

A PRIMER ON HOME FREEZING FOR THE BEGINNER

Every homemaker knows that meals must be planned to get the most out of the food dollar and to provide the family with a well- balanced diet. The freezer, more than any other household appliance, can help secure these results. The more you learn how to use it in relation to your own family, the greater the returns.

Freezing is a quick, convenient and easy way to preserve foods in the home. Plan ahead to manage your time and energy for preserving food directly from harvest. Freeze limited amounts at one time so the work is spread over several days of picking, rather than squeezed into one long tiring period of time. Be practical about what you attempt.

Your own observation has taught you that some foods "spoil" more quickly than others, so the rate of speed at which they must be frozen varies with their individual temperaments. A good rule for home freezing is: two hours from garden or orchard to container, and the faster the better!

Most food that is highly perishable at normal temperatures can be quick frozen.

Even delicate fruits and vegetables can be frozen, with only a few exceptions such as tomatoes (stewed tomatoes can be frozen) and those vegetables that lose crispness such as radishes, celery, cucumbers and salad greens.

Decide what you will freeze on the basis of availability of foods, family needs and taste, freezer space, cost of freezer storage, and availability of alternate methods of storage.

It is essential to start with high quality raw material. As garden foods mature, process without delay. Quality of the frozen food will

be only as good as the quality of the food before freezing. Freeze foods at their peak of eating quality to preserve flavor, texture, and appearance as near those of the fresh product as possible.

Do not ignore details of the recommended procedures for preparing foods for freezing. Seemingly unimportant steps can make the difference between a low quality and a superior frozen product.

Before you begin freezing foods at home it's important to know exactly which process to use and what the process is doing to the food.

Micro-organisms grow on food, causing it to spoil. The common growths are simple yeasts, molds, and bacteria. Because these micro-organisms are everywhere--in the air, water, soil and on all surfaces they contact--they naturally occur on all foods. Storing and preserving foods properly controls or inhibits the growth of micro-organisms, thus maintaining both quality and safety of the food.

Cleanliness and sanitary methods are as important in handling foods for freezing as in preparing them for immediate use.

All foods contain chemical substances called enzymes. They are essential to life, and continue their chemical activity after the fruits and vegetables mature or are harvested.

If allowed to work after a food reaches its peak of maturity, enzymes destroy the food's physical properties, thus changing its color, flavor and texture.

When perishable food is not preserved by one of the recommended ways, enzymes within the cells of the food continue to live and cause spoilage.

----- What Freezing Does -----

Freezing and storage wven at very low temperatures will not inactivate any of the common enzymes. At 0 F, the recommended temperature for storing frozen foods, enzymes are not inactivated but only slowed down.

In two to three months they will produce off-odors and bad taste. This temperature only checks the growth and reproduction of destructive bacteria. The faster a food is properly prepared frozen, the sooner both enzymes and bacteria are rendered harmless.

Just about every kind of food you or I will freeze contains moisture or water, and the process of freezing food involves the freezing point of water. As temperature of the surrounding air goes below the freezing point of water, the water progressively crystallizes out in the form of pure ice. Size of the crystals which form is determined by the span of time during which freezing takes place. When the temperature is lowered slowly, the crystals expand considerably. If the freezing is sharp and sudden, the crystals retain approximately the same size as the original water molecules.

In case you have doubts about how well a food will freeze, test it before freezing large quantities. To test, freeze three or four packages and sample the food a couple of weeks later. This will show the effect of freezing but not the effect of storage. Some varieties of the same kind of food freeze well, others do not.

Much of the success you have with your home freezer will depend on how you prepare, package, wrap and seal foods. Protecting frozen food is as important as freezing food of high quatity.

You will need general kitchen utensils, plus steel, aluminum or enamel kettle large enough to hold at least one gallon of boiling water, with a tight fitting cover. Use a mesh basket, a strainer, or large squares

of cheesecloth to hold one pound of vegetables in the boiling water.

