert

Cherries (sour)
- English Morello
- Large Montmorency

Currant
- Red Lake

Peaches
- Crawford
- Elberta
- J. H. Hale
- Halehaven
- Slappey

Huckleberries
- Wild (for pies)

Raspberries (black cap)
- Cumberland
- Plum Farmer

Raspberries (red)
- Chief
- Latham

Raspberries (purple)
- Sodus

Strawberries (standard)
- Dorset
- Dunlap
- Premier

Strawberries (everbear)
- Twentieth Century
- Progressive
- Wayzata or Rockhill
- Streamliner

Other Berries
- Boysenberry
- Youngberry