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MONTANA STATE UNIVERSITY EXTENSION

MontGuide

Processing Fruit, Tomatoes and Mixtures in a Pressure Canner

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Charts with processing times and pressures for various fruits and tomato products. Stresses importance of elevation in determining pressures.

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Safety is the top priority

The United States Department of Agriculture (USDA) home-preservation guidelines used in this MontGuide are based on extensive research to prevent botulism, a potentially deadly foodborne illness caused by a toxin of the bacteria *Clostridium botulinum*, which produces one of the most deadly poisons. *C. botulinum* can grow and reproduce in improperly processed home-canned foods.

The guidelines presented here will also help prevent foodborne illnesses caused by other bacteria, molds and yeast, and will help prevent food spoilage in your home-processed foods.

This MontGuide is best suited for intermediate and advanced home food preservers. A list of resources for beginning food preservers is found on page 2.

Two Questions of Safety

Before beginning your home-canning, ask yourself:

1. What is my altitude?

In order to decrease your risk of food-related illness and death, you must determine the correct home-canning processing times and pressures for your altitude. While water boils at 212°F at sea level, it boils at a much lower temperature at higher altitudes. Consequently, at higher altitudes home-canned foods must be processed for longer times or at higher pressures.

2. Is the food I am home-canning a high-acid or low-acid food?

Most high acid foods, such as fruits and properly acidified tomatoes, can be processed using either a boiling water or pressure canner. Information on using a boiling water canner can be found in the MontGuide, *Home-canning Pressure and Processing Times* (MT200905HR) and *Canning Pickles and Sauerkraut* (MT200902HR). The MontGuides provide information on times and pressures for using a pressure canner for processing either foods that are naturally high-acid (fruits) or foods that need additional acid for safe processing (tomatoes and pickled products). Of the two types of pressure canners, a dial gauge pressure canner allows more flexibility in pressure settings needed for altitude adjustments, therefore the quality of the product may be higher than when using a weighted gauge canner where pressure is not as precise. Dial gauge canners must be tested yearly to ensure accurate readings.

TABLE 1. Altitudes* of County Seats in Montana

County Seat	Elevation	County Seat	Elevation
Anaconda	5239	Hysham	2618
Baker	2968	Jordan	2640
Big Timber	4199	Kalispell	2984
Billings	3153	Lewistown	3936
Boulder	4938	Libby	2198
Bozeman	4806	Livingston	4557
Broadus	3091	Malta	2275
Butte	5539	Miles City	2362
Chester	3162	Missoula	3232
Chinook	2411	Phillipsburg	5357
Choteau	3799	Plentywood	2068
Circle	2500	Polson	2930
Columbus	3599	Red Lodge	5562
Conrad	3523	Roundup	3198
Cut Bank	3793	Ryegate	3775
Deer Lodge	4609	Scobey	2461
Dillon	5118	Shelby	3300
Ekalaka	3494	Sidney	1967
Forsyth	2510	Stanford	4288
Fort Benton	2698	Superior	2813
Glasgow	2088	Terry	2228
Glendive	2053	Thompson Falls	2519
Great Falls	3398	Townsend	3869
Hamilton	3625	Virginia City	5804
Hardin	2903	W. Sulphur Spr.	5091
Harlowton	4185	Wibaux	2650
Havre	2493	Winnett	2975
Helena	4068	Wolf Point	2043

*accessed January 22, 2009, http://nris.mt.gov/montanafacts/townelev.html

Additional Resources

This MontGuide is best suited for intermediate and advanced home food preservers. The following resources provide a wide variety of tested recipes and information, based on USDA recommendations, especially important for the beginning food preserver.

National Center for Home Food Preservation (NCHFP), USDA sponsored Web site is the most current source for publications, video clips, tutorials for the beginning home food preserver, frequently asked questions, and seasonal tips: http://www.uga.edu/nchfp/

USDA *Complete Guide to Home Canning, 2006*. Available on NCHFP Web site, above, click on 'publications'

So Easy to Preserve, 5th edition only, MSU Extension does not recommend earlier editions. http://www.soeasytopreserve.com

The following publications are available at local stores or online at http://www.kitchenkrafts.com: *Ball Blue Book Guide to Preserving*, 2009 edition only; *Ball Complete Book of Home Preserving*, 2006 edition only; *Ball Blue Book of Preserving*, 2006 edition only.

