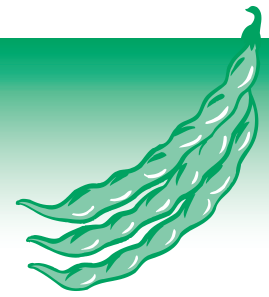


Green Beans



These recommendations are appropriate for snap and Italian (flat) beans, green and wax varieties.

Quantity

An average of 14 pounds is needed per canner load of 7 quarts; an average of 9 pounds is needed per canner load of 9 pints. A bushel weighs 30 pounds and yields 12 to 20 quarts. An average of $\frac{3}{4}$ pound makes 1 pint of frozen beans.

Quality

Select filled but tender, crisp pods. Remove and discard diseased and rusty pods.

Preparation

Wash the beans, snip off and discard the ends, and remove the strings, if appropriate. Leave whole, or cut or snap the beans into 1-inch pieces. Wash and drain the prepared pieces.

Freezing

Fresh green beans contain chemical compounds called enzymes that cause the loss of color, loss of nutrients, and flavor changes when they are frozen. These enzymes must be inactivated to prevent such reactions from taking place.

Importance of blanching

Enzymes are inactivated by the blanching process. Blanching is the exposure of the vegetables to boiling water or steam for a brief period of time. The vegetables must then be rapidly cooled in ice water to prevent cooking.

Blanching is absolutely essential for producing top quality frozen vegetables. Blanching also helps to destroy microorganisms on the surface of the vegetable.

Procedure

Freeze only up to 2 pounds of food per cubic foot of freezer capacity per day. Blanch 6 cups of raw prepared beans at a time. Place each batch in 1 gallon of boiling water.

Blanch the small pieces 2 minutes and large pieces 3 minutes after the water returns to a boil. Cool the beans quickly in several changes of cold water and drain in a colander. Fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top. Squeeze out the air, leave 1-inch head space, label, and freeze. Before freezing, the bags may be inserted into reusable, rigid-plastic freezer containers for added protection against punctures and freezer burn.

Canning

Food Safety

Green beans and other vegetables are low-acid foods. They do not contain enough acid to be safely canned in a boiling-water bath. Green beans must be pressure-canned for a specific period of time to avoid the possibility of the foodborne illness botulism. Botulism is caused by heat-resistant spores of the bacteria *Clostridium botulinum*. The spores are not destroyed by the 212° F temperatures of boiling-water bath canning. Canning at 10 pounds of pressure raises the temperature to 240° F, which is high enough to destroy the spores if the pressure is maintained for the recommended time.

Procedure

Wash the jars. Prepare the lids according to the manufacturer's instructions. If desired, add canning or pickling salt: $\frac{1}{2}$ teaspoon per pint and 1 teaspoon per quart. Salt may be omitted completely.

For raw packs: Fill the jars tightly with the prepared beans, leaving 1-inch head space. Add boiling water over the beans, leaving 1-inch head space.

For hot packs: Cover the prepared beans in a large pot with boiling water and boil 5 minutes.

Pressure process

Fill the jars with the beans and cooking liquid, leaving 1-inch head space. Wipe the sealing surface of the jars with a clean, damp paper towel. Add the lids, tighten the screw bands, and process in a pressure canner according to the following directions.

To process in a pressure canner, place the jar rack, 2 inches of water, and the sealed jars in the canner. Fasten the lid, and heat the canner on a high setting. After exhausting the steam 10 minutes, add the weighted gauge or close the petcock to pressurize the canner. Start timing when the desired pressure is reached. Process according to the chart below for your altitude and style of pressure canner.

Regulate the heat to maintain a uniform pressure. When the processing time is completed, remove the canner from the heat. Air-cool the canner until it is fully depressurized. Then slowly remove the weighted gauge or open the petcock, wait 2 minutes, and unfasten and carefully remove the canner lid.

Remove the jars from the canner with a jar lifter and place the jars on a towel or rack. Do not retighten the screw bands. Air-cool the jars 12 to 24 hours. Remove the screw bands and check the lid seals. If the center of the lid is indented, wash, dry, label, and store in a clean, cool, dark place. If the lid is unsealed, examine and replace the jar if it is defective, use a new lid,

and reprocess as before. Wash the bands and store separately.

Beans are best if consumed within a year and safe as long as the lids remain vacuum sealed. Store in a cool, dry place away from light for the best quality.

Nutrition per ½ cup, drained

Calories	22	Iron	0.8 mg
Carbohydrate	5.0 g	Sodium (without salt)	2.0 mg
Fat	0.2 g	Sodium (with salt)	268.0 mg
Dietary fiber	2.0 g		

Problems and Solutions

1. Can green beans be processed in a water bath canner?

No. Green beans are a low acid vegetable and must be processed in a pressure canner. Improperly canned green beans or other low acid vegetables can result in the growth of *Clostridium botulinum*, which causes the foodborne illness botulism.

Recommended process times for snap and Italian beans in a pressure canner

		Canner gauge pressure for different altitudes (in feet)			
		Dial gauge (lbs.)		Weighted gauge (lbs.)	
Jar size	Process time (min.)	0- 2,001	2,001-4,000	0-1,000	Above 1,000
Pints	20	11	12	10	15
Quarts	25	11	12	10	15

Revised by Karen Blakeslee, M.S., Extension Associate, Food Science

Adapted from *Preserving Green Beans* by Karen P. Penner, Ph.D., Foods and Nutrition, and Jeanne Dray, Extension Assistant, Foods and Nutrition, April 1995; *Complete Guide to Home Canning*, USDA AIB No. 539, 2009; and *So Easy to Preserve*, 5th ed., The University of Georgia Cooperative Extension Service.

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