



Department of Horticulture

Purdue University Cooperative Extension Service • West Lafayette, IN

Home Gardener's Guide

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This publication is designed for the home gardener, whether a beginner or an old hand. We hope new gardeners will find it basic enough and that experienced gardeners will find new ideas and solutions to some of their old problems.

Included is information on the planning, planting, and care of vegetables. In addition, there is a garden plan and planting guide showing the distance between rows, when to plant, how much to plant, etc.

Planning a Vegetable Garden

Planning is the first and most basic step in home vegetable gardening. Planning not only saves time when you're ready to plant but also gives you an idea of the types and quantities of seeds or plants you'll need. Most importantly, planning helps assure that the home garden will satisfy your needs and desires.

Garden Location

Vegetables grow best in an open, level area where the soil is loose, rich, and well drained. If the quality of the soil is poor, mix in 2-3 inches of topsoil, peat moss, strawy manure, compost, or leaves plus fertilizer. The more organic matter or topsoil you add, the more you'll improve your soil. Avoid heavy clays, sandy soils, and shady spots. Most vegetables require a minimum of 6 hours of direct sunlight daily.

Avoid planting vegetables near trees and shrubs. In these locations, vegetables must compete with the other plants for light, nutrients, and water. Walnut trees pose a problem because they produce a substance called "juglone", which is toxic to some plants, particularly tomatoes. Juglone-sensitive plants may eventually wilt and die. Because the roots may remain active for several years even after the tree is cut down, a minimum distance of 50 feet is recommended between walnut trees and sensitive plants.

Early Planning

Before the season starts, make a rough "blueprint" of your garden plot (Figure 1). Include in your sketch the vegetables you will plant, which rows they will be in, the distance between rows, the expected planting date, and any other information you feel would be helpful. Refer to the vegetable planting guide (Table 1).

Keep early vegetables such as lettuce, radishes, and green onions together. Tall-growing crops like sweet corn, tomatoes, and pole beans should be grouped together at the North end of the garden, to avoid shading smaller plants. For proper pollination, plant corn in blocks of several short rows, rather than a single long row. And to stretch out the harvest season, plant the same vegetables at different times, for instance, several small weekly plantings of cabbage and beans rather than a single large planting.

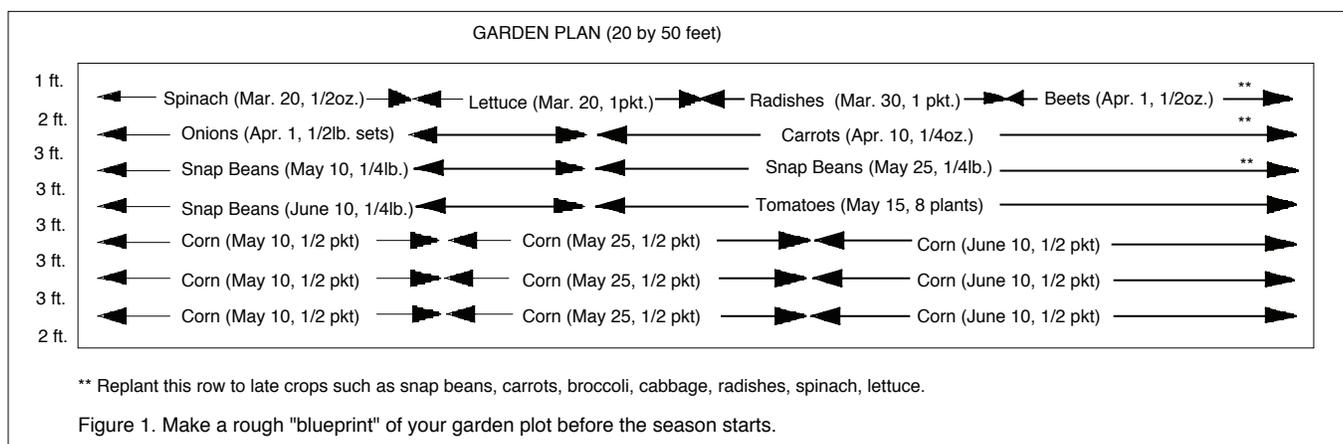


Table 1. Vegetable planting guide.

