

Options for Storing Potatoes at Home

by Lynn Woodell, Nora Olsen and Jim Wilson

Potatoes are a naturally healthy food. One medium-sized potato is fat free, cholesterol free, sodium free, provides 110 calories, is an excellent source of vitamin C and a good source of potassium (see figure 1—nutrition label).

Consumers often have questions about storing potatoes in the home to maintain tuber quality. If you buy a few potatoes to use within days, the storage location is not an issue—you can keep them almost anywhere. But if you intend to store several to hundreds of pounds of potatoes for as long as possible, the storage location can affect how long the potatoes remain usable.

To identify the perfect home storage location in your house, first answer three questions: What kind of potatoes are they? How long do you intend to store them? How do you intend to cook the potatoes—will you bake, fry, or boil them? Your answers will help you decide where to store potatoes at home.

What are the issues with storing potatoes at home?

Even after harvest, potatoes are still living, respiring organisms that use oxygen and give off carbon dioxide. This means potato tubers must have fresh air for prolonged storage. The fact that they are alive also means that they respond to their environment. Warm temperatures encourage sprouting and tuber diseases. Potato tubers exposed to light will turn green. Tubers stored in a dry environment will become flaccid and withered in appearance. The best place to store potatoes is in a ventilated, cool, dark, and humid environment.

Nutrition Facts	
Serving Size 1 potato (148g/5.3oz)	
Amount Per Serving	
Calories 110	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Potassium 620mg	18%
Total Carbohydrate 26g	9%
Dietary Fiber 2g	8%
Sugars 1g	
Protein 3g	
Vitamin A 0% •	Vitamin C 45%
Calcium 2% •	Iron 6%
Thiamin 8% •	Riboflavin 2%
Niacin 8% •	Vitamin B ₆ 10%
Folate 6% •	Phosphorous 6%
Zinc 2% •	Magnesium 6%
Copper 4%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Potassium	3,500mg 3,500mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g

Figure 1. USDA Nutritional Facts

Temperature

Most homes are kept at temperatures between 65 to 75°F—much higher than the ideal storage temperatures for a potato (42 to 50°F). The warmer temperatures of a typical home can eventually lower the quality of your potatoes, if they are stored at room temperature. Warm temperatures encourage the growth of disease-causing organisms that would typically be inhibited at cooler temperatures. Higher temperatures also encourage potatoes to form sprouts more quickly than lower temperatures. In general, a potato will naturally begin to form sprouts 30-140 days after harvest, depending on the variety. Potatoes purchased from a retail market may delay sprouting even longer due to methods that have been used to control sprouting prior to packaging.

Sprouts will also grow at a faster rate when stored at warmer temperatures. Small sprouts can easily be removed before cooking if the tuber is still turgid. If excessive sprouting occurs, tubers may become flaccid, hard to peel, and may no longer be as appealing. Warm temperatures encourage an increase in transpiration and respiration, which in turn cause increased water loss and potentially less firm potatoes.

On the other hand, temperatures that are too cold will cause your potatoes to turn brown when fried. Freezing temperatures can cause potatoes to turn gray or black.

Light

A potato tuber accumulates chlorophyll when exposed to light, which turns the tuber green. The longer the tuber is exposed to light, the more greening will occur. The process will not reverse—the green color will not go away—if you then store the potato in a dark place. The green color may be unappealing, but the color itself does not affect the taste of the potato. However, green potatoes can form compounds called glycoalkaloids that develop along with chlorophyll formation. Glycoalkaloids may make the potatoes taste bitter. In addition, glycoalkaloids are potentially toxic if you eat a lot of green potatoes at one time. If a potato has only small portions of green, you can safely remove these sections and eat the potato. Discard potatoes with a high proportion of green skin.

Humidity

Potatoes contain approximately 80% water and therefore need to be stored in a humid location to prevent them from drying out. Storing potatoes in a dry place will cause them to become dehydrated. In commercial storage facilities, potatoes are stored at 90-95% relative humidity (RH), but home environments are typically not this humid.

Where is the best place to store potatoes in the home?

Different potato varieties have unique storage requirements. In the United States, there have typically been three types of potatoes: russets, whites and reds. Recently, other unique types of potatoes with yellow, red or blue flesh and/or skin have become more readily available in stores and farmer's markets or to grow in gardens. Russets and long whites are used to make baked, boiled or fried potatoes. Round white potatoes are used for either boiling or potato chips depending on the variety. Red skinned potatoes are mostly used for boiling or salads. The newer specialty potatoes come in many different sizes, shapes, and colors and differ enough to be used for boiling, mashed, baked or fried.

