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Home Conservation of Fruits and Vegetables

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Home Conservation of Fruits and Vegetables

BY MARGARET OSBORN

Fruits and vegetables are a necessary part of a well selected diet. Since fruits and vegetables are grown during only part of the year, it is necessary to produce a surplus during the growing season and to find some means of caring for the food until it is needed. Some means of conserving the food must be used in order that the food will not spoil.

WHY FOOD SPOILS

Microscopic organisms known as molds, yeasts, and bacteria are present everywhere, in water, in air, in soil, and on food itself. They are very light and are easily transferred from one place to another. Like all living things, micro-organisms must have favorable conditions so that they can grow—food, warmth, moisture, and many of them need oxygen for growth. When any of these conditions are removed the micro-organisms can not grow.

When these micro-organisms attack food they may live on the food if conditions are favorable, and cause spoilage. The gas produced from a can of fruit that is working, the odor of meat that is spoiling, the mold on bread or meat are all results of the activity of micro-organisms. In preserving food, it is necessary to produce conditions which will either destroy these micro-organisms or make it impossible for them to grow. Yeasts, molds, and active bacteria are easily destroyed. However, many bacteria go thru a spore phase in their life cycle, a form which is difficult to kill. It is these bacterial spores which are responsible for some serious difficulties in canning.

The second reason for spoilage of food is the presence of enzymes in fruits and vegetables. These enzymes not only cause food to ripen, but also cause decay of food when the product becomes over ripe.

With these facts in mind, it has been possible to produce successful methods of food preservation. The application of heat for the purpose of destroying micro-organisms is one of the commonest. This is what is done in canning. The removal of moisture in drying is satisfactory for some foods. A low temperature will not destroy the micro-organisms nor the enzymes in food but their action will be stopped, thus preserving the food. Therefore, freezing and cold storage are effective methods of food preservation. Preserving by use of vinegar, salt, or sugar (as in preserves and jam) is effective because micro-organisms can not thrive where there is a quantity of any of these.

WHY CAN FRUITS AND VEGETABLES

Canning is one of the most widely used methods of preserving perishable fruits and vegetables. Canning makes possible a greater variety of some of the protective foods needed to promote health and to add to the palatability of meals during the winter months when fresh fruits and vegetables are expensive and difficult to obtain. Food materials that might otherwise go to waste are conserved. There may also be a considerable saving in money expenditures when home grown fruits and vegetables are canned. Added to this is a certain satisfaction in knowing that at least a part of the winter fruit and vegetable supply has been provided. In some cases the home canned products may be superior to commercially canned ones.

CANNING EQUIPMENT

Canning equipment for the most part may be devised or improvised from the materials found in any well equipped kitchen. In sections of the state where the altitude is high, it seems advisable to process

non-acid vegetables and meats by means of a steam pressure cooker. The Bureau of Home Economics at Washington recommends that a pressure cooker be used for these products at any altitude.

EQUIPMENT FOR VARIOUS METHODS

Open kettle. In the open kettle method of canning, a container of suitable size is necessary for boiling the food. Tin or chipped enamel kettles should not be used. The kettle needs to be large enough so that the material will not boil over on to the stove.

Water bath canners. One of the most common methods of canning is by the use of the water bath. A canner of this type consists of any vessel large enough to hold a convenient number of jars, and deep enough so that water may cover the jars by at least one inch, and permit boiling. The canner is fitted with a false bottom or rack which protects the jars from direct heat from the bottom and allows circulation of water around the jars. A large bucket, lard can or wash boiler with a tightly fitted lid may be used.

The false bottom may be made of hardware cloth or wooden strips securely nailed at each end to strips of wood which raise the rack about three-fourths of an inch from the bottom of the container. White pine or poplar are satisfactory woods to use. Handles may be attached to the rack if desired.