Vegetables	Space between rows ¹ (ft.)	Space between plants (in.)	Yield per 50 ft.	Amt. seed or no. plants per 50 ft.	Depth to plant (in.)	When to plant ²	Days 'til first harvest
Beets	1	3	1 bushel	1 ounce	1/2-1	Apr 1-June 25	55-65
Broccoli (plants)	3	18	36 heads	36 plants	—	Apr 15-June 15	40-55
Cabbage (plants)	3	18	36 heads	36 plants	—	Apr 5-June 5	55
Carrots	1	2	1 bushel	1/2 ounce	1/2	Apr 10-June 20	70-75
Cauliflower (plants)	3	18	36 heads	36 plants	—	Apr 15-June 25	50-60
Cucumber	4	18	3/4 bushel	1 packet	1	May 15-July 1	55-70
Eggplant (plants)	2	24	60 fruit	24 plants	—	May 15-June 15	55-70
Irish potato (pieces)	3	10	1 bushel	60 pieces	4	Apr 20-June 1	90-130
Leaf lettuce	1	4	150 plants	2 packets	1/2	Mar 20-June 15 ³	40-50
Lima beans (bush)	2	6	1 bushel	1/2 pound	1-2	May 15-June 15	65-75
Onion (sets or plants)	1	2	1 bushel	1 pound sets	1-4	Apr 1-May 1	90-120 (dry) 60 (green)
Muskmelon	4	18	25 melons	1 packet	1	May 15-June 1	85-90
Peas	1	1	1 bushel	1/2 pound	2	Mar 20-May 1	60-75
Peppers (plants)	2	18	2 bushels	36 plants	—	May 15-July 1	55-70
Radishes	1	1	500 roots	1/2 ounce	1/2	Mar 20-June 15 ³	25-30
Snap beans (bush)	2	2	1 bushel	1/2 pound	1-2	May 10-July 20	55-60
Spinach	1	3	25 pounds	1 ounce	1-2	Mar 20-June 15 ³	40-45
Summer squash	4	48	100 squash	1 packet	1/2	May 15-June 15	50-60
Winter squash & pumpkins	6	72	25 -50 squash	1 packet	1	May 15-June 15	85-110
Sweet corn	3	12	50 ears	1 packet	1-2	May 10-July 10	65-85
Sweet potato (plants)	3	12	1 bushel	50 plants	—	May 20-June 10	130-140
Tomato (plants)	4	24	100 pounds	25 plants	—	May 15-June 20	40-70
Turnips	1	4	1 bushel	1 packet	1/2	Apr 1-June 15	60-90
Watermelons	6	48	15 melons	1 packet	1	May 15-May 25	75-90

¹In large gardens, distance should be adjusted for cultivating equipment.

²Early date is for Indianapolis. Plant 20 days earlier in extreme southwestern part and 10 days later for northeastern part of state. Late date is about the same for entire state.

³For a late crop, plant spinach and lettuce from Aug. 15 to Sept. 1; plant radishes from Aug. 15 to Sept. 15.

As you plan, remember that besides planting and harvesting, you will have to take the time to weed, water, cultivate, and thin seedlings. Don't plan for more than you can take care of!

Equipment

Hoe, rake, shovel, trowel, garden hose, and sprinkler are standard gardening equipment. You may also need a good duster or sprayer for pest control. Don't forget fertilizer, mulch, short stakes, and string to mark rows, and 7-8-foot stakes for tomatoes or pole beans.

Plowing is the preferred method for soil preparation, but deep rototilling is more practical for today's garden. Rototillers can be rented in most communities. Small soil areas can be hand-turned using a spade or shovel. A long-handled, wheeled cultivator can be used for weed control during the season.

Seeds and Plants

Order seed of recommended vegetable cultivars (cultivated varieties) early, especially if you plan to start plants indoors, and buy seed from a reputable company. It's also best not to depend on old seed or seed saved from last year's garden, since many vegetable cultivars are hybrids. Seed saved from hybrid plants may not come "true," that is, may not produce the intended cultivar the second growing season.

Some vegetables, including tomatoes, broccoli, cabbage, cauliflower, eggplant, and peppers, are difficult to start directly in the garden from seed. Also, plants grown from direct seedings will take longer to reach harvest than those from transplants. Therefore, it is better to buy transplants from your local garden center or start your own transplants indoors.

Fertilization

The fertilizer requirements for your garden should be established during the planning stage, so establishing needs and applying fertilizer will be discussed together here.

Step 1—Establish basic fertility level. Establish the basic fertility level simply by applying fertilizer—the right kind and the right amount—to your garden soil. A soil test will indicate the kind and amount of fertilizer to apply. Testing in autumn will give you plenty of time to receive the results and have the appropriate materials ready for spring. Contact your local county Extension office for details on soil testing.

Remember that this basic application is a fertility-building step and will not be needed every year. After the basic fertility level has been established, it can be maintained by following steps 2, 3, and 4.

