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Food Preservation

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BY FREEZING

By *E. H. Wiegand* • *Thomas Onsdorff*
A. W. Oliver • *Lucy A. Case*

CALENDAR

For Freezing Foods

Winter—Meat, poultry, winter vegetables, apples.

Spring—Asparagus, peas, spinach, and other greens. Fish, berries, poultry, eggs, rhubarb.

Summer—Beans, peas, corn, apricots, berries, cantaloupe, cherries, fish, meat, poultry.

Fall—Beans, broccoli, brussels sprouts, cauliflower, corn, peppers, grape juice, peaches, plums, prunes, fish, game, meat, poultry.

DISCARD

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Food Preservation by Freezing*

By E. H. WIEGAND, THOMAS ONSDORFF, A. W. OLIVER,
and LUCY A. CASE

Freezing of foods has many advantages compared with other methods of preservation. A greater quantity of essential vitamins can be preserved; less labor and time are required for preparation; and the finished product more closely resembles fresh food in palatability and appearance.

PREPARATION OF MEAT AND POULTRY FOR FREEZING

FRESH MEAT

1. **Selection.** Use animals that have been recently fattened and are gaining in weight at time of slaughter.
2. **Slaughtering.** Slaughter in cool weather or late in afternoon. Keep carcass clean. Cool rapidly, at 32° to 34° F., if possible.
3. **Aging.** Hang beef, lamb, and mutton in a chill room at 32° to 34° F., 7 to 10 days before freezing. Prepare and freeze pork and veal as soon as animal heat has left carcass, which will take 36 to 48 hours in a chill room.
4. **Cutting and preparing.** Cut into family-size pieces. Place waxed paper between slices of steaks and chops before wrapping. The waxed paper aids in separating them when using. Grind some of less tender cuts into hamburger and sausage; do not season until time to cook. Boning saves locker space.
5. **Wrapping and labeling.** Wrap each piece separately and tightly twice in special waxed paper. Tie firmly. Label with name of cut and date. Use only special paper made for frozen food lockers. Wrap package with waxed side of paper next to meat or on the inside. This makes it possible to write on the outside. Ordinary butcher paper and lightweight waxed papers allow the moisture to evaporate from the meat. This dehydration causes the fat to become rancid and affects the flavor of the meat.

* This circular is a compilation of information from Federal Cooperative Extension Service and the Departments of Food Industries, Foods and Nutrition, Animal Husbandry, and Poultry Husbandry.

When wrapping, if a bone punctures the paper the meat should be rewrapped to avoid dehydration. The meat should be completely covered twice by the lockerwrap paper.

6. **Freezing.** Freeze and store at 0° F. or lower. Or quick freeze at -15° F. and store at 0° F. Check thermometer in storage room. Request that temperature of 0° F. or lower be provided. Freeze as soon as possible after cutting, but be certain to freeze within 12 hours. If no quick-freezing room is available, spread packages in an open or loose pile to aid in freezing quickly. Stack packages after freezing.

CURED MEATS

Cut into family-size pieces. Wrap in locker storage paper and tie securely. Pork may be given a mild cure and then frozen.

BIG GAME ANIMALS

Handle big game animals such as venison and elk the same as beef. Bleed and dress immediately after killing. Cool overnight. Transport in coolest part of car, away from engine and exhaust fumes. All game placed in storage and kept during the closed season must be tagged with metal game tags.

POULTRY

1. Choose fat birds for quality products. Bleed well. Dry pick; or semiscald 20 to 40 seconds in water at 125° to 130° F., and pick.

2. Singe. Draw. Wash. Remove oil sack, head, feet, and shanks. Cool thoroughly and quickly.

3. Leave whole for roasting. Disjoint for frying and fricaseeing. Cut broilers in half. Cutting saves locker space.

4. Pack not more than two chickens in one package.

5. Wrap tightly twice in locker storage paper and tie firmly; or pack in glass, tin, or waxed locker cardboard containers with tight covers. Some people, when using locker cardboard or tin containers, like to cover the pieces of poultry with cold water and freeze. It is necessary to leave headspace to allow for expansion in freezing. This should be $\frac{1}{2}$ inch for short pints, 1 inch for tall pints, and $1\frac{1}{2}$ inches for quarts. If this practice is followed, the water should be drained off as quickly as it thaws to avoid having the meat in water, which will remove some of the nutrients.

