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# Fall Vegetable Gardening

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## Planning for a fall harvest

By planning and planting a fall vegetable garden, it is possible to have fresh vegetables up to and even past the first frosts. At a time when retail vegetable prices are on the rise, you can be reaping large and varied harvests from your still-productive garden site.

A wide variety of vegetables can be planted in midsummer to late summer for fall harvests. Succession plantings of warm-season crops, such as corn and beans, can be harvested until the first killing frost. Cool-season crops, such as kale, turnip, mustard, broccoli, and cabbage, grow well during the cool fall days and withstand light frosts. Timely planting is the key to a successful fall garden.

Photo by Karaidel, iStock.

To calculate the time to plant a particular vegetable for the latest harvest in your area, you need to know the average date of the first killing frost and the number of days to maturity for the variety grown. Choose the earliest maturing varieties for late plantings. The following formula for determining the number of days to count back from the first frost will help determine when to start your fall garden.

To find the number of days from seeding or transplanting outdoors to harvest:

1. Start with the number of days from seed to transplant (if you grow your own).
2. Add the number of days from seed to transplant (if you grow your own).
3. Add the average harvest period.
4. Add the Fall Factor (about two weeks).
5. Add the Frost-Tender Factor, if applicable (2 weeks).

The total equals the number of days to count back from the first frost date.

The **Frost Tender Factor** is added only for those crops that are sensitive to frost (corn, bean, cucumber, tomato, squash), as these must mature two weeks before frost in order to produce a reasonable harvest. The **Fall Factor** considers the slower growth that results from cooler weather and shorter days in the fall and amounts to about two weeks. This time can be reduced two to five days by presprouting seeds. Almost any crop that isn't grown for transplants can benefit from presprouting. Sprout seeds indoors, allowing them to grow to about 1 inch. Sprouted seeds may be planted deeper than normal to help prevent drying out, and they should be watered well until they break the soil surface. Care should be taken not to break off the sprouts when planting them.

## Planting for fall harvest

When planting fall crops, prepare the soil by restoring nutrients removed by spring and summer crops. A light layer of compost or aged manure or a small application of a complete chemical fertilizer will boost soil nutrients in preparation for another crop.

Dry soil may make soil work difficult and inhibit seed germination during the midsummer period. Plant fall vegetables when the soil is moist after a rain, or water the area thoroughly the day before planting. Seeds may be planted in a shallow trench to conserve moisture. Cover the seeds about twice as deeply as you do in the spring. An old-time trick for germinating seeds in midsummer is to plant the seeds, water them in well, then place a board over the row until the sprouts just reach the soil surface; at that time, remove the board. An organic mulch on top will help keep the soil cool and moist, but should not be deep enough to interfere with germination. Mulching between rows can also help keep soil cool and decrease soil drying. In severe heat, a light, open-type of mulch, such as loose straw or pine boughs, may be placed over the seeded row. This must be removed as soon as the seedlings are up, so they receive full sun. Starting transplants in a shaded cold frame or in a cool indoor area is another possibility.

Once young plants are established, a thicker mulch layer may be used to retain moisture and control weeds. Irrigate when necessary so the young plants have sufficient moisture. Fall plantings often have few insect problems, as they avoid the peak insect activity period of midsummer. However, some insects, such as cabbageworm and corn earworm, may be even worse late in the year than in summer; vigilance is still required! Avoid some pests and diseases by planting crops of different families than those originally in that section of the garden.

Some of the best-quality vegetables are produced during the warm days and cool nights of the fall season. These environmental conditions add sugar to sweet corn and crispness to carrots. Parsnips and Jerusalem artichokes are examples of crops that are very much improved by a touch of frost.