The best method for making the basic application is first to put on half of the recommended fertilizer and follow up by deep plowing or spading. Then apply the other half and disc or rake it in lightly. This distributes the fertilizer throughout the upper 7 inches of the soil.

Important: Your soil test may recommend "no basic application." This means that the fertility level of your garden is adequate. If the report shows that you have too much of an element, leave it out of fertilizer applications. Plowing just a little deeper for a year or two and sowing green manure crops will also help reduce the effects of the element that is in excess.

Step 2—Apply fertilizer to maintain the basic fertility level. Each year after the basic fertility level has been established, it is important to apply fertilizer to the soil to maintain the basic level. Fertilizer is usually applied in the spring, before the soil is worked into a seedbed. It need not be worked deeply into the soil—the upper 3-5 inches will do. The purpose of this maintenance application is to replace the fertility you have removed in the form of crops and that which is lost to leaching.

Again the question comes up: "How much of what kind of fertilizer should I use?" A balanced fertilizer is used for this maintenance application. A balanced fertilizer contains three plant nutrients: nitrogen (N), phosphorus (P), and potassium (K).

A fertilizer bag will be labeled with a combination of numbers such as 8-24-8, 12-12-12, or 6-24-24, indicating the analysis or composition of nutrients. The first number always refers to the percent by weight of nitrogen contained in that bag. The middle number always refers to the percent of the oxide of phosphorus (P_2O_5), which is 44 percent P by weight, and the last number refers to the percent of the oxide of potassium (K_2O), which is 83 percent K by weight. For example, for every 100 pounds of 8-24-8 fertilizer you buy, you get 8 pounds of N, 24 pounds of P_2O_5 , and 8 pounds of K_2O .

Four of the mixed fertilizers most commonly sold are listed in Figure 2. Check the analysis on your bag of fertilizer, and find the corresponding analysis in Figure 2. The second column indicates the amount to use per 1,000 square feet of garden area. If the analysis on your bag is different from that listed, choose the one in the table which is nearest to yours, and use the rate indicated.

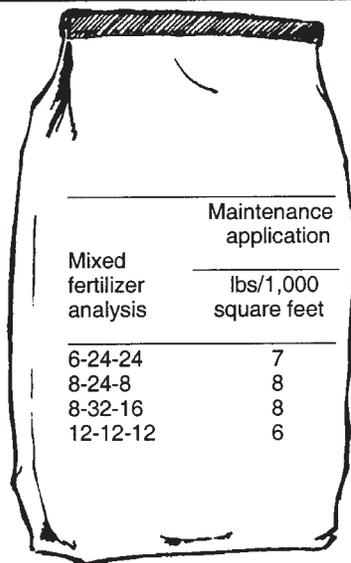


Figure 2. Examples of commonly sold fertilizers.

Step 3—Use starter fertilizer. As defined here, a starter fertilizer is a water-soluble fertilizer supplied when watering in a transplant.

Phosphorus is the most important element needed in getting your transplants off to a good start. Therefore, select a water-soluble fertilizer that has a high phosphorus content in relation to the nitrogen and potassium.

The following are the most commonly available water-soluble fertilizers: 5-10-5, 10-52-17, 8-32-16, 12-24-14, 15-30-15, and 13-26-13. Use any of these at the rate of 1-2 level tablespoons per gallon of water. Apply 1-2 cups of this solution around the roots of each newly set transplant.

Step 4—Side-dress with nitrogen. Vegetables and flowers vary in the amounts of nitrogen they need. Usually, vegetable crops require most of their nitrogen after they have made considerable growth or have begun to fruit. Too much nitrogen before this time delays maturity and reduces flowering and yields.

The major portion of the nitrogen your plants use comes from three sources: (1) the breakdown of organic matter, (2) yearly maintenance applications of fertilizer, and (3) nitrogen side-dressings.

Until the plant starts fruiting or makes considerable growth, it will receive enough nitrogen from the first two sources. But afterward, the demand of the plant for nitrogen often exceeds that supplied by the first two, and a nitrogen side-dressing is needed. Because vegetable crops vary so greatly in both the amount of nitrogen side-dressing required and times of application, Table 2 was developed for handy reference. Fertilizer requirements for annual flowers do not vary as much, and a single treatment may be made for the entire season.

Table 2. Recommended nitrogen side-dressings.