Steaming of cut, sliced or green leafy vegetables is recommended and will preserve more nutrients than water does.

You will need a container to hold ice water for quick chilling of vegetables to stop cooking action. Drain thoroughly in a colander and turn out on absorbent towels.

It is false economy to skimp on wrappings and containers. They should protect the food from cold air, which is dry, so as to retain the moisture in foods and prevent freeze burn and dehydration. Select them according to the use they will be put to.

Most freezer containers on the market today are easy to seal, waterproof, and give satisfactory results. Rigid plastic containers, bags, and jars with wide tops are favorites.

Moisture and vapor-resistant wraps, which are exceptionally effective at excluding oxygen, include heavyweight aluminum foil, coated and laminated papers, polyethylene films, saran, and polyester films. They should be strong and pliable so the wrap will adhere readily to irregularly shaped objects, and eliminate as much air as possible to avoid frost accumulation inside. Careful wrapping is of no avail if the package breaks. It should be easily sealed, either by heatsealing or freezing tape.

Freezer bags are available, and freeze-and-cook bags that withstand temperatures from below 0 F. to above the boiling point. The freeze-and-cook bags are suitable for freezing and reheating food. Points to consider include the size convenient for your use and the cost.

Materials not moisture-proof and vapor-proof, and thus not suitable

for packaging foods to be frozen, are packaging foods to be frozen, are ordinary waxed papers, cartons from ice cream or milk, and plastic cartons from cottage cheese or gelatin products because they crack easily.

Compare price, durability, shape and reusability in selecting containers, keeping in mind their convenience and the economical use of freezer space.

Retaining the vitamins and other nutrients depends on how fruits and vegetables are handled before freezing, on storage temperature in the freezer, and on how you cook them. Always follow up-to-date recommendations available from the U.S. Department of Agriculture or county Extension office.

Select foods of top quality. A freezer is not magic--it does not improve food. Its function is to preserve quality and food values and to prevent spoilage.

Choose vegetables and fruits suitable for freezing, and the best varieties for freezing. Because growing conditions and varieties vary greatly across the country, check with your county Extension office to find out which varieties are best for freezing.

Freeze fruits and vegetables when they are at their best for table use. If possible, freeze those that are ripened on the tree, vine or bush. Fruits should be ripe but firm.

Enzymatic changes continue after harvest, lowering quality and nutritive value. If stored at too warm temperatures, fruits can lose vitamin C, turn brown, lose flavor and color, and toughen.

Don't delay in harvesting vegetables since asparagus, corn, peas, snap beans, and lima beans all deteriorate rapidly in the garden after

reaching their peak.

Observe cleanliness while you work, to avoid contaminating foods.

Prepare vegetables for freezing by blanching them in boiling water for recommended times. County Extension offices will have information on specific times for various foods.

Blanching vegetables is absolutely necessary to inactivate enzymes that cause undesirable changes in flavor and texture. This brief heat treatment reduces the number of micro-organisms on the food, enhances the green color in vegetables such as peas, broccoli and spinach, and displaces air trapped in the tissues.

Pack food in containers as solidly as possible to avoid air pockets, leaving the necessary head space for expansion. Press out as much air as possible, with your hands or by using a freezer pump. Then seal the plastic bags by twisting the open end, folding it over. Freezer rubber bands, twist-seals, or freezer tape are satisfactory for sealing bags.

Label packages clearly and carefully with name of product, date when frozen, number of servings or poundage, and any information that will help you. Special pens are made for marking frozen food products. Or you can use a wax pencil or crayon.

Speed is important in preparing food and getting it into the freezer, so as to maintain quality. Put only the amount of unfrozen foods into the freezer at one time that will freeze within 24 hours.

Allow at least one inch between packages of unfrozen food in the freezer for circulation of cold air. Leave packages in freezing position for 24 hours before stacking them close together.

Uniform freezing temperature and keeping frozen products at 0 F. or

lower will maintain quality. Different foods have varying storage periods so keep your frozen food inventory changing.

