

# Missouri Environment & Garden

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## Pumpkin: A Brief History

Few horticultural crops signal the arrival of autumn more so than pumpkin. This fall, millions of Americans will make an annual pilgrimage to a retail outlet to purchase a vegetable they (unfortunately) are very unlikely to eat. While many people throughout the world use pumpkin as a staple in their daily diet, in the United States this colorful member of the Cucurbitaceae (gourd) family is used primarily for decoration. Halloween and Thanksgiving just would not be complete without pumpkins to add a festive air to the observation of these two events. October is an appropriate month to take a closer look at this fall favorite.

Pumpkin derived its name from the Greek word “pepon” which, literally interpreted, means “large melon”. The French word for “pepon” was “pompon” and the English changed the latter to “pumpion”. American colonists are credited with changing “pumpion” to “pumpkin”, the name which still is associated with this vegetable.

Pumpkin is somewhat of a generic name assigned to several members of the genus *Curcubita*. They include *C. maxima*, *C. moschata* and *C. pepo*. The names pumpkin and winter squash commonly are used for all of these species also. However, most authorities place the large, orange fruit sold for autumn decoration in the species *C. maxima*, and assign winter squash as a common name to the other two species. Interestingly, the canned product sold for making pumpkin pies actually is *C. moschata*, a species of winter squash.

Archeological evidence suggests that pumpkins and winter squash are native to the Americas from the southwestern part of what is now the United States through Mexico and Central America and south into Peru, Ecuador and Colombia. Pumpkins have been cultivated since about 3500 B.C. rivaling it with maize (corn) as one of the oldest known crops in the western hemisphere. Native Americans are said to have roasted long strips of pumpkin on

an open fire and then consumed them. They also dried pumpkin strips and wove them into mats.

Presumably, American colonists relied heavily on pumpkin as a food source as evidenced by this poem (circa 1630):

“For pottage and puddings and custard and pies,  
Our pumpkins and parsnips are common supplies:  
We have pumpkins at morning and pumpkins at noon,  
If it were not for pumpkins, we should be undone.”

One way colonists are thought to have prepared pumpkins was to slice off their tops, remove the seeds and refill the inside with a mixture of milk, spices and honey. The resultant concoction was baked in hot ashes and is said to be the origin of our modern pumpkin pie.

Columbus was known to have taken pumpkin seeds



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back to Europe on one of his excursions. However, pumpkins are warm season vegetables that require a relative long growing season. Thus, they never have gained popularity in northern Europe and the British Isles where the summer temperatures are not conducive to their growth.

Today, pumpkins still are valuable as a food crop but are more widely used for their ornamental value. Brightly colored, orange pumpkins are a staple for fall decoration especially around Halloween when frightening faces are carved into them to form jack-o-lanterns. Although jack-o-lanterns have been carved by people for centuries, the use of pumpkins to make them is relatively new and originated in America.

Jack-o-lanterns originated in Ireland where, according to Irish myth, a notorious character by the name of "Stingy Jack" succeeded in tricking the devil on several occasions through the course of his life, much to the devil's annoyance. Upon his death, Stingy Jack appeared at the gates of hell to learn his eternal fate. The devil, having been fooled by him on several prior occasions, refused to let him enter. Instead, he sent Jack off into the dark night with a burning lump of coal to guide his way. According to legend, Jack put the glowing coal into a hollowed out turnip and has been roaming the Earth ever since.

Immigrants arriving in America continued the tradition of making jack-o-lanterns but found pumpkins much easier to carve than turnips. The association of jack-o-lanterns with Halloween is related to the Celtic festival of Samhain, observed on October 31st—the Celtic equivalent to our New Year's Eve. The Celts believed the spirits of the dead (including Stingy Jack) roamed the earth on that night.