Crop	Amount side-dressing (lb. per 100 ft. row)* Ammonium nitrate** 33-0-0	Time of application (Sprinkle nitrogen fertilizer in row middles, and water if rain is not likely.)
Annual flowers	1	4-6 weeks after planting
Asparagus	2	Before growth begins in spring
Cabbage, cauliflower, broccoli	1	3 weeks after field transplanting
Cucumber, muskmelon	1	1) 1 week after blossoming begins 2) 3 weeks later
Onions (mature)	1	1-2 weeks after bulb formation starts
Peas and beans	1	After heavy bloom and set of pods
Peppers, eggplants	1	After first fruit sets
Spinach, kale, mustard & turnip greens	1	When plants are about one-third grown
Sweet corn	1	1) When plants are 8-10 inches tall 2) 1 week after tassels appear
Sweet potatoes, watermelons, carrots, beets, turnips, parsnips, lettuce	None	Excessive amounts of nitrogen will reduce yields, or lower quality, or both. Side dressings of nitrogen not needed
Tomato	1	1) 2 weeks after first fruit sets 2) 2 weeks after picking first tomato 3) 1 month later

* A pint of ammonium nitrate weighs approximately 1 pound.

** Other forms of nitrogen, such as ammonium sulfate, may be used on an equivalent nitrogen basis.

Table 3. Adjusting soil pH.

Pounds of sulfur required per 100 sq. ft. to lower pH				
To Lower the pH		Soil Type		
From	To	Sandy	Loamy	Clay
8.5	6.5	4	5	6
7.5	6.5	1	1.5	2
8.5	5.5	5	6.5	8
7.5	5.5	2	3	4
6.5	5.5	1	1.5	2

Pounds of limestone required per 100 sq. ft. to bring soil pH to 6.5 from initial pH shown			
Initial soil pH	Sands and sandy loams	Loams and silty loams	Clays
4.5	28	46	46
4.8	24	37	42
5.2	17	25	34
5.6	8	16	25
6.0	5	10	15

Note: These rates are based on a 9-inch plow depth and limestone with a 100% calcium carbonate equivalent.

Soil pH

Although the optimum soil pH (measure of acidity) varies with the specific crop, most vegetables perform best in a slightly acidic soil (pH 6.0-6.8). Most Indiana soils are in this range or perhaps more alkaline. Lime, a material which increases pH to make soils more alkaline, is rarely needed for Indiana gardens. In fact, the addition of lime to your garden may adversely affect the nutrition of garden plants. Some plants, such as potatoes, require a more acidic soil. Agricultural sulphur can be used to lower pH, making soil more acidic. See Table 3 for application rates of sulphur and lime to adjust soil pH.

Maintaining Organic Matter

Two major factors contribute to physical properties of your soil: size of inorganic particles (sand, silt or clay) and organic matter. You cannot alter soil particle size or type much, but you can control organic matter.

Sandy soils should contain 2 to 3 percent organic matter; clay type soils need 4 to 5 percent. Annual applications of organic matter are required to reach these levels and to maintain them.

Peat moss makes an excellent source of organic material for the small garden. Coarse types will provide the best soil conditioning. Compost not only adds organic matter, but it reuses your plant materials as well. Animal manures are excellent. They should be well-rotted, applied in the fall, and plowed under. Weed seeds are the chief objection to animal manures.

Peat moss, compost, or animal manure should be applied about 2 inches below the soil surface and then worked in thoroughly.

Green manures are legumes or small grain crops that are plowed under while still in the green stage. Winter green manure crops include rye, wheat, barley, and winter vetch. Summer green manure crops include Sudangrass, soy-beans, and cowpeas.

A highly satisfactory way to handle organic matter is to plant half of the garden to a winter green manure crop in September or early October. Then put some well-rotted animal manure on the other half, fall-plow it, and plant spring vegetables in this part. The following spring, turn under the green manure crop and plant your summer vegetables. Rotate these areas each year. After turning under a green manure crop, wait about 3 weeks before planting to allow the green manure a chance to dry down and begin decomposition.

Planting a Vegetable Garden

The second major step in successful vegetable gardening is proper planting at the proper time. Certain preparation, planting procedures, and timing should be followed to insure an abundant, healthy crop. Follow the recommendations in the vegetable planting guide in Table 1.

Preparing the Soil

When the first warm spring days appear, everyone is anxious to begin gardening. First, allow time for the sunshine

and warm spring breezes to dry out the soil before you try to work it. If you can crumble a soil ball with your fingers, it's ready to plant. If it clings together, it's still too wet. If you work soil that's too wet, it will remain hard and cloddy for weeks.

Prepare the soil about 6 inches deep, making sure all sod is turned under. Do this with a garden spade, a plow, or a rototiller. If you spade by hand, shatter and slice each shovelful so the soil is crumbly. Finish by leveling and smoothing with a rake or harrow.