Steamers and steam canners. A steamer is sometimes recommended for processing fruits and tomatoes. The use of a steamer is questionable where the ordinary wood or coal range is used as the supply of heat is likely to be irregular. Gas, kerosene, gasoline or electricity makes possible a more steady supply of heat. The water in the lower part of the steamer must be allowed to boil vigorously to supply live steam around the jars. At best, it is impossible to furnish satisfactory time tables for processing in the steamer, as several factors will affect the rate of heat penetration. The steamer, as a device for processing non-acid vegetables and meats, is not recommended.

Steam pressure cooker. A good pressure cooker must have a steam gauge, a safety valve, and a pet cock which regulates the release of steam. Cookers may be obtained in 10, 12, 14, 16, 18 and 25 quart sizes. Probably either the 12, 14, or 18 quart size is best for the average home as the larger sizes are too heavy for general use, and the medium sizes will find a number of other uses in the home.

CONTAINERS

Glass jars. The containers most commonly used for home canning are glass jars. Most jars come in half pint, pint, quart, and half gallon sizes. The wire clamp glass top jars are very satisfactory. Broken tops may be replaced when necessary. In using this type of jar, it is necessary that the wire clamp be tight. If the bail does not go on with a snap when the side clamp or tightening lever is up, remove the bail from the jar and bend slightly to tighten.

The screw top jar has a lid with a porcelain lining to prevent food from coming in contact with the metal. The top must fit perfectly to insure a perfect seal so that the food will be well preserved. An uneven edge may sometimes be remedied by placing the lid on a flat surface and rubbing the edge with a strong blade or knife handle until it lies flat on the table and touches at all points.

The automatic seal top jar requires no rubber but new tops must be purchased each year. Under the lacquered metal top around the outer edge is a hard wax-like compound which softens when heated and when cooled forms a tight seal.

Rubbers. Good quality rubbers are easily obtained. It is advisable to use them once only because they deteriorate with age.

A good rubber will stand pulling, pinching, twisting, and yet return to its original size and shape. A rubber should be strong enough to hold a weight of seventeen pounds. Four inches of a rubber ring should stretch to ten inches without breaking. Rubbers with lips are more easily removed when opening jars and cost no more than plain ones. If jars are to be packed for shipping these lips may catch and break the seal.

Tin cans. The type of tin can most commonly used has the top entirely open and is sealed by a double seaming of the cover onto its edge. Tin cans are designated by number rather than by liquid capacity. The No. 3 can holds approximately a quart and the No. 2 can holds a little over a pint.

OTHER EQUIPMENT

Results may be made more certain and work greatly lessened by having at hand some small canning equipment. For efficient canning, sharp knives are necessary. A stainless steel or silver knife is best for paring products which discolor readily. A long handled spoon makes stirring easier. A wire basket simplifies the scalding or precooking process. A wide mouth funnel saves time and helps preserve the shape of the product when filling the jars. Measuring cups and scales help to insure a standard product. A jar lifter is a desirable convenience when removing the jars from the processing container.

Steps in Canning

GENERAL PROCEDURE

Preparation of equipment. Jars, rubbers, and lids should first be thoroly washed in clean, hot suds; thoroly rinsed; then tested to detect flaws or leaks. When using glass jars, run the fingers around the edge of the lid and also around the place on the jar where the seal is made in order to detect nicks, cracks, and other flaws. If the inner lining of a screw top lid is cracked, discard the lid. Make the final test by placing hot water in the jar, place rubber and lid in position, make a tight seal and invert the jar. Allow it to stand inverted for five minutes to detect slow leaks. If the leak is above the rubber then the lid is usually defective. If the leak is below the rubber, the defect is usually in the jar.

After testing and washing jars, lids and rubbers, they should be immersed or inverted in a pan of water and boiled for 10 to 15 minutes. This precaution is especially important for used jars which may previously have contained spoiled food. After jars and lids have been heated in this manner, they should not be touched on the inside, especially in open kettle canning. The jars need to be kept hot while they are being filled. This may be accomplished by placing the jar in a pan of hot water.