The fall garden gives you a chance to try again at any spring failures you might have encountered. Some crops, in fact, grow well only in the fall in certain areas. Cauliflower and long-season Chinese cabbage are two examples of crops that do not produce well in mountain areas in spring because they cannot reach maturity before the cool weather ends. Protection of vegetable plants during cold periods may extend your season even further. Although in the hot days of summer, the last thing you want to think about is planting more crops to take care of, look ahead to the fall garden, which offers its own satisfaction through prolonged harvest of fresh vegetables, savings in food costs, and the knowledge that you're making full use of your gardening space and season.

## Care of fall crops

The beginning of fall garden care comes when the local news announces the first arrival of frost. Your main concern then should be to harvest all ripe, tender crops. Tomato, summer squash, melon, eggplant, cucumber, pepper, and okra are some of the crops that cannot withstand frost and should be picked immediately. Store the vegetables in a place where they can be held until needed for eating or processing. If the frost warning is mild, predicting no lower than 30° F, try covering tender plants in your garden that still hold an abundance of immature fruit. Baskets, burlap, boxes, blankets, or buckets help protect them from the frost. Warm days after the frost will still mature some of the fruit as long as the plants have this nightly frost protection. Much will depend on the garden's microclimate. If your spot is low and unsheltered, it is likely to be a frost pocket. Gardens sheltered from winds and on the upper side of a slope are less susceptible to early frost damage.

When using a cold frame to extend the harvest season, be sure to close the top on frosty nights to protect the plants from the cold. When the sun comes out the next morning and the air warms, open the cold frame again; leave it closed if daytime temperatures are low.

Cool-season crops, such as cabbage, cauliflower, broccoli, spinach, and Brussels sprouts, can withstand some cold. In fact, their flavor may be enhanced after a frost. They cannot stay in the garden all winter, but do not need to be picked immediately when frost comes. Kale, spinach, evergreen bunching onion, lettuce, parsley, parsnip, carrots, and salsify are some crops that may survive all winter in the garden. Mulch these overwintering vegetables with 8 inches of mulch to prevent heaving of the soil. Most of these vegetables can be dug or picked as needed throughout the winter or in early spring.

Photo of chard by HansLinde, pixabay.

## Care of perennial vegetables

Now is the time to prepare perennial vegetables for winter, too. Most will benefit from a topdressing of compost and a layer of mulch, which reduces damage from soil freezing and thawing of the soil. Dead leaf stalks of perennial vegetables, such as asparagus and rhubarb, should be cut to the ground after their tops are killed by frost, though some people prefer to leave asparagus stalks until late winter to hold snow over the bed. Don't forget strawberry beds. Remove weeds that you let grow when you were too busy last summer. You can transplant some of the runner plants if you have had no disease problems and the plants are vigorous. Carefully dig a good-sized ball of soil with the roots. Mulch the bed well with a light material.

When tender crops have been harvested and overwintering crops cared for, pull up all stakes and trellises in the garden except those stakes that are clearly marking the sites of overwintering plants. Clean remnants of plant materials and soil from stakes and trellises. Hose them down and allow to dry. Tie stakes in bundles, and stack them so that they won't get lost over the winter. If possible, roll up wire trellises and tie them securely. Store these items inside your attic, barn, or shed in an area where they are out of the way and where rodents and other animals cannot get to them to use as winter nests.

## Preparing soil for winter

Now you are ready to prepare the soil for winter. Pull up all dead and unproductive plants and place this residue on top of the soil to be tilled under or in the compost pile. Remove any diseased or insect-infested plant material from the garden that may shelter overwintering stages of disease and insect pests. If this plant material is left in the garden, you are leaving an inoculum of diseases and insects that will begin to reproduce next spring and add to your pest problems.

The best thing to do is to remove infested plant material from the garden or burn it, where legal. Burning will kill any diseases or insects that may be in plant wastes. Spread the ashes on the garden to get the benefit of mineral nutrients. Check laws in your area before burning anything; you may need a permit. If you live near a wooded area, burning may be too risky. In this case, haul the diseased material away.