TABLE 2. Processing Times When Using a Dial Gauge Pressure Canner. Processing times in this table are only for foods prepared according to the recommendations found in the Additional Resources listed above.

				Canner Pressure (PSI) at Altitudes of:			
Fruit	**Style of Pack**	**Jar Size**	**Time (Minutes)**	**0-2,000 ft.**	**2,00l-4,000ft.**	**4,001-6,000ft.**	**6,001 8,000ft.**
Applesauce	hot	pints	8	6 lb.	7 lb.	8 lb.	9 lb.
	hot	quarts	10	6	7	8	9
Apples, sliced	hot	pints/quarts	8	6	7	8	9
Berries, whole	hot	pints/quarts	8	6	7	8	9
	raw	pints	8	6	7	8	9
	raw	quarts	10	6	7	8	9
Cherries, sour or sweet	hot	pints	8	6	7	8	9
		quarts	10	6	7	8	9
	raw	pints/quarts	10	6	7	8	9
Fruit purees	hot	pints/quarts	8	6	7	8	9
Peaches, Apricots and Nectarines	hot or raw	pints/quarts	10	6	7	8	9
Pears	hot	pints/quarts	10	6	7	8	9
Plums	hot or raw	pints/quarts	10	6	7	8	9
Rhubarb	hot	pints/quarts	8	6	7	8	9
Tomato juice	hot	pints/quarts	20	6	7	8	9
		pints/quarts	15	11	12	13	14
Tomatoes, crushed and heated 5 minutes	hot	pints/quarts	20	6	7	8	9
		pints/quarts	15	11	12	13	14
Tomato sauce	hot	pints/quarts	20	6	7	8	9
		pints/quarts	15	11	12	13	14
Tomatoes, whole, waterpacked	hot or raw	pints/quarts	15	6	7	8	9
		pints/quarts	10	11	12	13	14
Tomatoes, whole, juice-packed	hot or raw	pints/quarts	40	6	7	8	9
		pints/quarts	25	11	12	13	14
Tomatoes, raw, pressed-in no added liquid	raw	pints/quarts	40	6	7	8	9
		pints/quarts	25	11	12	13	14
Tomato salsa/sauce, Mexican*	hot	pints	20	11	12	13	14
		quarts	25	11	12	13	14

*See recipe on page 4. For safety concerns, do not modify recipe.

SAFE EQUIPMENT

- ❑ Jar lifters
- ❑ Canning funnels
- ❑ Magnetic wand to lift jar lids
- ❑ Canning jars and 2 piece lids
- ❑ Nonmetallic spatulas
- ❑ Pressure canner - a specially made heavy pot with a tightly fitted lid. The lid is fitted with a vent and dial or weighted pressure gauge.

Equipment and methods *not* recommended: Open-kettle canning and the processing of freshly filled jars in conventional ovens, steam canners, microwave ovens, and dishwashers are not recommended because they will not prevent growth of deadly botulism. Jars with wire bails and glass caps, one-piece zinc, porcelin-lined caps, and pressure sauce pans are no longer recommended.

PREPARING

Begin with good quality foods which are at proper maturity and free of diseases, bruises and mold. Never use over-ripe foods. Never use tomatoes that have been frozen on the vine.

PACKING

Style of pack: Many fresh foods contain 10-30 percent air. Hot-packed foods will remove more air from the foods than raw packing, prevent floating of food, and yield a higher quality product.

Raw-packing is the practice of filling jars with freshly prepared, but unheated foods. Raw-packing works best for vegetables processed in a pressure canner.

Hot-packing is the practice of heating freshly prepared food to boiling, simmering it 2 to 5 minutes, and promptly filling jars with boiled food.

Jar size: Follow directions for packing in either ½ pint, pint or quart jars.

Head space: Use ½ inch headspace, except for salsa recipe.

Lids: Follow manufacturer's directions for lids.

PROCESSING

Follow manufacturer's directions for your pressure canner; directions for use vary among manufacturers and models.