Use a freezer thermometer in your freezer. Check your freezer door and wall plug daily to avoid any catastrophe.

A freezer can pay wonderful dividends with considerable thought and planning by the homemaker.

FREEZING YOUR GARDEN'S HARVEST

The growing season brings an abundance of fruits and vegetables freshly harvested from your garden. The unmatched sweetness of peas cooked fresh from the pods, the tender-crisp texture of fresh broccoli, the delectable flavor of sweet juicy strawberries are irresistible. It is always a disappointment when the growing season is over. You may have more produce than you were able to use within a short time so why not savor its just-picked freshness during the autumn and winter months - freeze it!

Of all the methods of home food preservation, freezing is one of the simplest and least time-consuming. The natural colors, fresh flavors, and nutritive value of most fruits and vegetables are maintained well by freezing. However, to freeze foods successfully - that is, to preserve their quality - produce must be carefully selected, prepared and packaged, and properly frozen. Be sure to use reliable home-freezing directions such as those found in U.S. Department of Agriculture publications. Unless recommended practices and procedures are observed, the food's eating quality will be a disappointment.

The first consideration before deciding whether to freeze the garden's harvest is whether your freezer can maintain temperatures low enough to preserve quality of the food during freezer storage. Storage temperatures must be 0 degrees F (-18 degrees C) or below to help

prevent unfavorable changes in the food, including growth of bacteria. The temperature control of your freezer should be adjusted so the warmest spot in the freezer will always be at 0 degrees F or lower. Freezers and most two-door refrigerator- freezer combinations are best suited for long storage of home-frozen fruits and vegetables since they can be set to maintain this temperature.

Proper preparation of produce is also important to insure high eating quality of frozen vegetables and fruits. Vegetables, except green peppers and mature onions, maintain better quality during freezer storage if blanched, or heated briefly, before freezing.

Blanching is necessary to prevent development of off-flavors, discoloration, and toughness in frozen vegetables. Beside stopping or slowing down the action of enzymes responsible for these undesirable changes, blanching also softens the vegetable, making it easier to pack into containers for freezing.

Fruit does not need to be blanched before freezing. However, most fruits require packing in sugar or sirup to prevent undesirable flavor and texture changes in the frozen product. Sugar, either alone or as part of the sirup, plus the acidity of fruit retards enzyme activity in fruit stored at 0 degrees F or below.

PACKING MATERIALS

Packaging Material Material selected for packaging fruits and vegetables for freezing must be moisture-vapor-proof or moisture-vapor-resistant to keep the food from drying out and from absorbing odors from other foods in the freezer. Loss of moisture from the food causes small white areas called "freezer burn" to develop. These areas are not harmful, but if extensive they can cause the food to become tough and lose flavor.

Suitable packaging materials include rigid plastic food containers, plastic freezer bags, heavy aluminum foil, freezer paper or plastic film, glass freezer jars, and waxed freezer cartons.

Collapsible, cardboard freezer boxes are frequently used as an outer covering for plastic bags to protect them against tearing.

Select packaging materials suiting the shape, size, and consistency of the food. Rigid containers are suited for freezing all foods, but are especially good for fruit packed in liquid. Non-rigid containers are best for fruits and vegetables packed without liquid. Paper, plastic, or foil wraps are ideal for freezing bulky vegetables such as broccoli, corn on the cob, and asparagus.

Rigid containers with straight sides and flat bottoms and tops stack well in the freezer. They take up less freezer space than rounded containers with flared sides, and bulky, wrapped packages or plastic bags without protective outer cartons. Containers with straight sides or those that are flared, having wider tops than bottoms, are preferred for easy removal of the food before thawing. If the opening is narrower than the body of the container, the food will have to be partially

Freezer containers and bags are available in a variety of sizes. Do not use those with more than 1/2-gallon capacity for freezing fruits and vegetables since the food will freeze too slowly, causing poor quality food.

Choose a container that will hold enough food for one meal for your family. You may wish to put up a few smaller packages for use when some family members are not home or to go with your family-size packages when guests are present for meals.

