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Recommended Citation

Kellogg, Minerva, "Freezing Fruits and Vegetables" (1944). *Agricultural Experiment Station Home Economics Pamphlets*. Paper 2.
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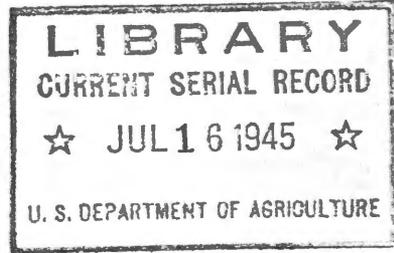
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Fourth Quarterly Bulletin

January, 1944

FREEZING FRUITS AND VEGETABLES

By Minerva Kellogg, Associate Professor



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By Minerva Kellogg, Associate Professor

More fruits and vegetables have been produced for home use this year than for any previous year for some time, and methods of preserving this food are needed. Canning is, of course, always a good method, but since the homemaker may not be able to obtain tin and rubber for containers, she must seek other ways to save her surplus garden products.

The sharp freezing and storage of foods is one of the new and popular methods of preserving fruits and vegetables. Locker plants operating in South Dakota offer freezing service and many of them butcher and package meat.* A few also prepare vegetables and fruits for freezing.

Freshly packed fruits and vegetables should be placed in the quick-freeze room at the refrigerator locker as quickly as possible after harvesting. For best results, both fruits and vegetables should be picked, packed, and frozen in one day, preferably from garden to locker in five hours.

It is well to keep a record of the number and kinds of foods frozen and the dates they are put in the locker, for green beans, wax beans, corn on the cob, and some varieties of rhubarb lose their palatability six months or more after they are frozen.

FRUITS FOR QUICK FREEZING

Not all fruits freeze well. Among those tested at this Station which lend themselves to freezing are apricots, plums, strawberries, rhubarb,# and cherries.

Varieties of some of these fruits grown in South Dakota that are suitable for freezing preservation are the following:

<u>Apricots</u>	<u>Plums</u>		<u>Strawberries</u>	<u>Rhubarb</u>
H-5	E-155	Opato	Minnesota 1166	Brandon Blood Red
Manchu	Hanska	Toka	Minnesota 1192	McDonald
Sing	Kahinta	Tokata	Premier	Ruby
	Kota	Waneta	Senator Dunlap	Siberian
	Kaga			

Preparation of Fruits for Packing

Fruits for freezing should be harvested when they are just ripe. Do not use fruits that are not yet ripe, or over-ripe, or fruits that have been damaged by insects or that are otherwise defective. Handle them quickly in small quantities, sort, wash, and drain well. Be careful not to bruise them. Skins and pits should be removed if necessary. The fruits are then ready for packing.

Packing Fruit for Freezing

Sweetening can be added to the fruit either as dry sugar or as syrup. For the dry pack, allow 1/4 or 1/3 pound of sugar to 1 pound of fruit. Sift the sugar evenly through the fruit as it is put in the container.

* Although it was not until about 1935 that freezer-locker plants were built in the Middle West, in 1934 South Dakota had about 150. Some 4,700 locker plants are being operated in the United States this year. Most of the growth of the freezer industry has come within the past five years.

As a frozen food, rhubarb is prepared and served as a fruit.

A syrup pack may be made of sugar and water only, or a white corn syrup or honey can be used to replace part of the sugar. Syrups* for the fruits tested at this Station can be made with the following proportions of sugar and sugar substitute for one gallon of water:

	<u>Sugar</u>	<u>Corn Syrup</u>	<u>Honey</u>
Sugar Solution	15½ c		
½ sugar; ½ corn syrup	7 ¾ c	7 ¾ c	
¾ sugar; ¼ corn syrup	12 c	3½ c	
½ sugar; ½ honey (about)	7 ¾ c		7 ¾ c
¾ sugar; ¼ honey (about)	12 c		3½ c

When the fruit is packed, add a cold syrup, allowing 1 to 1½ inches of head space with glass jars and ½ inch with cartons.

After the fruit is packed in the containers, it should be put into the sharp-freezing unit and frozen immediately. If some delay is necessary, keep the fruit in as cool a place as possible until the trip to the freezer locker. There the product is put into the quick-freeze room, and when it is entirely frozen, it is transferred to a locker and can be kept there for at least nine months without losing palatability.