Giblets should be washed, wrapped in locker paper, and placed in body cavity. In case poultry is cut, wrap giblets and place at top of container.

6. Use within 8 to 10 months if stored at 0° F. temperature.

GAME BIRDS

Handle game birds as you do poultry. Bleed well. Prepare and freeze promptly after killing. At present, by federal law, possession of migratory game birds is possible for not more than 45 days following close of open season in state where taken. For further storage limitation information consult state officials.

*PREPARATION OF FISH AND SEA FOOD FOR FREEZING

FISH

1. Use only strictly fresh fish. Never allow fish to become warm after catching. Pack immediately after catching, if possible, or provide refrigeration in case of delay in packing.

2. Prepare as for cooking. Remove fins, head, tail, entrails, scales. Wash. Cut large fish into family-size pieces or fillet. Rinse or dip in salt water, about 1 cup salt to 1 gallon of water.

3. Pack preferably in airtight containers, i.e., glass, tin, waxed cartons or cups. These will prevent an exchange of odors with other packed products during storage. To such containers water or a 2½ per cent brine (3 ounces or 4 tablespoons salt for each gallon of water) may be added to cover the flesh well, leaving ample headspace for expansion. This should be ½ inch for short pints, 1 inch for tall pints, and 1½ inches for quarts. This method of brine covering is particularly adaptable to the freezing preservation of fatty or oily species of fish, since it greatly retards changes during storage.

Sheet cellophane, moisture proof parchment paper, or suitable waxed locker storage paper is used in wrapping the various pieces of fish. Small pieces of the wrapping material between slices and fillets or individual wrapping will aid the retention of the original quality and facilitate handling when thawing. It is expedient to put another wrapping over all. If a wax-coated locker paper is used, wrap in such a way that the wax coating will be inside the package, and seal the ends of the package well. Freeze at -15° F. and store at 0° F.; or freeze at 0° F. with packages separated for air circulation and store at 0° F.

RAZOR CLAMS

Razor clams are of the best quality if dug between September and April, although they may be taken the year round. Dead clams should not be used; and care in cleaning clams for freezing should be exercised.

* The information on fish and sea foods was prepared by Dr. E. W. Harvey of the Sea Foods Laboratory at Astoria. This laboratory is a branch of the Food Industries Department. More detailed information is available in *Preservation of Sea Foods*, Oregon Agricultural Experiment Station Circular 164.

1. Rinse off external sand by hosing or washing under water tap.
2. Place clams in cold tap water or cold water to which salt has been added in the proportion of 3 ounces (about 4 tablespoons) to each gallon of water. Allow to stand for about an hour so that the clams will clean themselves of most of the sand held within the body.
3. Open or shuck as follows in order of preference:
 - a. Shuck raw, saving liquor.
 - b. Steam open; subject to live steam until majority of shells open.
 - c. Immerse in boiling water for 2 to 3 minutes to open shells.
4. Wash clams well under running water, having slit the neck and digger lengthwise to remove any dirt, sand, or foreign material and stomach contents. Drain off excess water.
5. If desired the necks may be cut off, ground, and packed separately for use in chowder preparation.
6. Pack meats, whole or minced, in glass, waxed cups or cartons, cellophane lined cartons, tins, or other suitable containers. Cover with clam liquor. A salt solution (1 level tablespoon to a quart of water) may be substituted for the clam liquor. The meats should be thoroughly covered with the liquor or brine to prevent dessication or locker-burn, and off flavor development during storage. Leave head-space for expansion. (Refer to paragraph 3 under Fish.) Seal well.
7. Freeze at 0° F. Store at 0° F.

NOTE: If there is any question about "mussel poisoning" or "clam poisoning" during the late spring or summer months, consult the nearest city or county health officer. For more detailed information regarding clam freezing see Oregon Agricultural Experiment Station Circular of Information No. 301, Freezing Razor Clams.

OYSTER FREEZING

Oysters are more susceptible to various types of spoilage than are some of the other marine foods. They must be handled with care and as rapidly as possible. It is suggested that the operator have well in mind the following steps in handling and the equipment and supplies needed before starting to shuck oysters preparatory to freezing them.

1. Use only live oysters.
2. Hose off to remove external debris from shell.
3. Shuck or open raw in usual manner, saving oyster liquor.
4. Wash thoroughly in salt brine (1 level tablespoon salt to a quart of water). Do not leave oysters in brine longer than necessary.