Selection of product. In selecting the product to be canned, use only good, firm fruits and vegetables. "Two hours from garden to can" is a good rule to observe, especially for vegetables. If fruits can not be canned immediately, discard any which show bruises, decay, or other defects and keep the remainder in a cool place.

Grade for size and same degree of ripeness if a uniform product is desired. Wash the material thoroly. A wire basket may be used. Lift the product out of water rather than pour the water off of it.

A sharp knife should be used for peeling. Some fruits and tomatoes may be scalded with boiling water to loosen the skins.

METHODS OF CANNING

The two methods in general use for the canning of fruits and vegetables are the open kettle and jar processed methods.

Open kettle. In the open kettle method of canning the material is completely cooked in an open kettle directly over a flame or on top of the stove, then filled into sterilized jars and sealed immediately. By this method the material is heated thru more quickly and evenly than when heated after packing into jars. The disadvantages lie in the necessity for thoro sterilization of jars, rubbers, and lids. There is danger of micro-organisms entering the jars while they are being filled. This method can be used for fruits and tomatoes but is not recommended for other vegetables.

Procedure for cold pack method. The cold pack method is best adapted to canning of fruits and tomatoes. The products to be canned should be washed, graded, and peeled. An easy way to scald a product from which skins are removed is to place it in a piece of cheesecloth, a wire basket, or a colander. Then dip it into boiling water until the skins are loosened. The product, however, may be placed directly into a kettle of water, then dipped out with a long handled perforated ladle or fork. When canning large quantities it is convenient to scald the product by placing in a large container such as a dishpan or a bucket, pour boiling water from a teakettle over the product and when the skins are loosened pour off the water.

Products which have been scalded may be cold dipped just enough so that they may be handled more easily. The product is packed into clean jars, with rubbers in place. Fill jars well but do not pack too tightly. For fruits fill the packed jars to within one-fourth inch of the top with a boiling hot syrup of the desired concentration. Boiling hot strained tomato juice may be used for tomatoes.

The degree of concentration of the syrup recommended for different fruits varies and is designated as thin, medium, thick, or very thick. The common proportions are as follows:

Kind of Syrup	Sugar	Water	Uses
Thin	1 part	3 parts	Sweet berries and non-acid fruits.
Medium	1 part	2 parts	Berries and slightly acid fruits.
Thick	1 part	1 part	Acid fruits.
Very thick	1½-2 parts	1 part	Very acid fruits.

Heat the sugar and water to boiling, stirring to dissolve the sugar.

Fruit juice may be substituted for water in making the syrup.

The amount of syrup required to fill jars varies with the size of fruit and tightness of pack, about ½ cup for pint jar and one cup for quart jar.

Too much sugar may destroy the delicate fruit flavor.

Jars should **not** be sealed completely before processing when the cold pack method is used since the product is not entirely shrunken nor is the air exhausted from the jar.

The following table tells how to make a partial seal and a tight seal with the different types of jars:

Jar	Partial seal	Tight seal
Screw lid	Tighten lid then turn it back ⅛ inch.	Turn lid until tight.
Glass lid	Snap the top bail into place and leave the side clamp or tightening lever up.	Turn the side clamp down.
Metal lid with composition material	Place lid, press it down around the edge and put on the wire clamp or screw right to hold lid in place.	Leave clamp or screw ring on until the jar is thoroly cold. With this type of jar a tight seal is formed as the jar cools.

Procedure for hot pack method. In the hot pack method the fruits or vegetables are pre-cooked in an open kettle for a short period of time, then immediately placed in the hot jar or can and processed at once. Jars filled in this manner may be sealed completely before processing in water bath but are partially sealed when processed in the oven or pressure cooker. The time required for the product to heat thru to the center of the can is much shorter than in the cold pack method. Vegetables packed in this way do not shrink as much during processing as those packed by the cold pack method because the product has shrunken during the precooking. There is also less danger of spoilage.