Fruits can be served just before they are completely thawed, and thawing can take place in the container.

VEGETABLES FOR FREEZING

Vegetables for freezing should be ripe enough for the table, freshly harvested, tender, and free from defects. Overmature vegetables that are frozen are likely to be starchy or flavorless. Only the best products should be used, for although the flavor is retained by freezing, it is not improved.

Vegetables which react well to freezing are:

cauliflower	soybeans
asparagus	carrots
lima beans	sweet corn
green beans	spinach
wax beans	other greens
peas	

Among varieties of vegetables in South Dakota that were found adaptable to freezing are:

Asparagus
Martha Washington

Spinach
Bloomsdale Long Standing
King Denmark
Henderson's Green Plume
New Zealand

Wax beans
Henderson's Golden Age
Sure Crop
Pencil Pod Blackwax

Carrots
Henderson's Tender Sweet
Henderson's Coreless
Chantenay
Denver's Half Long

* This is a 45 per cent syrup, 45° density on the Balling scale.

Green Beans
 Plentiful
 Bountiful
 Kentucky Wonder

Peas
 Little Marvel
 Laxtonian
 Laxton's Progress

Corn
 Golden Cross Bantam
 Top Flight
 Aristogold
 Spancross

Soybeans
 Benzéi

Lima Beans
 Ford Hook
 Baby Potato

Chard
 Lucullus

Most of the varieties of corn adapted to freezing were better when the kernels were cut from the cob than when they were frozen on the cob. Moreover, freezing corn on the cob is not economical because of additional space taken up by the cobs in the locker.

Preparation of Vegetables for Packing

The vegetables should be sorted carefully. After the undesirable portions have been cut away, wash the vegetables thoroughly in cool water. Be sure to handle them quickly.

One of the most important steps in the preparation of vegetables for freezing is the scalding or blanching in hot water or live steam.

Scalding periods found satisfactory for the different vegetables are as follows:

<u>Vegetable</u>	<u>Time scalded (Minutes)</u>
Asparagus.....	2½
Spinach.....	1, 2½
Green Beans.....	1½, 2
Wax Beans.....	2
Lima Beans.....	1½, 2½
Soybeans.....	2½
Carrots.....	3
Peas.....	1, 1½
Corn on cob.....	3, 6
Corn off cob.....	1½
Chard.....	2
Kale.....	2, 3
Squash.....	3½
Cauliflower.....	3

The scalding treatment helps to check plant enzymes that produce undesirable changes in the vegetable. Scalding also softens the vegetables, making them easier to pack, and brightens their colors.

After scalding, the vegetables are dipped in cold water only long enough to bring the temperature down.

Packing Vegetables for Freezing

The vegetable is then ready for packing. It should be packed quickly into any type of container that is liquid tight and air tight. Glass containers can

be used but are breakable and take up considerable locker space. Waxed cartons require less space but since they cannot be re-used, they are not so economical as the glass jars. Head space of about $1\frac{1}{2}$ inches for the glass jars and $\frac{1}{2}$ inch for the cartons should be left to allow for expansion in freezing.

The vegetables can be packed either dry or with brine. The brine is made by dissolving about $2\frac{3}{4}$ teaspoons of salt in each quart of water. When this brine is cold, it is poured over the packed vegetables. Later, it can serve as cooking water.

Cooking Frozen Vegetables

With both the brine-packed and dry-packed vegetables, care should be taken not to overcook them. Freezing softens the fibers of the vegetables and makes it possible to cook them tender in a shorter time than is required for vegetables that are not frozen. They take from $\frac{1}{2}$ to $\frac{2}{3}$ less time to cook than fresh vegetables. Brine-packed vegetables are best when they are thawed slightly in the container and cooked in the brine in which they are packed. Thaw the dry-packed vegetables only enough so that they can be removed from the container. Empty them into just enough salted water to keep them from scorching when they are cooked. Cook only until they are tender. Serve immediately.

Since quick freezing merely slows up the maturing process and does not improve the product, the food to be frozen should be of the best quality and every possible precaution should be taken to retain its flavor until it is ready for the table.