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Fall Vegetable Gardening

Diane Relf
Extension Specialist, Horticulture, Va. Tech

Planting 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 the time of year when retail vegetable prices are on the rise, you can be reaping large and varied harvests from your still-productive garden site.

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

To determine 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 you are growing. Choose earliest maturing varieties for late plantings. The formula below for determining the number of days to count back from the first frost will help determine when to start your fall garden.

$$\begin{array}{l}
 \text{Number of days from seeding or transplanting out-} \\
 \text{doors to harvest} \\
 + \text{ Number of days from seed to transplant if you start} \\
 \text{your own seed} \\
 + \text{ Average harvest period} \\
 + \text{ Fall Factor (about two weeks)} \\
 + \text{ Frost Tender Factor (if applicable) (two weeks)} \\
 \hline
 = \text{ Days to count back from first frost date}
 \end{array}$$

The Frost Tender Factor is added only for those crops that are sensitive to frost (corn, beans, cucumbers, tomatoes, squash), as these must mature two weeks before frost in order to produce a reasonable harvest. The Fall Factor takes into account the slow growth that results from cool weather and short days in the fall, and amounts to about two weeks. This time can be reduced from 2-5 days by presprouting seeds. Almost any crop that isn't grown from transplants can benefit from presprouting. Sprout seeds indoors, allowing them to reach a maximum length of one 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.

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

preparation for another crop. Dry soil can make working the soil difficult and inhibit seed germination during the mid-summer 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 mid-summer is to plant the seeds, water them in well, and then place a board over the row until the sprouts just reach the soil surface; at that time remove the board. Plastic, especially black plastic, may cause the soil to get too hot. In severe hot weather 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 that the seedlings receive full sun. Starting transplants in a shaded cold frame or in a cool indoor area is another possibility. A thin organic mulch helps retain soil moisture and keeps the soil warm without deterring germination.

Once young plants are established, a heavy mulch can be used to hold moisture and control weeds. Irrigate when necessary so the young plants have sufficient moisture. Fall plantings often have fewer 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 were 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 distinctly improved by a touch of frost.

The fall garden gives you a chance to try again any crops that failed in the spring. Some crops, in fact, grow well only in the fall in certain areas. Cauliflower and long-season Chinese cabbage are two examples of crops which do not produce well in Virginia's mountain areas in spring because they cannot reach maturity before the cool weather ends.

Protection of vegetable plants during cold periods can extend your season even further. See Publication 426-381, *Extending the Gardening Season*, for ideas. Though in the hot days of summer the last thing you want to think about is planting more crops, look ahead to the fall garden, which offers its own satisfaction through its prolonged harvest of fresh vegetables, savings in food costs, and the knowledge that you're making full use of your gardening space and season.

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Care of Fall Crops

The beginning of fall garden care comes when the weather and the radio station announce the arrival of the first fall frost. Your main concern then should be to harvest all ripe, tender crops. Summer squash, melons, eggplant, cucumbers, peppers 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 a 30°F. low), try covering tender plants such as tomatoes that hold an abundance of immature fruit. Baskets, burlap or canvas sacks, boxes, blankets, or buckets can be used as covers. Warm days after the frost will mature some fruit as long as the plants have nightly frost protection. Much will depend on your 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; but 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 onions, lettuce, parsley, parsnips, carrots and salsify are some crops that may survive all winter in the garden. Mulch these overwintering vegetables with 8" 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.

Prepare perennial vegetables for winter by topdressing with manure or compost and a layer of mulch which reduces damage from freezing and thawing. 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 for added insulation). Don't forget strawberry beds. Remove weeds that you let grow when you were too busy last summer. If strawberry plants are healthy and vigorous, transplant some of the runner plants by carefully digging a good-sized ball of soil with the roots. Mulch the bed well with a light material. Old raspberry canes can be cut back at this time or late in the winter.

When tender crops have been harvested and overwintering crops cared for, pull up all stakes and trellises in the garden except those that are marking the sites of overwintering plants. Clean stakes and trellises of remnants of plant materials and soil. 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 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 use them 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 heap. Remove any diseased or insect-infested plant material that may shelter overwintering stages of disease and insect pests. Leaving this plant material in the garden provides an inoculum of diseases and insects which will become active in the spring and add to garden pest problems.

The best practice is to remove infested plant material from the garden or burn it. Burning will kill any diseases or insects present in the plant wastes. Spread the ashes on the garden to gain the benefit of their mineral nutrients. Check burning laws in your area before you burn 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 to a landfill.

After clean-up 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 crops. The beneficial insects and microorganisms in the compost will help integrate the compost into the soil, and the 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 to you. Put some on the garden now and store some for next year's mulch. Leaves will mat if applied too thickly and will not decompose quickly. You can help spread the break down of leaves 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 are easy to obtain this season from sawmills. Many farms and stables want to get rid of manure piles before winter sets in.