Pumpkins are heat-loving plants and should not be planted until the soil has thoroughly warmed in the spring. Early June is a suggested planting date for most areas in Missouri. Select a location with good soil that is well-drained and has few perennial weeds. Avoid areas that have received herbicides the previous year aimed at broad-leaf weed control since these compound can carry over to the following year.

Pumpkins are vigorous growers and heavy feeders that require adequate nutrition to produce a good crop. Follow soil test recommendations or apply about 1000 pounds of a starter fertilizer such as 5-10-10 per acre (10 pounds per 100 feet of row) when preparing soil for planting. Later, when the vines start to "run" (reach a length of 12 - 15 inches) sidedress with 20 to 30 pounds of actual nitrogen and 60 to 100 pounds of actual potassium (K<sub>2</sub>O) per acre (one pound of 13-0-44 per 100 feet of row). The ideal soil pH for pumpkin production is between 6.0 and 6.5.

Spacing pumpkins depends upon variety. Most of the older, large-fruited varieties produce very vigorous vines that can spread up to 18 feet. Traditionally, these types are spaced 12 to 15 feet between rows and 2 to 4 feet between plants within the rows. Newer, semi-dwarf varieties can be planted in rows 9 to 12 feet apart with plants 2 feet apart within the rows. Dwarf pumpkins can be planted even more closely leaving only 6 to 8 feet between rows and 2 feet between plants within the rows. The use of black plastic mulch will both conserve moisture and help control weeds within the rows.

Because of their lush vegetative growth, pumpkins are prone to insect and disease infestation. Squash bug, squash vine borer, cucumber beetle and aphids are some of the more troublesome insects that attack pumpkins. Timely applications of pesticides labeled for these insects (e.g. endosulfan and carbaryl) can help to minimize damage. Monitoring insect populations by inspection or through the use of traps is essential for proper timing of pesticide applications.

Problematic diseases of pumpkins include powdery mildew, angular leaf spot, black rot, gummy stem blight, mosaic virus and bacterial wilt. Strict sanitation including the removal or turning under of all plant residue between crops is the first line of defense against disease infestation. Following that, preventative fungicides (e.g. chlorothalonil) are very effective in protecting pumpkins from disease problems caused by fungi.

Weeds tend to reduce both yield and quality of pumpkins by competing for sun, water and plant nutrients. Additional to the use of mulch, hand cultivation during the early stages of growth is essential for good weed control. Once the vines start to run, weed control becomes difficult unless herbicides are used. Trifluralin, clomazone and ethalfluralin are examples of herbicides that have been successfully used for weed control in pumpkins. With these or any other pesticides applied, always read and follow label directions.

Harvesting pumpkins at full maturity is essential for high quality and good storage life. Maturity occurs when the shell (rind) has completely hardened. Fruits destined for storage should be allowed to undergo a curing process after harvesting by exposing them for about two weeks to temperatures in the 75 to 85 degree F. range along with good air circulation. Avoid waiting until after a hard frost to harvest pumpkins since this will adversely affect storage. A portion of the stem (i.e., the "handle") should be left attached to the pumpkin since this usually makes them more decorative.

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As previously mentioned, pumpkins are a valuable food crop and an important part of the diet of many people worldwide. They are low in calories, fat, and sodium and high in fiber. A study by the USDA indicated that diets high in pumpkin as a fiber source tended to curb the appetite. The subjects in this study also absorbed less fat and calories from their food. Additionally, pumpkins are good sources of Vitamin A, Vitamin B, potassium, protein, and iron. A cup of cooked, mashed pumpkin contains only 49 calories.

### *Pumpkin trivia:*

- Pumpkins have been grown in North America for five thousand years.
- Eighty percent of the pumpkin supply in the United States is available in October.

- Morton, Illinois, the self-proclaimed Pumpkin Capital of the World, holds an annual 'Punkin Chuckin' contest.

- The heaviest pumpkin ever grown weighed 2009 lbs. and was grown in Topsfield, Maine in 2012.