PROCESSING

After packing by either the hot pack or cold pack method, the jars must be processed by subjecting them to heat. The processing is one of the most important steps in canning. No matter how carefully all the other steps have been performed, if the processing is not thoroly done, the result may be disappointing. It is necessary that the processing period be sufficiently long to destroy all micro-organisms and spores but not long enough to injure the texture and quality of the product.

With the water bath. Place the rack in the bottom of the canner, fill the canner with water and heat to boiling. Then place jars filled with hot material in the boiling water. Arrange the jars and rack so that water can circulate freely. Be sure that when all the jars are in the canner that the level of water comes over the lids about one or two inches. Start to count when the water actually reaches the boiling point, not before.

With the oven. Arrange the jars on the rack in the oven far enough apart to allow for free circulation of air around them. Count time as soon as jars are placed in oven, and process for a period 50 per cent longer than for the water bath method. The oven should be from 250° F. to 275° F. thruout the entire time. This method is most satisfactory for ovens equipped with a heat regulator for controlling the temperature.

With the steam pressure cooker. Boiling water should be poured into the cooker until the level is just below the rack that holds the jars. Then adjust the cover. In adjusting the clamps, partially tighten opposite clamps, then finish tightening. Steam should not escape any-

where except at the pet cock. Allow the pet cock to remain open until a **steady stream of steam escapes for seven minutes.** Then close and allow the pressure to rise until the gauge registers the desired temperature. A uniform pressure must be maintained thru the whole processing period as sudden drops in pressure result in loss of liquid from glass jars. A uniform pressure can only be maintained by adjusting the supply of heat. At the end of the processing period remove the cooker from the fire. In the case of glass jars allow the canner to cool until the gauge registers zero before opening the pet cock and then open slowly and cautiously to allow the steam to escape. When tin cans are used the pet cock may be opened at the end of the processing period. After the release of the steam the lid is removed from the cooker.

Length of the processing period... Certain factors must be taken into consideration in determining the length of the processing period. Whether the food is acid or non-acid is one factor. If a food is naturally acid as fruit or tomatoes, it is an unsuitable medium for the growth of bacteria. Consequently, boiling for a relatively short time is sufficient to preserve fruits and tomatoes. Non-acid foods furnish a suitable medium for growth of bacteria, hence a longer time is required.

The degree of ripeness or maturity is a second factor. Hard, unripe fruits should be processed for a longer time than ripe fruits, while more mature vegetables need a longer processing period than young tender ones.

Other factors which influence the length of the processing period are:

1. The size of the jar or can.
2. The density of the pack, that is, whether tight or loose.
3. The consistency of the material, whether dense like corn, sweet potatoes, and meat, or juicy like baby carrots or string beans. A high temperature in the center of the jar at the beginning will be a factor in shortening the length of the processing period.

The final factor is the temperature used in processing. In a water bath the material is processed at boiling temperature. Altitude, however, affects the boiling point. At sea level water boils at 212° F., at higher altitudes the boiling point is lower. Therefore, with the water bath, the higher the altitude the longer the processing period needs to be. A pressure cooker is not affected by altitude and, therefore, it is possible to obtain a higher temperature at any altitude thru its use. For this reason a pressure cooker is recommended for processing especially at high altitudes. It is desirable for processing non-acid vegetables and meats at any altitude and particularly where there has been difficulty with spoilage of canned foods. The following tables give method of treatment and processing time for some common fruits and vegetables.

CARE AFTER PROCESSING

Jars should be sealed immediately after processing. Jars should be placed far enough apart so they will cool rapidly. However, do not place glass jars in a draft. Observe the seal during the cooling process to detect any leaks. Inverting the jars or placing them on their sides is a method often used. Jars with an automatic seal should not be inverted while hot. A slight depression in the lid after the product has cooled will indicate a perfect seal. Tin cans may be plunged into cold water as soon as processed.