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, or 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.

If the weather stays dry enough before the ground freezes, you can plow or rototill in the fall. Turning under vegetation in the fall allows early 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 which helps improve the soil structure. If you have a rainy fall, or if your 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 nutrients. Winter cover crops can be planted as early as August 1 but should not be planted any later than November 1. Cover crops should make

some growth before hard frost kills them. 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. Some cover crops suitable for winter use are in the following table. Mixtures of legumes and non-legumes are also effective.

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 it. Broadcast the seed, preferably before a rain, and rake it evenly into the soil. Planting of the spring garden can be delayed by the practice of cover cropping, since time must be allowed for the green manure to break down. For crops that need to be planted early, leave a section of the garden bare.

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, avoid this practice for early spring planting as a mulch of heavy materials such as leaves can keep the soil cold long enough to delay planting by several weeks. In this case, chop the mulch fine enough that it will break down over the winter. The addition of fertilizer high in nitrogen will also help break down organic matter quickly.

Care of Garden Equipment

Clean-up of tools and equipment is another important practice related to the garden which should not be ignored in the fall. Proper clean-up of tools now will leave them in top shape and ready to use when spring arrives. Clean, oil, and mend 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 live in a warm area where your cold frame will protect vegetables all winter, you will need to clean up the frame when all vegetables have been harvested. Remove any plant material and add it to the compost pile. Spade compost 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 weight of snow may crack the glass. Remove the top, wash it thoroughly, and store in a protected indoor area where it will not get broken.

Successful gardening needn't stop with the first frost. When following good garden care practices during the fall and early winter months, your garden will be ready for the growth of healthy vegetables next spring.

TABLE 1. COVER CROPS

Type	Legume/ non-legume	Amount to sow per 100 sq. ft. (oz.)	When to sow	When to turn under	Effects	Notes
Alfalfa	L	1/2	Spring	Fall	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 August 10. Drought tolerant. Use legume inoculum.
Barley	N	4	Fall Spring	Spring Fall	Adds organic matter; improves soil aggregation	Prefers medium-rich, loam soil. Lime if pH is low. Not as hardy as rye. Drought tolerant.
Buckwheat	N	2 1/2	Spring Summer	Summer Fall	Rich in potassium.	Must leave part of garden in cover crop during season. Grows quickly. Not hardy.
Crimson clover	L	1/3	Spring Fall	Fall 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 somewhat hardier.
Fava beans	L	Plant 8' apart	Early spring	Early summer	Some types fix 70-100 lbs. N/acre in as little as 6 wks. use small-seeded rather than large-seed table type.	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 for hairy vetch.
Oats	N	4	Spring Fall	Summer Spring	Adds organic matter; improves soil aggregation.	Needs adequate manganese. Not hardy; tolerates low pH.
Rye, winter	N	3 1/2	Fall	Spring	Adds organic matter; improves soil aggregation.	Very hardy. Can plant till late October.
Vetch, hairy	L	2 1/2	Early fall	Spring	Fixes 80-100 lbs. N/acre/year	Inoculate; slow to establish. Fairly hardy. Till under before it seeds; can become a weed.
Wheat, winter	N	4	Fall	Spring	Adds organic matter; improves soil aggregation.	Same as barley.

FALL VEGETABLE PLANTING CHART

To use this chart, write in the date of your average first fall frost on the line above the 00 column. From there, fill in the dates before that frost, to the left of the 00 column, each 10 days prior to the last. For example, if your average first frost date is October 25, write October 25 on the line above 00. Then write October 15 above the column marked 10 to the left of the 00 column, October 5 in the next column to the left, etc. To the right of the 00 column, write November 4, November 14, November 24, etc. To plan for a spring garden, use the planning calendar in VPI & SU Publication 426-332.

Key: XXXXX = Planting period ooooo = Plant and harvest +++++ = Harvest period

	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	00	10	20	30	40	50	60	70	80	90	100	
Beans, bush																												
Beans, wax																												
Beets																												
Broccoli																												
B. Sprouts																												
Cabbage																												
Ch. Cabbage																												
Carrots																												
Cauliflower																												
Chard, Swiss																												
Collards																												
Cucumbers																												
Endive																												
Kale																												
Kohlrabi																												
Leeks																												
Bibb Lettuce																												
Leaf Lettuce																												
Mustard																												
Onion seed*																												
Garden peas**																												
Potatoes*																												
Radish																												
Rutabaga*																												
Spinach																												
Turnips																												

Note: * Tidewater and Piedmont only ** Mountains only