5. Drain off excess water or brine.
6. Package:
 - Cellophane lined box or carton
 - Waxed cups
 - Cans
 - Glass jars
7. Cover surface with oyster liquor to prevent exposure to air. For headspace refer to paragraph 3 under Fish.
8. Seal or close container.
9. Freeze as soon and as fast as possible.
10. Store at 0° F.

CRAB FREEZING

1. Use only live crabs.
2. Remove back shell by pulling from one side. The operator holds the crab mouth down by grasping the crab by its left legs and holding it on a table. Then with the right hand on the left edge of the back shell the operator pulls the back off with a quick pull up and to the right. Iced or chilled crabs will be less active than those fresh out of the water.
3. Eviscerate and wash. The body contents are easily shaken out or washed out with a small fast stream of water. The gills are removed by hand. Newly forming shell, which is jellylike and contains some pigment, is best removed. Otherwise this pigment may discolor the body meat. The crab is now broken in half ready for the precook.
4. Place crabs in a pressure cooker, a steamer, or a large kettle containing an inch of vigorously boiling water. Use of a pressure cooker is preferable. When using a pressure cooker, exhaust steam from petcock 7 to 10 minutes, then tighten the petcock and raise the pressure to 2 pounds. Cook from 12 to 15 minutes. When using a steamer or large kettle, count time from when steam flutters the lid or escapes rapidly. Steam the crabs 20 to 22 minutes.
5. After cooking, remove from the cooker, and as soon as the pickers can handle the crabs, start the picking. A small amount of cold water may be used to cool a few to start the picking but it is better if the meat does not come in contact with water at this point.
6. The halves are grasped by the legs. The body sections (thin white cartilaginous structures) are cracked and slightly crushed by hand so as to free the body muscle attachments. The halves are then shaken, shaking the meat into a pan. The picker often strikes the rim of the pan with the body to remove some of the meat that may remain within these sections. The legs are cracked along the

outer curved edges only enough to allow shell removal. The segments are removed from the legs by starting with those farthest from the body, thus pulling out the cartilaginous sheath to which the muscle of the next segment is attached. Usually the smaller segments do not contain enough meat to justify their being cracked and opened. Keep leg and body meat separate to facilitate packing.

7. Pack meat in suitable container for freezing. Glass, waxed cups, cellophane lined cups or other adaptable containers may be used. Fill, leaving headspace for expansion.

8. Cover meat with a salt brine (1 level tablespoon of salt for each quart of water) leaving headspace for expansion. (Refer to paragraph 3 under Fish.) Cover tightly, heat seal, or otherwise seal the container.

9. Freeze at -10° to -20° F., if available. If freezing is to be done at 0° F. allow ample spacing of containers for circulation of air until packages are frozen. Store at 0° F. or below.

Optional method for killing and cooking. Live crabs may be killed and cooked by dropping into a large amount of vigorously boiling salted water and boiling 20-25 minutes. The method outlined above, however, (killing and cleaning before cooking) is preferred since it produces a more desirable meat.

PREPARATION OF EGGS FOR FREEZING

1. Eggs should be frozen as quickly as possible after preparation.

2. Use only clean, fresh eggs.

3. Break each egg separately into a clean dish. Be sure eggs have firm yolks and whites, not weak or watery. Eggs must be free from odor.

4. Pack whole eggs or pack whites and yolks separately. *To pack whole eggs:* Mix whites and yolks thoroughly without beating air into them. To each pint of stirred egg, add 1 teaspoon of salt or 1 tablespoon of sugar, corn sirup, or honey, and mix thoroughly again. *To pack eggs with whites and yolks separated:* Whites need no treatment. Stir yolks thoroughly and treat the same as whole eggs.

5. *Containers* should be airtight and of suitable size. As frozen eggs should be used immediately after thawing and should never be refrozen, freezing in half pint and other small containers is recommended. Allow $\frac{1}{2}$ -inch vacant space at top of half pint container and 1-inch vacant space for pint container. Indicate on label whether contents contain salt or sugar.

Use frozen eggs in practically the same way as fresh eggs. In using frozen eggs, the added salt or sweetening must be deducted from the recipe. Equivalents: 5 medium whole eggs equal 1 cup; 8 medium egg whites equal 1 cup; 14 medium egg yolks equal 1 cup.

FREEZING DAIRY PRODUCTS

BUTTER

Butter may be packed in any of the following ways:

- (a) Wrapped in parchment paper and again in locker paper;
- (b) In waxed butter cartons lined with parchment paper and wrapped again in locker paper;
- (c) In airtight glass containers;
- (d) In paraffined parchment lined spruce butter boxes.