Product	Method of treatment before processing	Processing period in boiling water	
		Glass jars pt. & qt.	Tin cans No. 2 & No. 3
		Minutes	Minutes
Apples	Wash, pare, core, and cut into the sizes desired.		
	Cold pack. Pack into jars and cover with boiling hot, thin syrup. Process.	15	10
	Hot pack. Boil for 5 min. in thin or medium syrup. Pack into jars and fill jars with syrup. Apples may also be baked as for serving, then packed into hot jars. Apple sauce may be prepared as desired and canned hot. Process.	5	5
Apricots	Same as peaches except it is not necessary to peel unless desired.		
Berries black, blue, logan.	Sort the berries, wash, remove caps and stems.		
	Cold pack. Pack into containers pressing gently into place, cover with hot medium syrup. Process.	20	15
	Hot pack. To each pound of berries, add one-fourth to one-half pound of sugar according to the sweetness of the fruit. Place in a kettle and heat to boiling. Boil gently for 5 minutes. Pack boiling hot into jars. Process.	5	5
Straw-berries	**Hot pack.** Sort berries, wash, and hull. To each quart of strawberries add 1 c. of sugar and 2 T. of water. Boil slowly for 15 minutes. Let stand over night. Reheat to boiling. Fill into hot jars and process.	5	5
Cherries	Cherries may be canned pitted or unpitted depending upon personal taste.		
	Cold pack. Pack into hot jars, fill with boiling syrup using thick syrup for sour cherries and medium syrup for sweet. Process.	25	20
	Hot pack. Precook by boiling for 5 minutes with sugar to taste (approximately ½ c. to 1 c. for 1 qt. of cherries). Fill into hot jars then process.	5	5
Peaches	Wash, immerse peaches in boiling water for about 1 minute or until skins will slip easily. Plunge at once into cold water for a few seconds. Remove skins, cut into the sizes desired.	20 min. ripe fruit	15

Product	Method of treatment before processing	Processing period in boiling water	
		Glass jars pt. & qt.	Tin cans No. 2 & No. 3
		Minutes	Minutes
	Cold pack. Pack into jars. Fill containers with boiling hot thin syrup and process.	25-30 min. for firm fruit	25-30
Pears	Pears may be canned cold pack same as peaches.		
	Hot pack. Peel, cut into halves, core, and cook in medium syrup 4 to 8 min., according to the size of the fruit. Pack into hot jars and fill with boiling syrup. Process.	20	20
	For very hard pears it is desirable to cook them in water until soft before adding the sugar. Then pack in jars and process as above.		
Plums	**Cold pack.** Wash plums, fill into jars, and cover with boiling, medium syrup, then process. Pricking the plums with a silver fork sometimes helps prevent the skin from bursting.	20	15
Rhubarb	**Cold pack.** Do not peel rhubarb. Wash and cut into pieces one inch long. Plunge into boiling water for one minute. Pack into jars and fill with boiling hot thick syrup. Process.	20	15
	Hot pack. Baked. Prepare rhubarb by adding one-fourth as much sugar as rhubarb by measure. Bake until tender. Pack boiling hot. Process.	5	5
	Rhubarb may be cooked in a double boiler adding sugar as for baked rhubarb but no water. This gives a product with a superior flavor. Pack hot. Process.		
Tomatoes	**Cold pack.** Select ripe tomatoes of medium size and free from blemishes. Dip tomatoes into boiling water long enough to loosen skin. Plunge into cold water for an instant. Remove stem end and skins. Pack into jars as closely as possible. Add 1 t. salt per qt. Fill with boiling hot strained tomato juice or boiling water. Process.	25	20
Tomato juice	Wash tomatoes and cut into sections. Simmer until soft. Put thru a sieve fine enough to remove seeds. Bring to boil, fill into hot jars. Add 1 t. salt to each quart of juice.	5	5

