



## VEGETABLES

# The Fall Vegetable Garden

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Fall is an excellent time to grow many vegetable crops. During this season the gardener can take advantage of cooler temperatures and more plentiful moisture. Many spring-planted crops such as lettuce and spinach tend to bolt, or produce seed, and become bitter in response to the long, hot summer days. Fall gardening helps extend your gardening season so that you can continue to harvest produce after earlier crops have faded.

Vegetables such as broccoli, cauliflower, and Brussels sprouts are better adapted to fall gardening, since they produce best quality and flavor when they can mature during cooler weather. In Indiana, spring tends to heat up rather quickly. For many crops, insect and disease pests are not as much of a problem in fall plantings.

Many vegetable crops are well adapted to planting in late summer for a fall harvest. Use fast-maturing cultivars

whenever possible to ensure a harvest before killing frost occurs. Table 1 indicates the last feasible planting dates for late summer plantings using average maturing rates for short season cultivars. For more precise planting schedules, consult Figure 1 to determine the average date of first killing frost for your area. Then count backwards from the frost date, using the number of days to maturity for the cultivars you want to grow to determine the last feasible planting date.

Keep the fall garden in mind while planning and ordering your spring garden seeds and plants. Seeds of the cultivars you want may be out of stock by late summer. You may need to raise your own transplants; not all garden centers carry vegetable plants for fall gardens.

## Planting

Remove all previous crop residues and any weed growth. Completely prepare the soil by rototilling or spading 6-8 inches deep. If spring crops were heavily fertilized, then no additional fertilization may be needed. However, 1-2 pounds of a general analysis fertilizer, such as 12-12-12, may be applied per 100 square feet of bed area. Be sure to thoroughly mix the fertilizer with the soil. Some gardeners prefer to sidedress the plants with 1 pound of 10-10-10 per 25-30 feet of row placed 6-12 inches from the plants. Apply the sidedressing 2-3 weeks after germination if plants appear to be growing slowly.

Late summer plantings often suffer from hot soil and a lack of water. Soils may form a hard crust over the seeds which can interfere with seed germination, particularly in heavy soils. Use a light mulch of vermiculite, compost, or potting soil over the seed row to prevent a crust from forming. Seeds of lettuce, peas, and spinach will not germinate well when the soil temperature is 85°F and above. Shading the soil and using a light mulch over the seed row will help keep the temperature more favorable for germination. Planting the seeds slightly deeper than spring plantings may also be beneficial, since temperatures will be slightly cooler.

Do not allow seedlings and young transplants to dry out excessively. Apply 1 inch of water in a single application each week to thoroughly moisten the soil. Young seedlings may need to be watered more often during the first week or two of growth. Young transplants may benefit from light shade for the first few days until their new roots become established.