- ❑ Test your dial gauge at least once per year. Weighted gauges do not need testing.
- ❑ Canners must be vented for 10 minutes to exhaust air. If canner is not vented, excess air will keep the canner pressure and temperature too low for safe processing.
- ❑ Determine pressure and times for altitude.
- ❑ Start processing time when appropriate pressure is indicated for a weighted gauge and required pressure is reached for a dial gauge.

COOLING

- ❑ Remove canner from stove, cool at room temperature until pressure returns to zero. Do not force cool the canner by opening vent, removing weight, or running under cold water. After canner is depressurized, remove the weight or open the vent. Wait 10 minutes, then unfasten the pressure canner lid and remove carefully.
- ❑ Place jars on rack or cloth so air can circulate. Do not expose to draft or cover with towels. Do not touch or tighten lids until jars have cooled.

SEALING

- ❑ Cooled jars should have the center of the lid popped down and not moveable when pressed.
- ❑ Jars that have not sealed should be repacked and reprocessed for the original processing pressure and time within 24 hours. If not reprocessed, foods may also be refrigerated or frozen.

CONSUMING

- ❑ If you are uncertain about the safety of home-canned foods, follow the advice **“When in doubt, throw it out.”**
- ❑ Botulism and other deadly foodborne illness causes are not detected in food by sight, smell and taste. Foods may show no sign of spoilage! If a canned food looks spoiled, foams or even has an “off” odor, dispose of it.

TABLE 3. Processing times in this table are only for foods prepared according to the recommendations found in the Additional Resources listed on page 2.

Fruit	Style of pack	Jar Size	Time (Minutes)	Canner Pressure (PSI) Altitudes Above 1,000 Ft
Applesauce	hot	pints	8	10 lbs.
		quarts	10	10
Apples, sliced	hot	pints/quarts	8	10
Berries, whole	hot	pints/quarts	8	10
	raw	pints	8	10
		quarts	10	10
Cherries, sour	hot	pints	8	10
		quarts	10	10
	raw	pints/quarts	10	10
Fruit purees	hot	pints/quarts	8	10
Peaches, apricots and nectarines	hot or raw	pints/quarts	10	10
Pears	hot	pints/quarts	10	10
Plums	hot or raw	pints/quarts	10	10
Rhubarb	hot	pints/quarts	8	10
Tomato juice	hot	pints/quarts	20	10
		pints/quarts	15	15
Tomatoes, crushed and heated 5 minutes	hot	pints/quarts	20	10
		pints/quarts	15	15
Tomato sauce	hot	pints/quarts	20	10
		pints/quarts	15	15
Tomatoes, whole, water-packed	hot or raw	pints/quarts	15	10
		pints/quarts	10	15
Tomatoes, whole juice-packed	hot or raw	pints	40	10
		quarts	25	15
Tomatoes, rawpressed-in, no added liquid	raw	pints/quarts	40	10
		pints/quarts	25	15
***Mexican Tomato Sauce/Salsa**	hot	pints	20	15
		quarts	25	15

*For safety concerns, do not modify recipe.

Mexican Tomato Sauce

Yield: About 7 quarts

2½ to 3 lbs. chile peppers
1 Tbsp. salt
18 lbs. tomatoes
1 Tbsp. oregano
3 cups chopped onion
½ cup vinegar

Caution: Wear rubber gloves while handling chiles or wash hands thoroughly with soap and water before touching your face.

Procedure: Wash and dry chiles. Slit each pepper on its side so steam can escape. Peel peppers using one of the following methods.

Oven or broiler method: Place chiles in oven (400°F) or broiler for 6-8 minutes until skins blister. *Range-top method*: Cover hot burner, either gas or electric, with heavy wire mesh. Place chiles on burner for several minutes until skins blister.

Let peppers cool. Place in a pan and cover with a damp cloth. This will make peeling the peppers easier. After several minutes, peel each pepper. Cool and slip off skins. Discard seeds and chop peppers. Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water, slip off skins and remove cores. Coarsely chop tomatoes and combine the chopped peppers and remaining ingredients in a large saucepan. Bring to boil. Cover. Simmer 10 minutes. Fill jars, leaving 1 inch headspace. Adjust lids and process using times and pressures on pages 2 and 4.

To order additional publications, please contact your county or reservation MSU Extension office, visit our online catalog at **www.msuextension.org/publications.asp** or e-mail **orderpubs@montana.edu**

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