Product	Method of Treatment Before Processing	Water Bath	Pressure Cooker					
		Glass	Glass				Tin	
		Pt. and Qt.	Pint		Quart		No. 2 or No. 3	
			Time	Pressure	Time	Pressure	Time	Pressure
		Min.	Min.	Lbs.	Min.	Lbs.	Min.	Lbs.
Asparagus	Pick over carefully. Remove scales. Wash thoroly. Tie into bundles, place in a sauce pan in upright position with boiling water over lower portion only. Boil 2 to 3 min. Pack hot into containers. Cover with water in which it was boiled. Add 1 t. salt to each quart. Process.	180	35	10	40	10	30	10
String beans	String beans and wash thoroly. Cut into pieces of desired length. Add boiling water to cover. Boil 5 min. Pack into hot containers. Cover with the boiling liquid. Add 1 t. salt to each quart. Process.	180	35	10	40	10	30	10
Baby beets	Select young, tender, dark red beets. Wash thoroly. Leave roots and at least one inch of stem on beets while precooking. Steam or precook in boiling water until skins slip. Slip off skins. Pack in jars. Add 1 t. salt to each quart and fill with boiling water. Process.	120	35	10	40	10	30	10
Carrots	Select young, tender carrots. Wash thoroly. Scrape. Use whole, sliced, or cubed carrots. Cover with boiling water and cook 5 min. Pack hot into jars. Add 1 t. salt and fill jar with boiling water. Process.	120	35	10	40	10	30	10
Corn	Remove husks and silk and clean carefully. Precook 5 min. on cob. Cold dip. Cut from cob. Add half as much boiling water as corn, heat to boiling. Add 1 t. salt and 2 t. sugar to each quart. Fill boiling hot into containers to within ½ inch of top. Process. Corn cuts from the cob more easily if precooked but may be cut raw if desired.	180	75	15	80	15	70	15

Product	Method of Treatment Before Processing	Water Bath	Pressure Cooker					
		Glass	Glass				Tin	
		Pt. and Qt.	Pint		Quart		No. 2 or No. 3	
			Time	Pressure	Time	Pressure	Time	Pressure
		Min.	Min.	Lbs.	Min.	Lbs.	Min.	Lbs.
Greens	Pick over greens. Wash carefully in water. Steam or heat greens in covered vessel until completely wilted. Pack boiling hot into jars. Add boiling water if there is not enough liquid to fill the jar. Add 1 t. salt to each quart. Process.	180	60	15	65	15	55	15
Peas	Shell and wash peas. Bring to boiling in water to cover. Pack boiling hot into the jars, fill with boiling liquid and add 1 t. salt to each quart. Process.	180	45	10	55	10	45	10
Pumpkin and squash	Wash and cut into sections. Peel and cut into cubes, 1 to 1½ inches. Add a small amount of water and simmer until heated thru. Pack hot into jars, add 1 t. salt to each quart and water in which it was cooked. Process.	240	60	15	75	15	No.2 60 No.3 70	15

The above times are given for altitudes up to approximately 1,000 feet. If the altitude is over 1,000 feet, increase the time 10 per cent for each additional 500 feet. For example, how long should string beans be processed in the water bath at an altitude of 2,650 feet? This is approximately 1,500 feet higher, so the time should be increased 30 per cent of 2 hours, or 36 minutes.

LABELING, WRAPPING AND STORING

As soon as jars are cooled, a label with the product and date may be placed on the jar. Jars should be stored in a cool, dark place as this preserves color.

PRECAUTIONS IN THE USE OF CANNED FOODS

To be sure that food is wholesome, inspect carefully before using. Before opening the cover of the glass jar, see that the seal is perfect. Both ends of a tin can should be flat or curved slightly inward. Neither end should bulge or snap back when pressed.

As the can is being opened, notice whether there is an outrush of air or spurting of the liquid for these indicate spoilage. If the air sucks inward, this is a good sign and shows that the vacuum seal has not been broken. The contents should appear sound, normal in color, and the liquid free from unusual cloudiness.

