

Canning Low-Acid Foods: Legumes

By Julie Cascio

Legumes, which include beans, lentils and peas, are among the most versatile and nutritious foods available. Thought to be one of the first cultivated crops, legumes have been consumed by people around the world for over 10,000 years. Legumes are a rich plant source of protein, are high in dietary fiber, low in fat, contain no cholesterol, and are high in folate, potassium, iron and magnesium.

Soaking and boiling legumes is important. Studies show that boiling counteracts the lectins, phytates and tannins in raw legumes which can interfere with digestion and absorption of some nutrients. Canned beans are already sufficiently heated for this. Dry beans should always be fully cooked before eating.

To reduce the flatulence-inducing quality of legumes, can beans. The canning process breaks down some of the gas-producing carbohydrates into digestible form.

Selecting Legumes

Fresh legumes for canning should be well-filled pods with young, tender, sweet seeds. Discard diseased pods. Use quickly after harvest. Any delay in using produce gives nutrients time to dissipate and the bacteria in food an opportunity to multiply.

For dry beans or peas, select mature, dry seeds. Sort out and discard discolored seeds.

Equipment

Have all the equipment needed to produce a safe, good-tasting canned product.

A pressure canner is required for processing legumes. The high temperature reached under pressure is necessary to ensure a safe low-acid product. With pH values above 4.6, legumes are low-acid foods. Canning at the appropriate pressure and correct amount of time is necessary to prevent the toxin that causes botulism.

Read and follow directions for your canner. If you don't have an instruction manual, look online or write the manufacturer for a new copy.

Your pressure canner must be in good condition. Replace the gasket and safety plug if necessary. Be certain the vent or petcock is clear.

If you have a dial pressure gauge on your canner, have it checked for accuracy before the canning season begins. Dial pressure gauges may be checked at your local Cooperative Extension Service office.

Jars should be washed in hot, soapy water and rinsed before you use them. Check the rims of jars and discard any that have nicks.



Lids and screw bands (rings) form two-piece, self-sealing lids. Flat lids should be purchased each year. Rings may be reused if not bent or rusty. Prepare the jar rings and flat lids by rinsing and setting aside until needed.

Cutting boards, sharp knives and counter should be clean and sanitized to reduce bacterial contamination.

LEGUME PREPARATION

Wash and rinse the fresh or dry beans or peas thoroughly. Work quickly while preparing the legumes. Delays result in loss of flavor and nutritive value.

Use the instructions in the following pages for the legumes you are preparing. There are two methods:

Hot pack: preheat cut vegetables, fill hot jar to 1-inch headspace, then cover with boiling liquid to 1-inch headspace.

Raw pack: put raw cut vegetables in hot jar to 1-inch headspace, then cover with boiling water leaving a 1-inch headspace.

Most vegetables are hot packed; some may have the option to pack raw. When both are given, choose which you prefer.

Salt is optional; it is for flavor and is not needed to prevent spoilage. If desired, add ½ teaspoon salt to hot pint jar or 1 teaspoon to hot quart jar.

Release air pockets by inserting a flat thin plastic or rubber spatula between the food and the jar. Slowly turn the jar and move the spatula up and down to allow air bubbles to escape. Adjust the headspace, then clean the rim of the jar with a damp cloth or paper towel.

Place the lid, gasket down, onto the clean jar rim. Add the metal screw band ring. Screw the band down gently with fingertips until you feel it catch. Then do a quarter turn more. If too tight the lid will buckle during processing or form cuts in the sealing compound that prevent sealing.

Pack only enough jars at one time to fill the canner.

To ensure the safety of canned vegetables, process in a pressure canner. Use the researched process time for the legume you are canning, shown in the following instructions. This is needed to kill all bacteria that cause spoilage or food poisoning.

Adjust for Elevation

Canning instructions are for sea level. Higher elevations need more pounds of pressure to reach the 240°F necessary for killing pathogenic spores. When a dial gauge pressure canner is used, add 1 pound per square inch (psi) pressure for each 2,000 feet above sea level.

- Use 11 pounds pressure at altitude 0 to 2000 feet.
- Use 12 pounds pressure at 2001 to 4000 feet altitude
- Use 13 pounds pressure at 4001 to 6000 feet altitude.
- Use 14 pounds pressure at 6001 to 8000 feet altitude.

When using a weighted gauge pressure canner use 10 pounds pressure at altitude 0 to 1000 feet. If above 1000 feet use 15 pounds pressure.

Processing in a Pressure Canner

1. Add 2–3 inches (about 3 quarts) of hot water to the pressure canner. Put the rack in the bottom of canner. Place the closed, filled jars on the rack, apart from each other. Fasten the canner cover securely. Leave the lid vent open. Turn the heat setting to high.
2. Heat the canner until steam comes through the open vent in a steady stream. Allow the steam to escape for 10 minutes. This step removes air from inside the canner. This is done so the temperature is the same throughout the canner.
3. Close the vent (use a hot pad or mitt) by shutting the petcock or by placing the weighted gauge or pressure regulator (also called a dead-weight) on the vent.
4. Turn the heat to high. When the pressure reads 11 pounds per square inch (psi) on the

dial gauge or the 10-pound weighted gauge begins to jiggle, begin the timing process and adjust the heat to maintain a steady pressure. *Write down the time at the beginning of the process and the time when the process will be finished.*