Pack foods tightly into containers. Since most foods expand during

freezing, leave headspace between the packed food and closure.

For fruits that are in liquid, pureed, or crushed and packed in containers with wide openings, leave 1/2-inch headspace for pints, 1-inch headspace for quarts. If containers with narrow openings are used, leave 3/4-inch headspace for pints, 1 1/2-inch headspace for quarts.

For fruits and vegetables packed without liquid, leave 1/2-inch headspace for all types of containers. Vegetables that pack loosely, such as asparagus and broccoli, require no headspace.

Any container for freezer use must be capable of a tight seal. Rigid containers should have an airtight-fitting lid.

Press out all air from the unfilled parts of plastic bags. Immediately twist the top of each bag and securely tie it with a paper or plastic-covered covered wire twist strip, rubber band, or string to prevent return of air to the bag.

Some bags may be heat-sealed with special equipment available on the market. Follow the manufacturer's directions.

Edges and ends of paper, foil, or plastic wraps should be folded over several times so the wrap lies directly on top of the food and all air has been pressed out of the package. Seal the ends with freezer tape to hold them securely in place.

Selecting and Preparing

Grow varieties of fruits and vegetables that freeze well. Your county Extension office can provide information on suitable varieties that grow well in your locality.

Produce selected for freezing should be of optimum eating quality. Freezing only preserves the quality of produce as it is at the time of freezing. It never improves quality.

Fruits to be frozen should be firm and ripe. Underripe fruit may have a bitter or off-flavor after freezing. Pick berries when ripe and freeze them as soon after picking as you can. Some fruits - apples, peaches, pears - may need to ripen further after harvesting. But take care they don't get too ripe. Frozen fruit prepared from overripe fruit will lack flavor and have a mushy texture.

Choose young, tender vegetables for freezing. Since vegetables lose quality quickly after harvest, freeze them as soon as possible for maximum quality. The sugar in corn, peas, and lima beans is rapidly lost when held too long before freezing. If you must hold vegetables and ripe fruits for a short while, refrigeration will help retain the just-picked freshness better than leaving produce at room temperature.

Wash small quantities of fruit gently in cold water. Do not permit fruit to stand in water for any length of time since it will become water-soaked and lose flavor and food value. Drain fruit thoroughly.

Peel fruit and remove pits or seeds. Halve, slice, chop, crush or puree fruit as indicated in the instructions for each specific fruit. Some fruit, especially berries, may be left whole, but remove stems or hulls. Work with small quantities of fruit at a time, particularly if it is fruit that darkens rapidly. Two or three quarts is an adequate amount to handle at once.

Pack fruit by sirup pack, sugar pack, or unsweetened pack. Most fruit has better texture and flavor with a sweetened pack. Apples, avocados, berries, grapes, peaches, persimmons, and plums can all be frozen satisfactorily without sweetening, but the quality is not quite as good as freezing in sirup or sugar. An unsweetened pack will give as

good a quality product for gooseberries, currants, cranberries, rhubarb, and figs as a sweetened pack.

SIRUP PACK

Make a sugar sirup by dissolving sugar in water. A 40% sirup (3 cups of sugar to 4 cups of water) is recommended for freezing most fruits. Sirups containg less sugar are sometimes used for mild- flavored fruits;those with more sugar for very sour fruits. The type of sirup to use is specified in the directions for freezing each fruit. Allow 1/2 to 2/3 cup of sirup for each pint of fruit. Cut fruit directly into the freezer container, leaving the recommended headspace. Add sirup to cover fruit.

SUGAR PACK

Cut fruit into a large bowl. Sprinkle with sugar. The amount of sugar to use is specified in freezing directions for each fruit. Mix gently until juice is drawn from the fruit and all the sugar is dissolved. Pack fruit and juice into freezer containers.

UNSWEETENED PACK

Some fruit may be packed dry, without added liquid or sugar. Other fruit, particularly if it darkens rapidly, can be covered with water to which ascorbic acid has been added. Crushed fruit or sliced fruit that is very juicy can be packed in its own juice without added liquid.