Two pound lots are suggested for (a) and (b); not more than 10 pounds for (d). Pack containers tight with as small air space as possible. Tie packages securely with string.

Butter for freezing should be made from fresh pasteurized cream. It should be well salted and thoroughly worked.*

COTTAGE CHEESE

Cottage cheese if of good quality, preferably made from pasteurized skimmed milk, the curd washed and salted but not creamed, may be kept in glass jars or paraffined containers, tightly covered, for 2 or 3 months. A temperature of from 0° to 10° F. is satisfactory. Thaw cottage cheese slowly.

MILK

Freezing of milk is unsatisfactory and is not practicable.

PREPARATION OF FRUITS AND VEGETABLES FOR FREEZING

GENERAL RULES FOR BOTH FRUITS AND VEGETABLES

1. Variety is important. See tables, pages 12-15.
2. Freeze only fresh products of good quality and proper maturity. Fruits and vegetables lose certain vitamins rapidly after harvesting.
3. Gather products in cool of the morning, handle quickly, and rush to freezer locker as soon as possible. Four hours or less from garden to locker is a good rule.
4. Keep in cool place while under preparation.
5. Prepare as for cooking. Wash, and remove foreign material, decayed, badly bruised, or immature products.

* Note: Directions for making butter and cottage cheese of quality suitable for freezing can be obtained from county extension offices.

6. Pack in glass jars with tight covers, lacquered tin cans with friction top or slip covers, or locker storage waxed paperboard containers with tight covers. Best flavor and longer keeping quality are obtained in airtight containers. Avoid containers larger than 1 or 2 quarts in size. Square or rectangular containers use locker space most efficiently.

7. In case of dry pack, which is not solid, fill containers to top and close tightly before freezing.

8. In case of liquid pack, allow $\frac{1}{2}$ inch for short pints, 1 inch vacant space at top of tall pint containers, and $1\frac{1}{2}$ inches vacant space at top of quart containers. Close tin cans and paper containers immediately after packing. In case of glass jars, put lids in place before freezing and fasten down after freezing.

9. Rubber rings on glass jars improve pack by keeping out air.

10. Label containers with name of product, date, and method.

11. When transporting products to and from locker in excessive heat, insulate with paper and cardboard cartons.

12. At locker plant, quick freeze if possible or separate packages in locker to facilitate freezing.

13. Fruits and vegetables retain best quality when stored at 0° F.

14. Use frozen fruits and vegetables within 1 year.

ADDITIONAL DIRECTIONS FOR FREEZING FRUITS

(See also General Rules, pages 8-9)

Sugar or sirup preserves color and flavor and improves the texture of the frozen fruit. Fruit may be packed in two ways, either in dry sugar or in sirup.

Dry sugar pack

Use dry sugar pack for purposes that require a less juicy product.

WARTIME SUGAR RATION (Fall 1943). One-half cup of sugar is allowed to 1 quart of packed fruit, and $\frac{1}{4}$ cup of sugar to 1 pint of packed fruit. See tables, pages 12-13.

PEACETIME SUGAR USAGE. Use either the proportion of 4 pounds of fruit to 1 pound of sugar (four to one) or the proportion of 3 pounds of fruit to 1 pound of sugar (three to one).

Distribute sugar evenly over fruit. Combine fruit with sugar either in a bowl or directly in the container for freezing. Fill containers to top if there is air space between fruit pieces; otherwise leave vacant space as for sirup pack ($\frac{1}{2}$ inch for short pints, 1 inch for tall pints, and $1\frac{1}{2}$ inches for quarts). Seal immediately.

The proportion of 4 to 1 by weight is commonly used in peacetime with most fruits. A simple method of measuring sugar for berries is as follows: Remember that one standard hallock or retail box of berries weighs 12 ounces net. When packing berries in the proportion of 4 to 1 by weight, use slightly more than $\frac{1}{3}$ cup of sugar to one hallock of berries. When packing berries in the proportion of 3 to 1, use $\frac{1}{2}$ cup of sugar to one hallock of berries.

Sirup pack

Sirup pack has the advantages of preserving color, is easy to pack, and the berries or fruit pieces retain near-fresh size and shape.