Planting Seed

Make a furrow for the seed, using the hoe handle if planting fine seeds or the hoe blade for larger seeds (Figure 3). Barely cover small seed, and place only 1 inch of soil over large seed. One of the most common errors in gardening is planting too deep. Seeds planted too deep often do not come up.

When planting in rows, mark the rows to be planted by stretching a heavy cord between short stakes at either end of the garden. Alternatively, vegetables can be grouped into bands or blocks using the recommended within row spacing between all plants.

Distance between the rows varies with the kind of vegetable, so check Table 1 for proper spacing. Sow seed evenly and a little thicker than the plants will finally stand; then gently cover and firm the soil with a rake. If the soil is dry, a thorough but gentle watering will hasten seed germination. Try moistening the furrow just before laying the seed. Some seeds may have trouble breaking through the hard crust which sometimes forms over the seed row. Applying a light mulch over the seeds helps prevent soil crusting and adds some protection from hard spring rains. Use a thin layer of chopped straw, grass clippings, compost, vermiculite, or similar materials.

If you have a large garden, consider using a mechanized seed planter. Push-type planters will sow seed at the right depth and rate, cover the seed, and firm the soil—all in one operation. Other hand planters, which distribute the seed in the opened row without the operator having to bend too much, are available.

Setting Out Plants

Buy only sturdy, green transplants of known cultivars. Those in individual peat or plastic pots are easy to work with. When planting a peat pot, be sure to tear off the rim and bottom of the peat pot before planting. The edges, when exposed to the air, act as a wick and draw moisture away from the root area. Removing the bottom of the peat pot will allow easier root penetration. Also, be sure the peat pot is moist at planting time. In sandy soil, carefully remove the entire peat pot. All plastic pots should be removed before planting.

To avoid wilting and possible death of plants, set them out during the late afternoon or early evening, when the sun's intensity and the wind have died down. Transplants can be "hardened off" by gradually exposing them to the cooler, brighter, and windier outdoors 1-2 weeks before final planting. However, hardening off should not be a substitute for producing or buying stocky, vigorous plants rather than tall, spindly ones. First, mark the rows as you would for seed. Then dig a hole for each plant roughly twice as wide and twice as deep as the soil ball, keeping in mind proper planting distance as noted in Table 1.

Next, set each plant at the same level it grew before; place soil around the roots; and water with starter solution. If the next 2-3 days call for sunshine, shade the new transplants to prevent wilting. Newspaper tents (Figure 4), coffee cans, or similar materials can be used. Water as needed, but water thoroughly each time.

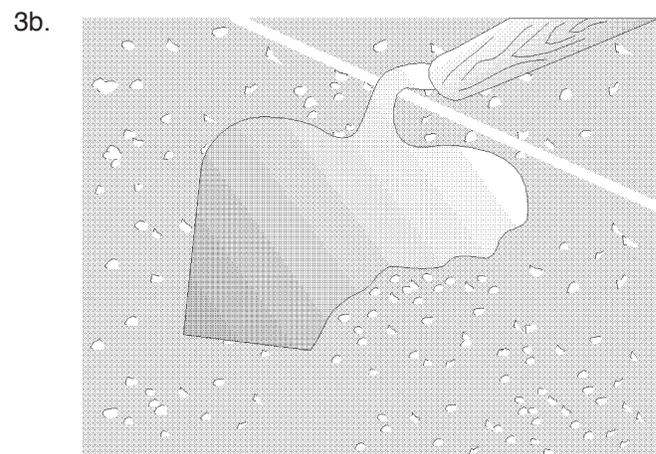
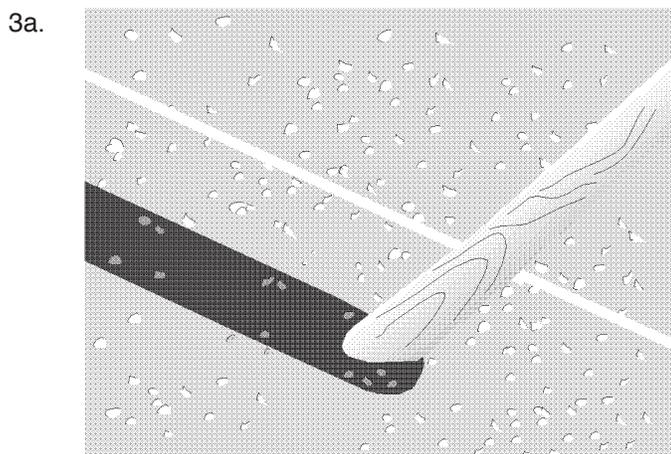


Figure 3. Make a furrow for seeds using the handle end for small seeds (3a) or the blade for large seeds (3b).