For all packs except the dry, unsweetened pack, liquid - either sirup, juice, or water - should completely cover the fruit. This prevents the top pieces from changing color or losing flavor due to exposure to air in the headspace.

A small crumpled piece of waxed or parchment paper placed on top of the fruit helps keep it pressed down in the liquid once the container has been sealed. The paper should loosely fill the headspace area. Do not use aluminum foil since acid in the fruit can cause the foil to pit (form holes), and tiny pieces of foil may drop into the food.

ANTI-DARKENING

Many fruits darken during freezing, particularly if not kept under liquid. Darkening occurs when the fruit is exposed to air. Since a small amount of air is in the liquid as well as the tissues of fruit, some darkening can occur even when the fruit is submerged in liquid. To help retard darkening during freezer storage, add ascorbic acid (vitamin C) to the fruit during preparation.

Ascorbic acid is available in several forms from drug stores, some freezer locker plants, and some grocery stores that sell freezing supplies. Crystalline ascorbic acid is easier to dissolve in liquid than powder or tablet forms. The amount of ascorbic acid to use is given in the directions for those fruits where use of ascorbic acid is beneficial. Ascorbic acid mixtures containing sugar, and sometimes citric acid, also are available. Follow the manufacturer's directions for use of these products.

In preparing vegetables, wash a small quantity of the vegetables gently in several changes of cold water. Lift the vegetable out of the water each time so all dirt will settle to the bottom of the sink or pan.

Shell, husk, or peel and trim. Some vegetables such as lima beans, corn on the cob and asparagus require sorting for size, since blanching times depend on size of the pieces.

Blanch the vegetable (this is not necessary for green peppers and

mature onions). Most vegetables are blanched by heating them in boiling water. A blancher consisting of a tall kettle, basket, and cover is convenient to use and can be purchased at most department or farm supply stores. However, any large pan which can be fitted with a wire or perforated metal basket and covered is suitable.

To insure adequate blanching, immerse a basket containing a small amount of the vegetable (1 pound) into a large amount of boiling water (at least 1 gallon). Start timing once the vegetable has been immersed and the kettle is covered. Blanching time will vary with the vegetable and the size of the pieces, so follow the recommended blanching times for each vegetable.

Cool the vegetable by immersion in a large quantity of cold or iced water. Rapid cooling is necessary to stop the food from cooking. Cool the vegetable for about the same length of time as it was heated. Once cooled, do not leave the vegetable standing in water, as loss of flavor and food value can occur. Drain the cooled vegetable thoroughly before packaging.

Other methods of blanching and cooling are recommended for some vegetables. For example, mushrooms are heated by sauteing, tomatoes by simmering in their own juice. These foods are cooled by setting the pan of food in cold or iced water to speed cooling.

Freezing and Storing

After packing and sealing containers, label them with the name of the food, type of pack (for fruits), and date of freezing. Freeze food soon after packing, placing a few packages at a time in the freezer as you have them ready.

Freeze food at 0 degrees F or below. Do not load the freezer with more food than can be frozen in 24 hours. Usually 2 to 3 pounds of food per

cubic foot of freezer capacity can be frozen at a time. Place packages on freezing coils or plates or in fast-freezer section of freezer, leaving a space between each package. Loading the freezer in this manner enables the food to be frozen quickly. Freezing foods too slowly can result in loss of quality.

Once food has frozen, stack containers. Keep freezer surfaces relatively free from frost to insure maximum operating efficiency of your freezer.

Fruits and vegetables stored at 0 degrees F or below will maintain high quality for 8 to 12 months. Unsweetened fruit loses quality more rapidly than sweetened fruit.

Keeping food longer than the recommended time will not make it unsafe to eat, but some quality loss can occur.

Thawing

Home-frozen fruits and vegetables are convenient and easy to use since most of their preparation is done before freezing. Thaw frozen fruit in the refrigerator, or at room temperature in a pan of cool water. Leave fruit in the unopened freezer container.