WARTIME RATION (Fall 1943). This allows $\frac{1}{2}$ cup of sugar per quart of packed fruit and $\frac{1}{4}$ cup of sugar per pint of packed fruit. One quart of fruit requires approximately 1 cup of sirup and 1 pint of fruit requires approximately $\frac{1}{2}$ cup of sirup. To make wartime sirup, allow 1 cup of water and $\frac{1}{2}$ cup of sugar for each quart of fruit to be packed. Any remaining sirup can be held in the refrigerator or used in canning. One hallock or 12-ounce box of berries will usually fill a pint jar.

PEACETIME SIRUP. Use strength of sirup to your taste. Forty per cent and fifty per cent sirups are commonly used. Forty per cent sirup means that the sirup is forty per cent sugar by weight and sixty per cent water. This is equivalent to 4 pounds of sugar and 6 pounds of water or 4 cups of sugar and 6 cups of water. Fifty per cent sirup is equivalent to an equal number of cups of sugar and water.

To make sirup, add sugar to water, stir until dissolved, and bring to a boil. Cool thoroughly. Place prepared fruit in container. Add cold sirup to within $\frac{1}{2}$ to $1\frac{1}{2}$ inches from top. Be sure to cover fruit with sirup. Fruits that discolor quickly, such as peaches, apricots, and apples, should be sliced directly into sirup in the packing containers. Discoloration of top layer of fruit may be prevented by holding fruit under the surface of the sirup. To do this, place a wad of waxed paper under the lid and freeze. Close tin cans and paper containers immediately after packing. In case of glass jars, partly seal before freezing and fasten lids down tightly after freezing.

ADDITIONAL DIRECTIONS FOR FREEZING VEGETABLES

(See General Rules, pages 8-9)

1. Blanch all vegetables thoroughly. This is necessary to insure retention of flavor and vitamin content. Blanching may be done

either by steam or by boiling water, preferably by steam except as noted in table.

- (a) *Blanching by steaming.* Use very hot fire. Place 1 to 2 inches of water in large kettle and bring to a vigorous boil. Place prepared vegetables in thin layer in wire basket or colander and lower into steam. Two wire baskets may well be used, one over the other for good steam distribution. Cover kettle closely and rapidly bring water to a boil again. Begin to count time when steam flutters the lid or escapes rapidly. Use blanching periods given in table, pages 14-15.
- (b) *Blanching by means of boiling water.* Have hot fire. Have vigorously boiling 3 gallons of water in preserving kettle or hot water bath canner. Place prepared vegetable in wire basket or colander, small amounts at a time. Immerse basket in boiling water. Agitate vegetables occasionally during blanching, but keep below surface of water at all times. Start counting blanching time when water boils again. The quantity of vegetable should be so small that the water resumes boiling in $\frac{1}{2}$ minute. Blanch about 1 quart of vegetables at a time in 3 gallons of water. Bring water to a boil between lots. Blanch vegetables according to table, pages 14-15.

At the end of scheduled time, remove basket of vegetables immediately from boiling water and immerse in a large panful of cold running water until thoroughly chilled. If you have no running water, change water several times.

2. Drain well.
3. Pack by either dry pack or brine pack method. See table, pages 14-15, for individual vegetables. Dry pack is preferred.
 - a. *Dry pack.* Place cooled, drained vegetables in container, fill to top, and seal.
 - b. *Brine pack (2 per cent salt solution).* Prepare brine by dissolving salt in pure cold water. Use 1 level teaspoon salt for each cup of water. Place cooled, drained vegetable in container and fill with brine to within $\frac{1}{2}$ to $1\frac{1}{2}$ inches from top. Allow about $\frac{1}{2}$ cup of brine for each pint container of vegetable. Close tin cans and paper containers tightly at once. In case of glass jars, close tightly after freezing.

FREEZING FRUITS

These products should be frozen and stored at temperatures of 0° F. or lower. If quick frozen, use -15° F. or lower and store at 0° F.