- The largest pumpkin pie ever baked weighed 2,020 pounds and measured more than 12 feet in size. It took 5 hours to bake and produced over 3000 slices of pie.

- Pumpkins were once recommended for removing freckles and curing snake bites.

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## Want to reduce waste and time? Try mowing leaves rather than removal



*Credit: Hoosier Gardener*

When moving from Michigan to Missouri some years ago, Michigan State University Extension began promotion of mowing leaves as an alternative to raking them. My Missouri home had a plentiful lawn relative to the amount of leaves dropped, so after practicing this for 10 years, I wondered- is this practice still suggested and have there been any follow up studies on the

effects to the soil or turf quality?

Burning of leaves in cities and towns has declined dramatically since the 1970 passage of the Clean Air Act. In the late 1980's concern developed over the amount of yard waste ending up in landfills, resulting in many states banning yard waste from landfills (e.g. Missouri 1992, Indiana, 1994; Michigan, 1995). While commercial or municipal compost sites developed in response to the situation, some cities have focused on how commercial sites and homeowners could reduce the amount of yard waste they send off their property.

Maintaining a regular mowing schedule in the fall was an idea that appeared to save time and reduce the volume

of yard waste. For mowers with bagging units, collecting the chopped leaves and using them as mulch around trees and shrubs is a great option. But capturing the shredded leaves takes time, and many individuals do not have 'bagging' mowers. (Mowing the leaves and grass clippings into a 'windrow' and then raking them up is an acceptable compromise, but still takes more time.)

Studies in Michigan were conducted in the 90's to evaluate the effects of leaf mulching on turf, under various conditions. The first study considered three different leaf application rates (none, 3 inches, and 6 inches) of mixed tree species, mulched in with a rotary mower using two passes in October. It also considered 2 different nitrogen applications (2 or 4 lbs of nitrogen/1,000 sq ft). A second study used leaves from maples or oaks. Both studies were done in full sun with Kentucky bluegrass lawns. Michigan State scientist did note that while the nitrogen application improved the turfgrass quality rating, it did not seem to speed the decomposition of the leaves. It was also pointed out that chopping leaves into small particles was important and allows them to filter into the turfgrass canopy making better soil contact.

What about soil quality? In a 1998 study at Michigan State, soil from these various plots were analyzed. Soil pH did not change, but organic matter did increase in response to the leaf mulching. Composition of the grass clippings was also affected; the percentages of carbon and nitrogen both increased with leaf mulching, but the ratio

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of carbon to nitrogen stayed constant, which is positive. If nitrogen had been reduced, a decline in turfgrass vigor or color may have occurred.

Purdue University also conducted a study considering the effects different leaf application rates may have on turfgrass growth. They applied shredded maple leaves to perennial ryegrass for 4 years. Application rates were 0, 2000, or 4000 lbs/acre in a single application, with leaves being mowed-in with a mulching mower. For comparison to a typical lawn, consider that a typical woodlot will drop about 3,000 lbs/acre of tree leaves and litter per year. Nitrogen was applied in the spring at 0, 1.3 and 2.6 pounds per 1,000 sq ft. In the second year of the study, nitrogen rates were increased to 1.3, 2.6 and 3.9 pounds per 1,000 sq ft because the turfgrass quality was quite poor when no nitrogen was added. Conclusions from this study were all positive, as long as some nitrogen was added. Leaves had no effect on turfgrass quality or color, thatch build-up, soil pH, nutrient availability, weed infestation, or the diseases evaluated (red thread, dollar spot, and pink patch).