Observe odor which should be characteristic of the product. Any change in odor probably indicates spoilage. (Be sure that the person opening the canned goods has a keen sense of smell.) If odor seems suspicious, discard without tasting.

Observe contents carefully to see whether they appear natural in color and texture. If not, discard without tasting.

Notice the appearance of the inside of a tin can. It should be clean and bright, not extensively blackened or corroded.

Do not taste canned non-acid vegetables and meats before boiling. Boil non-acid vegetables and meats ten minutes shortly before using even tho there is no sign of spoilage. Boiling tends to destroy the toxin or poison produced by certain bacteria, even tho it does not invariably destroy all bacteria.

In case the liquid in the can is not sufficient to cover the product, add boiling water and boil for ten minutes. Observe odor of heated contents, for heating sometimes brings out odors not noticed in cold foods.

Destroy by burning, or by adding strong lye, all foods showing in appearance or odor, any signs of spoilage. Take no chances.

Do not bury spoiled products even after boiling for certain bacteria may continue to thrive in the soil. Do not feed spoiled products to animals even after boiling.

It is believed that if the foregoing instructions are all carefully followed, there need be no fear of botulism or other poisoning from canned goods.

CANNING BUDGET FOR VEGETABLES AND FRUITS

To insure having fruits and vegetables thru the winter, how much should the homemaker plan to can and store? The following tables deal with this, the tables having been worked out on the basis that during the eight non-growing months each person gets one-half of his weekly vegetable and fruit allowance from canned products and the other half from dried or stored products.

BUDGET OF CANNED VEGETABLES—ONE PERSON FOR EIGHT MONTHS
(36 weeks)

	Servings per week	Servings 8 months	Servings per pint	Number pints
Tomatoes	3	108	4	27
Greens *	1	36	4	9
Other vegetables Beans Beets Carrots Corn and peas.	4	144	4	36
	8	288		72

* Greens, asparagus, chard, beet tops, spinach, dandelions, other greens (raw cabbage, lettuce, and celery).

Multiply the number of pints in each case by the number of people in the family and add 10 per cent to the total thus attained to allow for company, for breakage of jars, etc.

BUDGET OF STORED VEGETABLES—ONE PERSON FOR EIGHT MONTHS
(36 weeks)

	Servings per week	Servings 8 months	Servings per pound	Number pounds
Squash Parsnips Turnips	1	36	3	12
Salsify Beets Carrots	3	108	5	22
Onions Cabbage	3	108	9	12
	7	252		46

This budget does not contain dried vegetables, and does not include lettuce, celery, and other products which should go to make up a well balanced diet. These may be substituted for any of the stored products. They might well replace some of the carrots or beets which appear in both the stored and canned budgets.

BUDGET OF CANNED FRUITS—ONE PERSON FOR EIGHT MONTHS
(36 weeks)

	Servings per week	Servings 8 months	Servings per pint	Number pints
Apples Berries Cherries Grapes Pineapples Peaches Pears Plums Rhubarb	7	252	6	42

In addition to this it is recommended that dried and fresh fruits be supplied.

Drying

Drying is a means of preserving food which might otherwise be wasted. There is a great reduction in bulk and the material may be stored almost indefinitely without special containers. It does, however, have certain limitations in that not all fruits and vegetables can be dried successfully. Apples and corn are examples of foods which may be dried satisfactorily.

PRINCIPLES OF DRYING

The aim in drying any food is to remove sufficient moisture to insure keeping and to preserve all the food value with as much of the natural flavor and cooking quality as possible. This double purpose can not be accomplished successfully unless certain guiding principles are observed.

The rate at which drying will occur will depend upon the temperature of the air and upon the amount of moisture already in the air. If the air is kept in motion drying will be greatly hastened. This is the same principle as drying clothes on a windy day. It is also hastened by raising the temperature of the air.