Name and varieties	Preparation	Sirup*	Sugar*	Containers
APPLES Firm winter varieties	Refer to pages 8-9 Peel, core, and trim; cut in eighths or twelfths Drop into light brine to prevent browning. (1 tablespoon salt per quart of water) Drain and pack		*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or plain tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
APRICOTS Tilton, Royal Blenheim, Wenatchee, Moorpark	Refer to pages 8-9 Wash thoroughly and pit Dip into boiling water $\frac{1}{2}$ minute to stop discoloration Chill and pack	Refer to pages 9-10 Pack in 40 per cent sugar sirup		Glass jars or plain tin cans Airtight containers preferable Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
BLACKBERRIES Pacific Northwest Native Wild, Cascade, Pacific, Brainard, Himalaya, Evergreen	Refer to pages 8-9 Sort carefully, wash, drain, and pack	Refer to pages 9-10 Pack in 40 per cent sugar sirup	*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or enameled tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
BLUEBERRIES Rancocas, June Concord, Katherine, Jersey, Rubel, Adams, Harding, Cabot, Grover Sam, Alaska Wild	Refer to pages 8-9 Screen, sort, and wash well to remove all foreign matter	Refer to pages 9-10 40 per cent sugar sirup preferred		Glass jars or enameled tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
BOYSENBERRIES	Refer to pages 8-9 Sort and wash carefully. Drain	Refer to pages 9-10 Pack in 40 per cent sugar sirup	*Dry sugar pack, $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or enameled tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
CANTALOUPE Any good firm variety	Refer to pages 8-9 Dice or slice from portion of fruit that is firm, ripe	Refer to pages 9-10 Pack in 40 per cent sugar sirup		Glass jars or plain tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
CHERRIES—SOUR Montmorency, Early Richmond, Late Duke, English Morello	Refer to pages 8-9 Soaking fruit in cold water for 2 hours aids pitting Pit and pack into containers	Refer to pages 9-10 Pack in 40 per cent sugar sirup	*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, very well mixed	Glass jars or enameled tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
CHERRIES—SWEET Lambert, Bing, Deacon, Royal Ann, Republican	Refer to pages 8-9 Pitting not necessary Stem, wash, and pack in containers	Refer to pages 9-10 Pack in 40 per cent sugar sirup		Glass or plain tin cans preferable Airtight containers necessary

* Amounts of sugar and strength of sirups are subject to federal rationing regulations. Ratio of fruit to sugar recommended for peacetime is 3 or 4 parts fruit to 1 part sugar by weight. (See pages 9-10.)

FREEZING FRUITS—Continued

These products should be frozen and stored at temperatures of 0° F. or lower. If quick frozen, use -15° F. or lower and store at 0° F.

Name and varieties	Preparation	Sirup*	Sugar*	Containers
LOGANBERRIES	Refer to pages 8-9 Use firm, ripe fruit Sort and wash well	Refer to pages 9-10 Pack in 40 per cent sugar sirup	*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or enameled tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
PEACHES Elberta, J. H. Hale, Candoka, Gold Medal, Crawford, Sal- wey, Rochester, Slappy, Carman	Refer to pages 8-9 Blanch and peel. Choice of methods: (a) Slice. Dip in boiling water $\frac{1}{2}$ minute to pre- vent discoloration, cool prompt- ly. (b) Cut in half, dip in boil- ing water 1 to 2 minutes. Cool promptly. (c) Slice directly into sugar sirup	Refer to pages 9-10 Use 40 per cent sugar sirup	Thoroughly mix 4 cups sliced blanched cooled peaches with $\frac{1}{2}$ cup sugar	Glass jars or plain tin cans Airtight containers only Use locker cartons only if glass or tin containers not available
PRUNES Italian, Agen	Refer to pages 8-9 Sort, wash and pit fruit Pack quickly before browning occurs	Refer to pages 9-10 Pack in 40 per cent sugar sirup	*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or enameled tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
RHUBARB Deep red color, standard varieties	Refer to pages 8-9 Select as for fresh use, tender with absence of fibers Wash, trim, cut into $\frac{1}{2}$ inch pieces	Refer to pages 9-10 Pack in 40 per cent sugar sirup	Dry sugar not recommended	Glass or plain tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
RASPBERRIES Cuthbert, Tahoma, Washing- ton, Lloyd George, Viking, Cayuga, Latham, Chief, New- burgh, Antwerp, Marlboro	Refer to pages 8-9 Use only very fresh berries Sort carefully, wash, and drain Pack loosely in suitable con- tainers	Refer to pages 9-10 40 per cent sugar sirup preferable	*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or enameled tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
STRAWBERRIES Corvallis, Marshall, Clark Seedling, Redheart, Narcissa	Refer to pages 8-9 Select late season mature berries Sort, cap, wash, and drain care- fully	Refer to pages 9-10 Pack in 40 per cent sugar sirup	*Dry sugar pack $\frac{1}{2}$ cup sugar per quart, well mixed	Glass jars or enameled tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
FRUIT JUICES Grape and berries	Refer to pages 8-9 Use only mature fruit Sort and wash Place in preserving kettle with small amount of water Simmer 10 minutes Do not boil Drain in jelly bag		*Add sugar in pro- portion of 4 to 5 cups of juice to 1 cup of sugar. (May dilute $\frac{1}{2}$ to $\frac{1}{3}$ for beverage)	Glass jars or enameled tin cans Bottles and jugs not over $\frac{1}{2}$ full