Clean-up also gives you the chance to add compost to the garden. Compost contains highly nutritious, decomposed plant material and beneficial organisms and is an excellent soil builder. By spreading compost and other wastes on the soil and plowing them in, you are adding nutrients to the soil for next year's crop. The beneficial insects and microorganisms in the compost will help integrate the compost with the soil, and the added humus will improve soil structure.

Don't overlook other excellent sources of organic material available during the fall. Leaves are abundant, and neighbors will usually be glad to give their leaves away. Put some on the garden now, and store some for next year's mulch. Leaves will mat if put on in too thick a layer and will not decompose quickly. You can help leaves break down more easily by running a lawn mower back and forth over the pile. Put the shredded leaves directly onto the garden or compost them. Sawdust and wood chips can be obtained in bulk from some sawmills, and farms and stables often want to get rid of manure piles before winter.

If you wait until spring to add organic material to the garden, it may not have time to decompose and add its valuable nutrients to the soil by the time you are ready to plant, and you may have to delay planting to a later date. Hot (very fresh) manure can also burn young seedlings. By adding these materials in the fall, you give them plenty of time to decompose and blend into

the soil before planting time. If you don't have enough organic material for the entire garden, try to cover those areas that you want especially rich for next summer's crop.

Check with your county recycling center for mulch or compost, but keep in mind that it may contain weed seed or disease.

If possible, plow or rotary till in the fall. Turning under vegetation in the fall allows earlier planting in the spring and is especially good for heavy soils, since they are exposed to the freezing and thawing that takes place during the winter. This helps to improve soil structure. If you have a rainy fall or if the garden is steep and subject to erosion, you may decide you'd rather plant a cover crop for winter garden protection. A cover crop decreases erosion of the soil during the winter, adds organic material when it is incorporated in the spring, improves soil tilth and porosity, and adds valuable nutrients. Winter cover crops can be planted as early as August 1, but should not be planted any later than November 1. They should make some growth before hard frost. Where you have fall crops growing, you can sow cover crop seed between rows a month or less before expected harvest. This way, the cover crop gets a good start, but will not interfere with vegetable plant growth.

Prepare the soil for cover crop seed by tilling under plant wastes from the summer. Ask at the seed store what the best type of cover crop for your area is and at what rate (pounds per 100 square feet) to plant, or refer to Table 1. Broadcast the seed, preferably before a rain, and rake it evenly into the soil. Spring planting may be delayed somewhat by the practice of cover cropping, since time must be allowed for the breakdown of the green manure. If you have crops that need to be planted very early, you may prefer to leave a section of the garden bare or with a stubble mulch.

When time or weather conditions prohibit either tilling or cover cropping, you may wish to let your garden lie under a mulch of compost, plant wastes, or leaves all winter to be plowed or tilled under in the spring. However, if you want to plant early the next spring, a mulch of heavy materials, such as whole leaves, may keep the soil cold long enough to delay planting. In this case, chop them fine enough so they will break down over the winter. The addition of fertilizer high in nitrogen will also help break down organic matter more quickly.

## Care of garden equipment

Cleaning up tools and equipment is another important garden practice to complete in the fall. Proper clean-up of tools now will leave them in top shape and ready to use when spring comes. Clean, oil, and repair all hand tools. Repaint handles or identification marks that have faded over the summer. Sharpen all blades and remove any rust. Power tools should be cleaned of all plant material and dirt. Replace worn spark plugs, oil all necessary parts, and sharpen blades. Store all tools in their proper place indoors, never outdoors, where they will rust over the winter.

Unless you are lucky enough to live in a warm area where a cold frame will protect vegetables all winter, you will need to clean up the frame when all vegetables have been harvested. Remove all remaining plant material and spread it on the cold frame soil. Spread the plant refuse and any other organic material into the soil in the cold frame as thoroughly as possible. Do not leave the top on the cold frame over the winter as the cold air or the weight of snow may crack or break the glass. Remove the top, wash it thoroughly, and store it on its side in a protected indoor area where it will not get broken.