Flavor and cooking qualities are best preserved by rapid drying. Changes take place rapidly in fruits and vegetables. Some of these produce darkening, others cause fading of the characteristic colors, while others affect the flavor. It is, therefore, desirable to arrest these changes as soon as possible.

PREPARATION OF MATERIAL FOR DRYING

Fruits and vegetables used for drying should be fresh, young and tender. A satisfactory product can not be made from wilted or inferior grades of fresh material. All material to be dried should be thoroly clean.

The material to be dried should be in small enough pieces that drying may be done within a reasonable length of time. Therefore, foods may be made into convenient sizes for drying by means of slicing. From an eighth to a quarter of an inch is a fair thickness for most products.

Precooking or steaming. In some cases vegetables and fruits are better when steamed or blanched before they are dried. The color is set, the tissues are softened and relaxed, and further ripening processes and undesirable changes in flavor are prevented.

A wire basket or colander is convenient. The material may, however, be placed in a cheese cloth. The product may either be plunged into boiling water for a short time or placed in a kettle so arranged that the product may be steamed. After precooking or steaming the required length of time, drain well.

METHODS OF DRYING

Drying in the open air. The oldest method of drying, that of placing the material in the sun, is the simplest form. Bright, hot, sunny days are esesntial. Some protection against insects and dust should be provided. Cheese cloth, mosquito bar or wire screen are satisfactory. Small quantities of food may be dried by spreading upon clean boards, canvas, heavy wrapping paper or cloth. A sloping roof with a south exposure is an excellent place. Trays may be used if desired.

Material dried in the sun should be stirred several times during the day. Do not place material in the sun until the dew is well dried in the morning and remove before it starts to form in the evening.

Drying by artificial heat. Drying may be done in the oven. Care must be taken to keep the heat low and even and to stir often to insure even drying. The oven door must be left open to allow escape of moisture.

DIRECTIONS FOR SPECIAL PRODUCTS

Apples—Wash, pare, core, and slice apples. Drop apples as they are prepared into water to which table salt has been added at the rate of 3 to 5 teaspoons per gallon. Dry the material until when a handful of slices gripped firmly in the hand has an elastic feel and leaves no visible moisture upon the hand. The salt water dip may be omitted, if desired.

Sweet corn—Remove husk and silk from corn, and place in a basket and plunge into boiling water for 8 to 12 minutes, allowing the corn to remain in the water until the milk is set. Drain the corn, cut from the cobs and spread material out to dry. Dry until the kernels are hard and semi-transparent.

PREPARATION OF DRIED PRODUCTS FOR THE TABLE

The principle of drying lies in the removal of sufficient moisture to prevent spoilage. The replacement of this moisture is accomplished by soaking the product in cold or warm water for a time. In general, over night soaking is recommended. The product should be simmered until tender in the water in which it was soaked.

Storage of Fruits and Vegetables

Fruits and vegetables that mature at a season when they can be preserved by storage may be kept fresh in their natural condition. There is a satisfaction in having a supply of fresh vegetables near at hand during winter months.

Only firm products of a good size and without blemishes should be stored. The products ought to be mature but not over ripe.

Temperature and humidity are important factors in storage of fruits and vegetables. Root crops, such as beets, carrots, turnips, and also cabbage and celery require a cool, damp storage place. Such conditions may be provided in a cellar, cave, or outdoor pit. It is possible to keep a cellar cool and to reduce the temperature of the stored product to the desired point by opening the door during the night and closing it in the morning before the air becomes warm.

Moisture may be added to the air by keeping the floor of the cave or cellar damp or by placing flat pans of water on the floor. If an outdoor pit is used, it may be lined first with straw. The pit should be covered with a layer of straw and dirt. As the weather becomes colder more straw and dirt will need to be added.

Vegetables such as onions, sweet potatoes, pumpkins, and squashes require a dry storage place, such as in an attic or a dry, well ventilated cellar.

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