NOTE: When storing food in refrigerated lockers, check the room temperature by observing the thermometer provided by the plant manager. To retain quality products request temperature of 0° F. or lower in storage room.

* Amounts of sugar and strength of sirups are subject to federal rationing regulations. Ratio of fruit to sugar recommended for peacetime is 3 or 4 parts fruit to 1 part sugar by weight. (See pages 9-10.)

FREEZING VEGETABLES

These products should be frozen and stored at temperatures of 0° F. or lower. If quick frozen, use -15° F. or lower and store at 0° F.

Name and varieties	Harvesting, handling†	Preparation	Blanching time and cooling	Type of pack	Container
*ASPARAGUS Martha Washington, Mary Washington, Palmetto, Paradise	Harvest in early morning Keep fresh by placing stalks in water or in wet moss, in upright position	Sort, wash carefully and trim Cut stalks in 1-inch pieces or leave whole	Steam, 4 to 5 minutes Boiling water, 2 to 3 minutes Cool quickly and drain	Dry pack preferred or 2 per cent brine may be used	Glass or enameled tin cans Waxed locker cartons with waxed paper liners Wrap small bundles twice tightly in locker paper Waxed paper cups
BEANS—GREEN OR WAX Kentucky Wonder, Tendergreen, Full Measure, Stringless, Valentine, Blue Lake	Select full flavored beans, not too young Handle quickly to avoid wilting	Sort, snip, wash carefully and cut Remove all bruised or discolored beans	Steam, 10 to 12 minutes Boiling water, 5 to 8 minutes Cool quickly and drain	Dry pack or 2 per cent brine	Glass or plain tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
BEANS—LIMA Baby Fordhook, Fordhook, Carpenteria, Holmes' Green Prolific, Seiberts' Early	Beans in pod will keep longer than shelled After shelling handle quickly	Sort overmature beans that have turned white Pack white and green beans separately	Boiling water, 3 to 4 minutes Cool quickly and drain	Dry pack or 2 per cent brine	Glass, plain or enameled tin cans or C enamel cans Waxed locker cartons with waxed paper liners Waxed paper cups
BRUSSELS SPROUTS Italian	Harvest only the bright green succulent stalks Pack loosely to prevent breaking heads	Remove woody stem ends, leaving tender portion with flowering head Separate stalks to facilitate scalding and packing	Steam, 8 to 10 minutes Boiling water, 4 to 5 minutes Cool quickly and drain	Dry pack or 2 per cent brine	Glass, or plain or enameled tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
CAULIFLOWER Any variety	Harvest as for fresh market Discolored heads should be discarded Handle rapidly to prevent discoloration	Sort, trim, split stalks to ½ inch thickness Split stems to keep flowerets not larger than 1 inch Soak in light brine to assist cleaning	Steam 8 to 10 minutes Boiling water, 4 to 5 minutes Cool quickly and drain	Dry pack or 2 per cent brine	Glass or plain or enameled tin cans Waxed locker cartons with waxed paper liners Waxed paper cups
CORN—CUT Golden Cross Bantam, Golden Bantam, Top Cross, other suitable varieties	Select corn when kernels are full, round, highly colored with rich, milky, sweet juice Harvest early in morning	Husk, silk and wash	Boil ears 8 to 10 minutes Cool quickly, drain and cut	Dry pack or 2 per cent brine	Glass or tin cans with C enamel Waxed locker cardboard cartons with waxed paper liners Waxed paper cups

* Asparagus eating quality is improved more by quick freezing than that of any other vegetable.

† See pages 8-9 and 10-11.

FREEZING VEGETABLES—Continued

These products should be frozen and stored at temperatures of 0° F. or lower. If quick frozen, use -15° F. or lower and store at 0° F.