## Additional Resources

Actual first-killing-frost dates vary from year to year because of local conditions and annual temperature fluctuations. To help determine the ideal planting window for your fall vegetable garden, refer to the hardiness zone tables in VCE Publication 426-331 – Virginia's Home Garden Vegetable Planting Guide: Recommended Planting Dates and Amounts to Plant (https:// www.pubs.ext.vt.edu/426/426-331/426-331.html). Virginia Cooperative Extension also offers numerous crop-specific publications—far too many to list here. Visit the VCE Publications website (https://pubs.ext.vt.edu) and search for "Vegetables" to explore available resources.

**Original publication reviewed by Alan McDaniel, associate professor, Horticulture, Virginia Tech.**

Table 1. Cover Crops

| Type | Legume/ Non-legume | Amount to Sow per 100ft² (ounces) | When to Sow and When to Turn Under | Effects (N/ac/yr equals Nitrogen per acre per year) | Notes |
|---|---|---|---|---|---|
| Alfalfa | Legume | 1/2 | If sown in **spring**, turn under in **fall**.<br><br>If sown in **late summer**, turn under in **spring**. | Fixes 150-250 lbs. N/ac./yr; deep roots break up hard soil, trace elements to surface. | Loam, fairly fertile soil; needs warm temps. for germination. Lime if pH is low. Hardy. In mountains sow by Aug 10 Drought tolerant. Inoculate. |
| Barley | Non-legume | 4 | If sown in **fall**, turn under in **spring**.<br><br>If sown in **spring**, turn under in **fall**. | Adds organic matter; improves soil aggregation. | Prefers medium-rich, loam soil. Lime if pH is low. Not as hardy as rye. Tolerates drought. |
| Buckwheat | Non-legume | 2 1/2 | If sown in **spring**, turn under in **summer**.<br><br>If sown in **summer**, turn under in **fall**. | Mellows soil; rich in potassium | Must leave part of garden in cover crop during season. Grows quickly. Not hardy. |
| Crimson Clover | Legume | 1/3 | If sown in **spring**, turn under in **fall**.<br><br>If sown in **fall**, turn under in **spring**. | Fixes 100-150 lbs. N/ac./yr. | Not reliably hardy. Sow before mid-Sept. in Piedmont and mountains. Not drought tolerant. Lime if pH is low. White clover is a bit hardier. |
| Fava beans | Legume | plant 8” | If sown in early spring, turn under in **early summer**.<br><br>If sown in late summer, turn under in **fall**. | Some types fix 70-100 lbs. N/ac./yr in as little as 6 weeks. Use small seeded rather than large seeded table types. | Will grow on many soil types. Medium drought. tolerance. Likes cool growing weather. Good for mountain areas. If planted in early spring can grow late vegetables. Inoculate with same bacteria as hairy vetch. |
| Oats | Non-legume | 4 | If sown in **spring**, turn under in **summer**.<br><br>If sown in **fall**, turn under in **spring**. | Adds organic matter; improves soil aggregation. | Needs adequate manganese. Not hardy; tolerates low pH |
| Rye, winter | Non-legume | 3 1/2 | If sown in **fall**, turn under in **spring**. | Adds organic matter; improves soil aggregation. | Very hardy. Can plant until late October. |
| Vetch, hairy | Legume | 2 1/2 | If sown in **early fall**, turn under in **spring**. | Fixes 80-100 lbs. N/ac./yr. | Inoculate; slow to establish. Fairly hardy. Till under before it seeds; can become a weed. |
| Wheat, winter | Non-legume | 4 | If sown in **fall**, turn under in **spring**. | Adds organic matter; improves soil aggregation. | Prefers medium-rich, loam soil. Lime if pH is low. Not as hardy as rye. Tolerates drought. |

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