Frost Danger

Cover tender crops such as tomatoes, peppers, and eggplants when frosty nights are forecast. Cardboard boxes, blankets, hot caps, fabric row covers, or newspaper tents will do. Do not allow the coverings to touch the plants, for they could injure the plants. Remove the covers in the morning. Don't use metal or plastic sheets to protect plants from frost damage. They actually conduct cold to the plants.

Care of a Vegetable Garden

Care after planting is the third important step in good vegetable gardening. Proper care is what makes the difference between "just" vegetables and those that have that really fresh, home garden goodness.

Weed Control

Weed control is a must. Nothing is more disheartening than a well-prepared garden overrun by weeds. The best time to control weeds is when they're small. If allowed to grow, weeds compete with the vegetable plants for water, fertilizer, and sunlight while harboring insects and diseases.

Weed with a sharp hoe, using a shallow shaving stroke, not a chop. Cultivate no deeper than 1/4-1/2 inch. Deeper cultivation may bring weed seeds to the surface where they can sprout, and it may also damage plant roots. For large garden plots, a wheel hoe with knives or power equipment is well worthwhile. Don't cultivate too closely to plants; prevent stem and root injury by hand pulling close weeds while they're still very small.

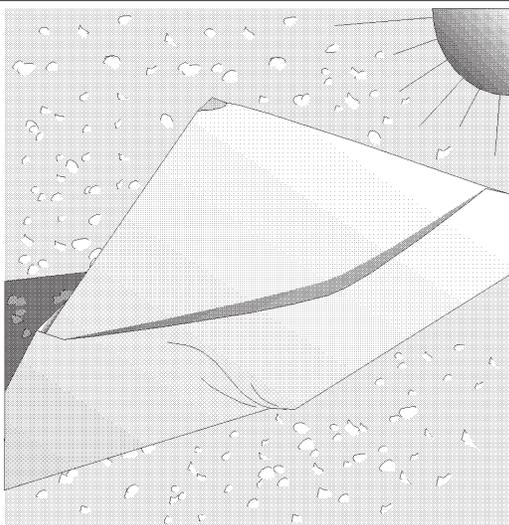


Figure 4. If the next 2- 3 days call for sunshine, cover the new transplants with newspaper "tents" to prevent wilting.

For large plantings of specific vegetables, an herbicide may be applied; but always follow label directions and restrictions. No one herbicide can be used to control all weeds in all crops, and proper application is critical for effective control. Therefore, herbicides are not feasible for most home vegetable growers.

Mulches control weeds and offer other advantages as well. A 2-4-inch layer of organic matter will control most of the weeds.

Mulching

Mulching encourages growth by conserving moisture, controlling weeds, and moderating soil temperature. Black plastic mulch tends to increase soil temperature and is ideal for warm season crops such as tomatoes, eggplants, peppers, and vine crops. Plastic mulch is applied before planting the crop.

Organic mulches tend to keep soil cooler and are ideal for moderating hot summer temperatures. Straw, crushed corn cobs, bark chips, shredded bark, sawdust, and compost are all good mulching materials. Apply these materials in late May or early June, after you clean up weeds and the soil has warmed. Place the material around the plants and between the rows. Use 4 inches of mulch; if coarse material like straw is used, or 2 inches for fine material like grass clippings.

Caution. During rainy seasons or in wet areas, any mulch may keep the soil too damp.

Watering

Vegetable plants need plenty of water throughout the entire growing season. Apply 1-1 1/2 inches per week in a single watering, unless rain does it for you. Light sprinklings may do more harm than good because roots tend to form near the surface of the ground if water doesn't penetrate deeper. Shallowly rooted plants are more susceptible to drought damage.

Sandy soil requires more frequent watering than heavy clay. However, always apply water slowly so it can soak in. Check the amount applied by catching it in straight-sided tin cans placed throughout the garden, or by digging down to see if the moisture has penetrated at least 6 inches. Inexpensive plastic rain gauges are also available.

Thinning

Vegetables need room to grow (Figure 5). Proper spacing between plants in the row as well as between rows promotes faster growth and a larger, better quality crop. Vegetables started from plants should have been spaced

properly when planted; however, those started from seed will have to be thinned. See Table 1 for recommended spacing between plants.

Thin plants while they are small and when the soil is moist to minimize injury to the remaining plants. Grasp plants to be removed right at the soil line, and pull them out gently. If you are damaging other plants, don't remove plants by pulling; rather, cut them off at the soil line. Leave the strong plants, and firm the soil after you've finished. Watering after thinning is helpful in resettling the soil around the roots of remaining plants.