A pint package of fruit frozen in sirup will take about 6 to 8 hours to thaw in the refrigerator, or 1/2 to 1 hour in a pan of cool water. Fruit in sugar packs takes less time. Unsweetened packs need more time than sirup packs. For best eating quality, serve fruit with a few ice crystals remaining.

Cook most frozen vegetables without thawing first. (Corn on the cob and leafy vegetables require partial thawing to insure even cooking.) Add the vegetable to boiling salted water. Use 1 cup of water and 1 teaspoon of salt for each quart of vegetable with these exceptions:

Use 2 cups of water for lima beans; water-to-cover for corn on the cob. Cover the saucepan during cooking. Cook the vegetable only until tender. Avoid overcooking.

Consult timetable in freezing directions for recommended times for cooking home-frozen vegetables.

How to Freeze Strawberries

1. Select Strawberries: Choose firm ripe red berries with a slightly tart flavor. Allow about 1 1/2 quarts fresh strawberries for each quart to be frozen.

2. Prepare strawberries: Wash berries in cold water; Drain well Remove hulls

3. Pack into rigid freezer containers:

TO PACK IN SIRUP -

Prepare ahead of time a 50% sirup by dissolving 4 3/4 cups sugar in 4 cups of water; this will make 6 1/2 cups sirup Add about 1/2 cup sirup to each container Put berries into prepared containers

TO PACK IN SUGAR -

Add 3/4 cup sugar to each quart berries Mix gently until sugar is dissolved and juice is drawn from berries Pack strawberries with juice in containers in containers

TO PACK UNSWEETENED -

Put berries into containers For better color, cover with cold water containing 1 teaspoon ascorbic acid per quart of water

FOR ALL PACKS -

Press fruit gently down in each container; add liquid (sirup, juice, or water)to cover fruit, unless fruit is packed dry, unsweetened Leave recommended amount of headspace (See earlier reference).

Put a small piece of crumpled waxed paper on top of berries to keep them down in liquid Wipe all liquid from top and sides of containers Seal tightly with lid Label with name of fruit, type of pack, and date of freezing

4. Freeze strawberries: Immediately after packaging, place berries in freezer set at 0 degrees F or below; leave space around each container for faster freezing Do not freeze more than 1 quart of berries per cubic foot of freezer capacity at a time.

Stack containers of berries once frozen; store at 0 degrees F or below
*These instructions are for strawberries only.

How to Freeze Green Peas

1. Select green peas: Choose bright-green plumb, firm pods with sweet, tender peas (do not use immature or tough peas) Allow 4 to 5 pounds fresh peas for each quart to be frozen
2. Prepare green peas: Shell peas Wash shelled peas in cold water; drain
3. Blanching green peas: Bring 1 gallon water to boil in large kettle Put peas (1 pound) in blanching basket Lower basket into boiling water Cover kettle and heat peas 1 1/2 minutes Chill peas promptly in cold or iced water 1 1/2 minutes Drain cooled peas
4. Pack green peas: Pack drained, blanched peas in freezer containers (See reference on containers in early part of chapter) Leave 1/2-inch headspace between peas and closure Seal containers tightly Label each package with name of vegetable and date
5. Freeze green peas: Immediately after packaging, place peas in freezer set at 0 degrees F or below; leave space around each container for faster freezing Do not freeze more than 2 to 3 quarts of peas per cubic foot of freezer capacity at a time Stack packages of peas once frozen; store at

0 degrees F or below

*These instructions are for green peas only. Preparation procedures and blanching times are specific for each vegetable. See USDA Home and Garden Bulletin 10, "Home Freezing of Fruits and Vegetables" , for directions for freezing other vegetables.

For Further Reading: "Home Freezing of Fruits and Vegetables", U.S.Department of Agriculture HG Bul.No.10, on sale by Superintendent of Documents, U.S.Government Printing Office, Washington D.C. 20402.