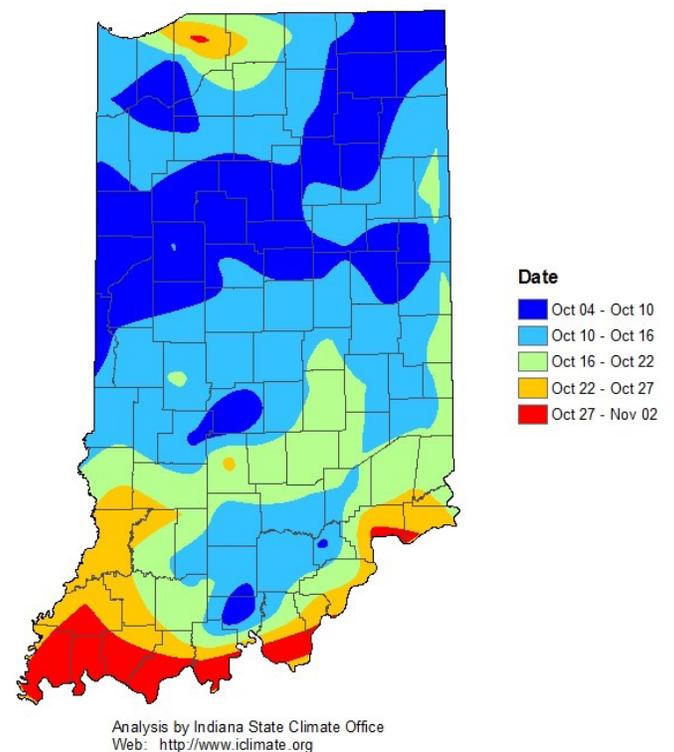
## Frost Protection

Some vegetables that are already growing in the garden will continue to produce well into the fall, but are damaged by even a light frost. Some crops are considered semi-hardy and will withstand a light frost without protection. Others are hardy enough to withstand several hard frosts. Many common vegetables are listed in Table 2 according to their frost tolerance.

You can extend the fall growing season for tender crops by protecting them through early light frosts.

Indiana often enjoys several more weeks of good growing weather after the first frost. Cover growing beds with blankets or throw-cloths supported by stakes or wire to prevent mechanical injury to the plants. Individual plants can be protected with such items as paper caps, milk jugs, plastic water-holding walls, and other commercially available products. The season can be extended even further by planting crops in a coldframe or hotbed.

### Average Date of First Fall Frost 32 F or Lower



**Figure 1.** Average first frost dates in fall. The chance of a frost on the average first frost date is 50 percent. However, the likelihood of a 32°F (0°) occurrence is only 10 percent 2 weeks prior to the average first frost date.

Table 1. Planting guide for fall vegetable gardens.

Crop	Average days to harvest	Last feasible planting date		Depth to plant (inches)	Recommended spacing between plants (inches)
		N. Indiana	S. Indiana		
<b>Seeds</b>					
Beets	50	Aug. 15	Aug. 25	1/2-3/4	3
Carrots	60	Aug. 5	Aug. 15	1/4-1/2	2
Collards	80	July 19	July 29	1/2-3/4	12
Endives	95	July 4	July 14	1/4-1/2	9
Leaf Lettuce	40	Aug. 25	Sept. 5	1/4-1/2	4
Kale	60	Aug. 5	Aug. 15	1/2-3/4	8
Kohlrabi	50	Aug. 15	Aug. 25	1/2-3/4	6
Peas	60	Aug. 5	Aug. 15	2	1
Radish	25	Sept. 15	Sept. 25	1/2-3/4	1
Bush beans	50	Aug. 15	Aug. 25	1-2	2
Spinach	40	Aug. 25	Sept. 5	1/2-3/4	2
Swiss chard	50	Aug. 15	Aug. 25	1/2-3/4	3
Turnip	50	Aug. 15	Aug. 25	1/2-3/4	2
<b>Transplants</b>					
Broccoli	50	Aug. 15	Aug. 25	—	18
Brussels Sprouts	55	Aug. 10	Aug. 20	—	18
Cabbage	50	Aug. 15	Aug. 25	—	18
Cauliflower	50	Aug. 15	Aug. 25	—	18
Chinese cabbage	50	Aug. 15	Aug. 25	—	12
Onion	40	Aug. 25	Sept. 5	—	2

Table 2. Cold temperate tolerance of vegetables.

Tender vegetables (damaged by light frost)	Semi-hardy vegetables (tolerate light frost)	Hardy vegetables (tolerate hard frost)
Beans	Beets	Broccoli
Cucumber	Carrot	Brussels Sprouts
Eggplant	Cauliflower	Cabbage
Muskmelon	Celery	Collards
New Zealand Spinach	Chard	Kale
Okra	Chinese Cabbage	Kohlrabi
Pepper	Endive	Mustard Greens
Pumpkin	Lettuce	Onion
Squash	Parsnip	Parsley
Sweet Corn	Potato	Peas
Sweet Potato	Salsify	Radish
Tomato		Spinach
Watermelon		Turnip