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University of Kentucky
College of Agriculture,
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Safe Home Canning: Altitude Adjustments

For safe home canning, it's important to know your altitude (or elevation), since altitude affects processing times and pressures. The processing times and pressures given in University of Kentucky Cooperative Extension home canning publications are based on canning at or below 1,000 feet above sea level. While much of Kentucky lies below 1,000 feet in elevation, some portions of the state, particularly in the southeast, are above 1,000 feet. The highest point in Kentucky is Black Mountain in Harlan County, at 4,145 feet above sea level; the lowest point is at the Mississippi River in Fulton County, at 257 feet above sea level. All towns and communities in Kentucky are below 2,000 feet. You can usually find your altitude at your local zoning office, on your town or city's webpage, or from your local County Extension office. If you live at an altitude greater than 1,000 feet, you may need to adjust processing times or pressures to ensure the safety of your home-canned foods.

Why are Altitude Adjustments Needed?

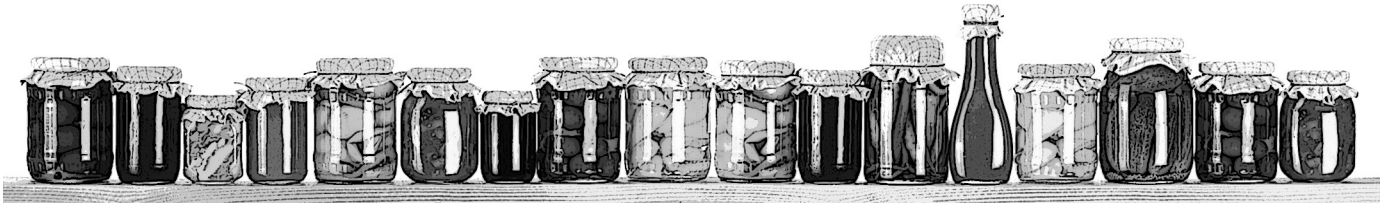
Air pressure decreases as altitude or elevation increases. Because of decreased air pressure, the boiling point of water decreases as altitude increases. At sea level (altitude 0 feet), water boils at 212°F; at 1,000 feet, it boils at 210°F; at 2,000 feet, it boils at 208°F. Lower boiling water temperatures are less effective at killing bacteria so, for safe home canning, adjustments must be made when canning at altitudes above 1,000 feet.

In boiling water canning, altitude adjustments take the form of longer processing times at higher altitudes. The longer processing times are needed to compensate for the lower temperature of the boiling water in the canner.

In pressure canning, processing times do not change, but the canner pressure must be increased at higher altitudes. The increased pressure ensures that the steam inside the canner reaches a temperature high enough to kill any spores of Clostridium botulinum (the bacterium that causes botulism) that might be present.

Altitude Adjustments for Boiling Water Canning

For boiling water canning, the amount of extra processing time needed at altitudes greater than 1,000 feet depends on the length of the recommended process at 0-1,000 feet.



For recipes processed for **less than 20 minutes** at 0-1,000 feet, boiling water processing times for most foods are adjusted for altitude as shown in Table 1.

Table 1. Boiling water processing for less than 20 minutes.

Altitude (ft)	Processing time
0-1,000	as specified in recipe
1,001-6,000	add 5 minutes to time specified in recipe

For recipes processed for **20 minutes or longer** at 0-1,000 feet, boiling water processing times for most foods are adjusted for altitude as shown in Table 2.

Table 2. Boiling water processing for 20 minutes or longer.

Altitude (ft)	Processing time
0-1,000	as specified in recipe
1,001-3,000	add 5 minutes to time specified in recipe
3,001-6,000	add 10 minutes to time specified in recipe

An exception to the above tables is in the processing of **jellied fruit products** (jams, jellies and preserves). For those lower-risk foods, boiling water processing time is increased by 1 minute for each 1,000 feet of additional altitude above 1,000 feet.

Altitude Adjustments for Pressure Canning

For pressure canning, the canner pressure must be increased at altitudes greater than 1,000 feet. However, the processing times do not change. Canner pressures are adjusted for altitude as shown in Table 3.

Table 3. Pressure canner processing.

	Processing pressure	
Altitude (ft)	Weighted gauge	Dial gauge
0-1,000	10 pounds	11 pounds
1,001-2,000	15 pounds	11 pounds
2,001-4,000	15 pounds	12 pounds
4,001-6,000	15 pounds	13 pounds

Detailed information on altitude adjustments for canning specific foods is available on the National Center for Home Food Preservation website at http://nchfp.uga.edu/.

For more information on safe home canning, please see *Home Canning Basics,* publication FCS3-578, or contact your local Extension office.

References

Andress, E. L., and Harrison, J. A. (2014). *So Easy to Preserve* (6th ed.). Athens, GA: Cooperative Extension, University of Georgia.

Geology.com. (n.d.) *Kentucky Elevation Map.* Retrieved November 18, 2014, from http://geology.com/state-map/kentucky.shtml.

U.S. Geological Survey. (2001). *Elevations and Distances in the United States.* Retrieved November 18, 2014, from http://pubs.usgs.gov/gip/Elevations-Distances/elvadist.html.

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