Insect and Disease Control

The very first step in controlling diseases and insect pests is to identify the cause of the problem. Then choose an appropriate control strategy. Commercially available garden sprays or dusts applied throughout the growing season will control many vegetable insects and diseases. Spray or dust regularly as directed on the label. Be sure to cover the underside of the leaves as well as the tops. Controls may need to be reapplied after a rain.

To reduce dependence on pesticides, use the following techniques: (1) plant only disease-resistant cultivars, (2) plant crops in a different location from year to year, (3) practice good garden sanitation, such as removing plant debris from the garden and keeping the edges and fence rows free of trash and weeds, and (4) hand-pick insect pests when possible.

Harvest and Storage

To insure high-quality, nutritious vegetables from your home garden and to prevent waste, proper harvesting at the right stage is essential. Harvest vegetables when

they exhibit the following characteristics, and store at the temperatures and humidities listed.

Cold, Moist (32-40°F, 90-95% relative humidity)

Root Crops

Beets—Begin harvest when beet is 1 inch in diameter. Beet tops at this time make excellent tender greens. Main harvest when beets are 2-3 inches. Harvest spring-planted beets before hot weather (July). Harvest fall beets before the first moderate freeze. For storage, wash roots, trim tops to 1/2 inch, place in perforated plastic bags, and store in refrigerator, cold moist cellar, or pit. Storage life: 2 to 4 months.

Carrots—Harvest spring carrots before hot weather (July). Fall-planted carrots should be harvested before the first moderate freeze. For storage, wash roots, trim tops to 1/2 inch, place in perforated plastic bags, and store in refrigerator, cold moist cellar, or pit. Storage life: 2 to 4 months.

Horseradish—Harvest after several severe freezes. Store in the ground all winter, mulch with straw or leaves, and dig when needed. Horseradish can also be stored much like carrots.

Parsnips—Harvest in late fall after several moderate freezes. Exposure to cold develops the sweet flavor. Same storage requirements as for carrots.

Potato, Irish—Harvest when the tops have yellowed and/or died. Do not leave in ground because high soil temperatures will accelerate over-ripening. Cure for about a week in a shaded, well-ventilated place (open

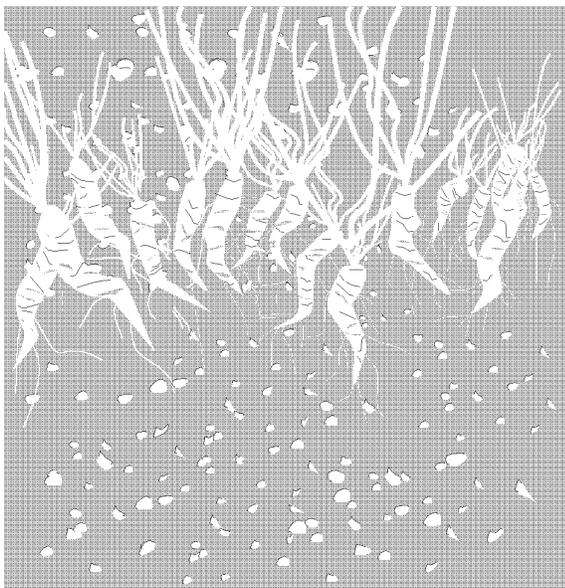


Figure 5a. Unthinned carrots.

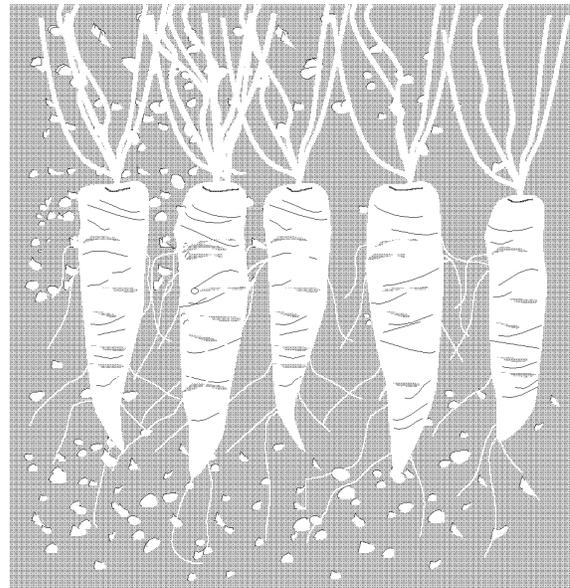


Figure 5b. Properly thinned carrots.

barn, shed, garage). Remove excess soil from potatoes and discard those diseased or damaged. Avoid exposing tubers to light. They will turn green with even small amounts of light. Store in as cool a place as possible above 40°F. Ideal storage conditions are hard to find in late summer. Cool basements are probably the best storage available. Keep humidity high and provide good ventilation. Storage time: 2 to 4 months.