A final Michigan State study considered how much leaf litter a low input lawn could handle without significant damage occurring? This was of interest because areas such as municipal parks, low maintenance ball fields and golf course roughs were appealing locations to apply 'extra leaves' during the fall peak period. Leaves were from a mixture of deciduous trees applied to a turfgrass mixture of Kentucky bluegrass, perennial ryegrass, and fine fescue. The rates were approximately 6, 12, and 18 thousand pounds/acre (2, 3 & 4 times the typical woodlot production mentioned above) which correlated to a layer 6, 12 or 18 inches thick. No nitrogen was applied for the 3 years of the experiment. While considerable leaf litter was visible into the spring, a 3 inch mowing height reduced this detraction significantly. Furthermore, grass green-up was faster at the higher mulch rates. Since athletic activity was of interest, the surface hardness was tested after 3 years. Application of leaves, regardless of rate, softened the surface. Finally, the Carbon:Nitrogen ratio of the soil thatch layer was analyzed, and while it did increase significantly, it held below a threshold for which it is not considered a problem to turfgrass quality and vigor - 30:1.

So, has this idea caught on? Searching the internet has revealed extension articles promoting this technique throughout other states such as Kansas, Illinois, Minnesota, Texas, and Virginia. Typical leaf drop patterns, in Missouri, has a couple of advantages over states such as Michigan, where the leaves shed abruptly, probably 80% in the month of October. Here, leaves typically fall over several months, with leaves of trees such as ash and maple dropping in October/November and those of oaks falling in

November/December. Also, at the end of hot dry summers, a number of trees (e.g. cottonwood) lose quite a few leaves in late August and September to conserve moisture.

Rainfall usually returns in late summer and fall, which provides a reason to mow the grass. So if you haven't tried this before, go for it, you may never go back to leaf removal or raking.



Credit: PT Pittsburgh

### Sidebar

#### *Tips for mowing leaves*

1. A sharp mower blade is more effective, and it may be dull after a long season of mowing.
2. Avoid mowing shorter than you normally would, and having the grass a little longer will allow the leaf pieces to sift down so they are less visible. A height of 3 to 4 inches is often suggested.
3. Mow before the layer of leaves piles up too high. More than 3-4 inches of leaves is probably too much. Also, don't let a dense layer of leaves (especially wet and matted) lie on turf too long; more than 4 days is not advised. Given an extended rainy spell, raking may be needed.
4. Don't mow too fast; the leaves won't chop up as well. A normal speed, or slightly slower will work well.
5. Dry leaves chop up better, so this can be DUSTY. Wear a dust mask over your nose and mouth as well as safety goggles. Mowing when the leaves are damp from dew may suppress the dust, but mowing wet leaves doesn't work.
6. Mulching mowers are preferred, so if using a rotary mower be safe and inspect and remove any sticks or limbs, they may be somewhat hidden.

**Benefits:** Less time, returning nutrients and organic matter to the turf, and the environmental benefits of reduced smoke, less landfill waste, less bag usage, and less transportation costs are just a few.

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# November Gardening Calendar

## Ornamentals

- **Weeks 1-4:** Continue watering evergreens until the ground freezes. Soils must not be dry when winter arrives.
- **Weeks 1-4:** Now is the ideal time to plant trees and shrubs. Before digging the hole, prepare the site by loosening the soil well beyond the drip line of each plant. Plant trees and shrubs at the depth they grew in the nursery and not deeper. Remove all wires, ropes and non-biodegradable materials from roots before back filling. Apply a 2-3 inch mulch layer, but stay several inches away from the trunk. Keep the soil moist, not wet, to the depth of the roots.
- **Weeks 1-4:** Remove the spent flowers and foliage of perennials after they are damaged by frost.
- **Weeks 1-3:** Newly planted broad-leaf evergreens such as azaleas, boxwood and hollies benefit from a burlap screen for winter wind protection. Set screen stakes in place before the ground freezes.
- **Week 1:** Now is a good time to observe and choose nursery stock based on fall foliage interest.
- **Week 1:** Plant tulips now.
- **Weeks 3-4:** Mums can be cut back to within several inches of the ground once flowering ends. After the ground freezes, apply a 2 to 3 inch layer of loose mulch such as pine needles, straw or leaves.
- **Weeks 3-4:** Mulch flower and bulb beds after the ground freezes, to prevent injury to plants from frost heaving.
- **Weeks 3-4:** Roses should be winterized after a heavy frost. Place a 6 to 10-inch deep layer of mulch over each plant. Top soil works best. Prune sparingly, just enough to shorten overly long canes. Climbers should not be pruned at this time.
- **Weeks 3-4:** Take steps to prevent garden pools from freezing solid in winter. Covering pools with an insulating material, or floating a stock tank water heater in the pond, will lessen the chance of ice damage.
- **Weeks 3-4:** Covering garden pools with bird netting will prevent leaves from fouling the water. Oxygen depletion from rotting organic matter can cause winter kill of pond fish.