Since some varieties have more than one culinary use, you should decide how you intend to use your potatoes before deciding how and where to store them. While colder temperatures inhibit sprouting, they also tend to cause dark-colored fried potatoes. If you intend to fry your potatoes, you will want to keep them in a slightly warmer place (in other words, not the refrigerator). This is because potatoes that are stored in colder temperatures undergo a reaction that converts starch into sugars, which causes potatoes to turn a dark brown color when fried. Dark colored French fries and potato chips are generally not considered as appealing as golden colored fries and chips. This color change will not appear in potatoes that are baked or boiled; however, to some people, a potato stored in cold conditions will taste sweeter once it is boiled or baked.

University of Idaho researchers, in cooperation with College of Southern Idaho agriculture classes, designed a study to look at the question of where best to store potatoes in the home. Students stored russet potatoes in different locations in their home, recorded air temperature and humidity, and watched for signs of greening

(table 1). Home storage locations included: 1) a bowl in a kitchen cabinet; 2) a tied, clear, plastic produce bag in a kitchen cabinet; 3) a kitchen countertop; 4) a refrigerator; 5) a plastic box in an unheated area; 6) a tied, clear, plastic produce bag in an unheated area; and 7) a cabinet under the kitchen sink. Potatoes were also stored at the University of Idaho Kimberly Potato Storage Facility in a location similar to a commercial storage facility prior to packaging (45°F, 95%RH). The clear plastic produce bags used in two of the above locations were plastic vegetable bags available in the produce section of most grocery stores. Unheated areas varied from an unheated room or closet in a home, to the garage, with differing amounts of light.

Results for the variety Russet Norkotah from the student's home storage study are shown in table 1. Potatoes stored in a bag had higher humidity and less weight loss when compared with potatoes stored in the same location without a bag. Storage at cooler temperatures resulted in darker fry color (see figure 2 and table 1), with tubers stored in the refrigerator accumulating the darkest color. And finally, students confirmed that exposure to light resulted in greening.

Ideally, potatoes should be stored in a well-ventilated, cool, dark, and humid place. Suggested home storage locations include an extra refrigerator set a few degrees higher than normal that you access frequently; or an unheated entrance, spare room, attic, basement or garage insulated to protect the potatoes from freezing temperatures. It is important for potatoes to be stored in a dark location or in dark-colored, perforated plastic bags. The bags must

have many small holes cut in the sides to allow for air movement. Choose a home location with high humidity (such as a damp cellar); or elevate the humidity of your chosen location by storing the tubers in plastic bags with many holes cut in the sides, and/or by placing large pans of water in front of their air source. Do not store potatoes in airtight plastic containers.

Overall Recommendations

- Ideal conditions are ventilated, cool temperatures, high humidity and no light.
- Store at cool temperatures (42-55°F). The warmer the temperature, the greater the potential for sprout development. The cooler the temperature, the greater the increase in sugar concentration and the darker the fry color.
- Avoid exposure to light to prevent greening.
- Options include:
 - Purchase in limited quantities or on an “as needed” basis to avoid the need for long-term storage.
 - Store away from light in an unheated (42-55°F) room, closet or cabinet in your home or garage.
 - Store in a perforated plastic bag to increase humidity and decrease water loss. Do not tightly seal the bag. The goal is to provide fresh air and to minimize carbon dioxide levels and disease development potential.
- Do not wash harvested garden potatoes prior to storage.

Table 1. The impact of home storage location on the quality of potatoes after 5 weeks

Treatment	Average temperature	Average humidity	Weight loss	Green	Fry color
	(°F)	(%)	(%)		
Cabinet—in a bowl	68	39	2.9	no	light
Cabinet—in a produce bag	68	56	1.6	no	light
Countertop	68	38	3.0	yes	light
Refrigerator	36	44	2.5	no	dark
Unheated—in a plastic box	56	56	1.7	no	light
Unheated—in a produce bag	57	67	0.9	some	light
Under Sink	68	43	2.7	no	light
UI Storage Facility	45	95	0.6	no	light



Figure 2. Fry color of potatoes stored at home locations for 5 weeks

For more information

- Idaho Potato Commission:
<http://www.idahopotato.com>
- Potato Promotion Board:
<http://www.healthypotato.com/>
- National Potato Council:
<http://www.nationalpotatocouncil.org>

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