5. If the pressure drops below 10 or 11 psi, the timing must begin again from zero minutes. If the pressure rises above 10 or 11 psi, lower the heat on the stove but do not begin timing again.
6. Regulate heat to maintain a uniform pressure.
7. When processing is complete, remove canner from the heat and allow the canner to air-cool until it is fully depressurized. This takes from 30 to 45 minutes. Then slowly remove the weighted gauge or open the petcock. After waiting for an additional 10 minutes, unfasten and remove the canner lid.
8. Remove jars from the canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Let the jars set for 12 to 24 hours to cool.
9. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jars in a clean, cool location. Do not replace screw bands. If a lid is unsealed, the product can be refrigerated or reprocessed as before (check jar for defects and use a new lid).
10. Canned legumes are best if consumed within a year. Do not consume any product that has lost its vacuum seal during storage.

LOW-ACID LEGUMES INSTRUCTIONS

Beans or Peas: Dried, Shelled

Select mature, dry seeds (beans). Sort out and discard discolored seeds. Before canning, dry beans and peas must be fully rehydrated. Use slow or quick method to hydrate:

Slow Method: Place dried beans or peas in a large pot and cover with fresh water. Soak 8 to 12 hours in a cool place. Drain water.

Quick Method: Place dried beans or peas in a saucepan. Cover with boiling water. Boil 2 minutes, remove from heat, soak 1 hour, then drain.

Cover beans soaked by either method with fresh water. Bring to boil, simmer 30 minutes. Fill jars with beans or peas, then add boiling water, leaving 1-inch headspace.

Remove air pockets. Wipe jar rims. Adjust lids. Process dry, shelled beans in:

- pint jars 75 minutes.
- quart jars 90 minutes.

Beans: Dry with Tomato or Molasses Sauce

Select mature, dry seeds. Sort out and discard discolored seeds. Wash dry beans. Add 3 cups of water for each cup of dried beans or peas. Boil 2 minutes, remove from heat and soak 1 hour; drain. Place drained soaked beans in pot with fresh water. Heat to boiling in fresh water, simmer 30 minutes, drain. Make your choice of the following sauces:

Tomato Sauce Version 1: Mix 1 quart tomato juice, 3 tablespoons sugar, 2 teaspoons salt, 1 tablespoon chopped onion, and ¼ teaspoon each of ground cloves, allspice, mace and cayenne pepper. Heat to boiling.

Tomato Sauce Version 2: Mix 1 cup tomato ketchup with 3 cups of cooking liquid from beans. Heat to boiling.

Molasses Sauce: Mix 4 cups water or cooking liquid from beans, 3 tablespoons dark molasses, 1 tablespoon vinegar, 2 teaspoons salt and ¾ teaspoon powdered dry mustard. Heat to boiling.

Fill hot jars three-fourths full with hot beans. Add a ¾-inch cube of pork, ham, or bacon to each jar, if desired. Fill jars with heated sauce, leaving 1-inch headspace. Remove air pockets. Wipe jar rims. Adjust lids. Process beans with sauce in:

- pint jars 65 minutes.
- quart jars 75 minutes.

Beans: Dry, Baked

Sort, soak and boil beans and prepare molasses sauce as directed above.

Place seven ¾-inch pieces of pork, ham, or bacon in a large casserole or pan. Add beans and enough molasses sauce to cover beans. Place lid on pan and bake 4 to 5 hours at 350°F. Add water as needed—about every hour.

Fill hot jars, leaving 1-inch headspace. Remove air pockets. Wipe jar rims. Adjust lids. Process baked beans in:

- pint jars 65 minutes.
- quart jars 75 minutes.

Beans, Fresh: Lima, Butter, Pinto or Soy Peas, Fresh: Blackeye, Crowder or Field

Select tender, well-filled pods with green beans. Discard diseased or damaged pods. Shell the beans.

Hot pack: Bring water to boil in large pot. Blanch beans in boiling water 3 minutes. Pack loosely into hot jars, leaving 1-inch headspace in pint jars, 1 ½-inch headspace in quart jars. Fill jar with boiling liquid to same headspace.

Raw pack: Pack raw fresh beans loosely into hot jars, leaving 1-inch headspace in pint jars, 1 ½-inch headspace in quart jars. Fill jar with boiling water to same headspace.

Remove air pockets. Wipe jar rims. Adjust lids. Process fresh beans in:

- pint jars 40 minutes.
- quart jars 50 minutes.

Succotash

Yield: 7 quarts

3 quarts cut whole kernels of corn
4 quarts shelled limas
2 quarts crushed or whole tomatoes (optional)
Discard diseased, damaged produce; wash.

Hot pack: Combine all prepared vegetables in a large kettle with enough water to cover the pieces. Boil gently 5 minutes. Fill jars with pieces and cooking liquid, leaving 1-inch headspace.

Raw pack: Fill jars with equal parts of all prepared vegetables, leaving 1-inch headspace. Do not shake or press down pieces. Add fresh boiling water, leaving 1-inch headspace.

Remove air pockets. Wipe jar rims. Adjust lids. Process succotash in

- pint jars 60 minutes.
- quart jars 85 minutes.

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