## Vegetables

- **Weeks 1-4:** Fall tilling the vegetable garden exposes many insect pests to winter cold, reducing their numbers in next years garden.
- **Weeks 1-4:** Any unused, finished compost is best tilled under to improve garden soils.
- **Weeks 1-4:** To prevent insects or diseases from over-wintering in the garden, remove and compost all plant debris.
- **Weeks 1-3:** Overcrowded or unproductive rhubarb plants can be divided now.
- **Weeks 3-4:** Root crops such as carrots, radishes, turnips and Jerusalem artichokes store well outdoors in the ground. Just before the ground freezes, bury these crops under a deep layer of leaves or straw. Harvest as needed during winter by pulling back this protective mulch.
- **Week 4:** Thanksgiving - Weave a holiday wreath of garlic, onions, chili peppers and herbs. It will make a gourmet gift for a lucky friend.

# November Gardening Calendar

## Fruits

- **Weeks 1-4:** Keep mulches pulled back several inches from the base of fruit trees to prevent bark injury from hungry mice and other rodents.
- **Week 1:** Harvest pecans when they start to drop from trees. Shake nuts onto tarps laid on the ground.
- **Week 1:** Fallen, spoiled or mummified fruits should be cleaned up from the garden and destroyed by burying.
- **Weeks 3-4:** A dilute whitewash made from equal parts interior white latex paints and water, applied to the southwest side of young fruit trees will prevent winter sun scald injury.
- **Weeks 3-4:** Commercial tree guards or protective collars made of 18-inch high hardware cloth will prevent trunk injury to fruit trees from gnawing rabbits and rodents.
- **Weeks 3-4:** Mulch strawberries for winter with straw. This should be done after several nights near 20 degrees, but before temperatures drop into the teens. Apply straw loosely, but thick enough to hide plants from view.

## Miscellaneous

- **Weeks 1-4:** Now is a good time to collect soil samples to test for pH and nutritional levels.
- **Weeks 1-4:** Roll up and store garden hoses on a warm, sunny day. It's hard to get a cold hose to coil into a tight loop.
- **Weeks 1-4:** To prevent injury to turf grasses, keep leaves raked up off of the lawn.
- **Weeks 1-4:** Continue mowing lawn grasses as long as they keep growing.
- **Weeks 1-4:** A final fall application of fertilizer can be applied to bluegrass and fescue lawns now.
- **Weeks 2-4:** Clean house gutters of leaves and fallen debris before cold wet weather sets in.
- **Weeks 2-4:** Set up bird feeders. Birds appreciate a source of unfrozen drinking water during the winter.
- **Weeks 2-4:** Be sure to shut off and drain any outdoor water pipes or irrigation systems that may freeze during cold weather.
- **Weeks 3-4:** For Cyclamen to bloom well indoors, they need cool temperatures in the 50-60 degree range, bright light, evenly moist soils, and regular fertilization.
- **Weeks 3-4:** Reduce or eliminate fertilizing of houseplants until spring.

*Gardening Calendar supplied by the staff of the William T. Kemper Center for Home Gardening located at the Missouri Botanical Garden in St. Louis, Missouri. ([www.GardeningHelp.org](http://www.GardeningHelp.org))*