Name and varieties	Harvesting, handling†	Preparation	Blanching time and cooling	Type of pack	Container
CORN ON COB Bantam, Top Cross, Improved Golden Bantam, Golden Cross Bantam, Burbank Top Cross, Pure Gold, Seneca Golden, Tendergold, White: Pearlcross	Same as for cut corn	Husk, silk, trim off rough ends, and wash (Requires much more locker space than cut corn)	Boiling water, 1½ inch ears, 8 minutes; 1¾ inch ears, 10 minutes; larger ears, 12 minutes Cool quickly and drain	Dry pack only	Large plain or enamel cans or wrap ears tightly twice in locker wrap paper
*PEAS World's Record, Improved Gradus, Thomas Laxton, Asgrow 40, Onward, Rogers' 95, Stratagem, Tall Alderman (Telephone)	Pick when peas fully developed Avoid over or under maturity After shelling handle rapidly	Shell and handle before peas become warm Heating reduces vitamin content Sort out overmature, starchy, or woody peas	Boiling water, 2 to 3 minutes Cool quickly and drain	Dry pack or 2 per cent brine	Glass or plain or enameled tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
PEPPERS, SWEET Any variety at proper stage of maturity	Customary practice of harvesting for fresh use is satisfactory This vegetable handles easily with minimum of deterioration	Wash, slice, or halve the product before packing	Steam, 5 to 8 minutes Boiling water, 3 to 5 minutes Cool quickly and drain	Dry pack or 2 per cent brine Brine is preferred	Airtight glass or tin preferred Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
SPINACH AND OTHER GREENS Any variety at proper stage of maturity	Harvest when green and succulent, without fibrous midrib Spinach should be cut before flowering	Very thorough washing and trimming is necessary Remove all infested or decayed leaves and discard all large or tough stems	Steam, 2 to 3 minutes Boiling water, 2 minutes Cool quickly and drain	Dry pack	Glass or tin cans Waxed locker cardboard cartons with waxed paper liners Waxed paper cups
SQUASH OR PUMPKIN Only firm fleshed fall varieties	Select when matured	Cut open, remove seeds Cut into 4-inch square pieces	Steam until tender and sieve Cool quickly	Solid pack, no liquid	Glass or enameled cans Waxed locker cartons with waxed paper liners Waxed paper cups
ZUCCHINI	Select when matured	Wash and cut to ½ inch or thinner slices	Steam, 3 to 4 minutes Boiling water, 2 minutes Cool quickly and drain	Salt brine (1 teaspoon salt to quart)	Glass or enameled cans Waxed locker cartons with waxed paper liners Waxed paper cups

15

NOTE: When storing food in refrigerated lockers, check the room temperature by observing the thermometer provided by the plant manager. To retain quality products, request temperature of 0° F. or lower in storage room.

* Varieties of peas high in B₁ content: World's Record, Dwarf Alderman, Rogers' 95, Stratagem. Varieties of medium B₁ content: Asgrow 40, Improved Gradus. Smaller differences in ascorbic acid (Vitamin C) occur: Highest, Dwarf and Tall Alderman, Improved Gradus.

† See pages 8-9 and 10-11.

HOW TO PRESERVE FOOD VALUES

1. Select fruits and vegetables that are not overmature.
2. Freeze fruits and vegetables promptly after gathering.
3. Be sure to blanch thoroughly all vegetables for the full recommended time to insure against changes in flavor and food values. Precautions should be taken to prevent overblanching, which results in losses of essential nutrients.
4. Do not refreeze fruits or vegetables.
5. When cooking, place most frozen vegetables directly into a small amount of boiling water. Do not overcook. (Follow directions in circular HE 1663—The Cookery and Uses of Frozen Foods, available at Oregon State College or county Extension offices.)

SUGGESTIONS FOR COOKING AND SERVING FROZEN FOODS

Fruits. Serve very cold while they still have a few icy crystals in them. This insures a firmer texture, a more natural color, and more appetizing quality than does completely thawed, lukewarm fruit.

Vegetables. Corn on cob and solid masses of greens are thawed before cooking. Other vegetables are cooked while still frozen in small amounts of boiling water or by steaming. Cook all vegetables shortest time that yields the texture that your family will accept. This is about one half to two thirds the time for fresh vegetables. Flavor, food value, and good texture decrease with long cooking.

Meats. Cook frozen or thawed. If frozen, allow extra time in cooking for thawing. Use low cooking temperature for a long period. Slow, long cooking produces more uniform doneness, greater tenderness and juiciness, and less shrinkage loss. Use dry heat for tender cuts and moist heat for less tender cuts.