Radish—Harvest when 1/2 to 1 inch in diameter. Wash roots, trim both tap root and tops, and store in plastic bags in refrigerator for up to 1 month. Winter or black radishes are stored the same as carrots.

Salsify—Same harvest and storage as for parsnips.

Turnip—Turnips can be harvested from the time they are 1 inch in diameter. They are best as a fall crop and can withstand several light freezes. Store same as carrots.

Cole Crops (Cabbage Group)

Broccoli—Harvest terminal head while florets are still tight and of good green-blue color. Smaller size heads will develop from side shoots. Store in perforated plastic bags for up to 1 week in the refrigerator. Freeze any surplus.

Brussels Sprouts—Harvest the sprouts (small heads) when they are firm. Beginning from the bottom of the plant, cut or break sprouts from the leaf axil (where it meets the stem). Sprouts can stand several moderate freezes. Harvest all sprouts prior to the first severe freeze, and store in the refrigerator in perforated bags for up to 3 weeks. Freeze any surplus. Best grown for a fall harvest.

Cabbage—Harvest when heads are solid. Store cabbage in refrigerator or cold cellar in plastic bags or in outdoor pit for up to 2 months.

Cauliflower—To keep heads white, tie outer leaves above the head when curds are about 1-2 inches in diameter (except purple types). Heads will be ready for harvest in about 2 weeks. Cauliflower may be stored in perforated plastic bags in the refrigerator for up to 2 weeks. Freeze any surplus.

Chinese Cabbage—Best grown in the fall. Harvest after the first moderate frost in the fall, and store in perforated plastic bags in the refrigerator, cold cellar, or outdoor pit. Will keep for up to 2 months.

Kohlrabi—Harvest when the swollen stems are 2-3 inches in diameter. Stems become woody if left too long before harvest or if grown under poor conditions. Cut off root and leaf stalks, and store in plastic bags as indicated for carrots. Storage life: 2 to 4 weeks.

Greens

Chard, Swiss—This green may be harvested continuously. Merely break off the outer leaves. Swiss chard is a beet developed for its top. A spring planting will provide greens from early summer to the first moderate freeze. May be stored up to 2 weeks in refrigerator.

Collards, Kale, Mustard, and Spinach—Harvest the leaves of greens when they reach suitable size. Either harvest the whole plant or the outer, larger leaves. Wash and trim. Greens do not store well, but may be kept in plastic bags in the refrigerator for up to 2 weeks. Freeze any surplus.

Endive (Escarole)—Harvest the whole plant. Wash thoroughly to remove soil and sand. Gather leaves together, and tie with rubber band. Store in plastic bags in refrigerator for up to 3 weeks.

Lettuce—Head, semi-head, and leaf lettuce can be stored for up to 2 weeks in perforated plastic bags in the refrigerator.

Parsley—Successive harvests can be made during the growing season by snipping stems close to the ground. Do not cut more than half of the plant at once. Parsley will over-winter if planted in a protected place such as a cold frame. If planted in the open, it can be lifted carefully with a ball of soil just before the soil freezes, potted, and taken into the house to a cool, sunny room, and harvested for several weeks. Parsley will keep in plastic bags in the refrigerator for 1 or more weeks.

Legumes

Lima Beans—Harvest when pods have filled. For tender limas, harvest when a bit immature; for “meaty” limas, harvest when dry and mature. Shelled limas can be stored in perforated plastic bags in the refrigerator for about a week. Surplus can be canned, frozen, or dried.

Garden Peas—Harvest when pods have filled. For tender peas, harvest when a bit immature; for “meaty” peas, harvest when mature. Unshelled peas can be kept in a perforated plastic bag in the refrigerator for about a week. Freeze or can surplus. Snow peas should be harvested when pods are fully elongated, but still flat-sided. Snap peas should be left on the plant until the peas reach full size and pod is cylindrical.

Southern Peas (Black-eyed peas, Crowder, Purple Hull, etc.)—For fresh use, freezing, or canning, harvest when seeds are large and plump, but moist. Either shelled or unshelled peas may be stored in the refrigerator for several days. For dry storage, harvest after pods and seeds have dried.

Vine Crops

(Although melons are used as a fruit, because they are annual plants they are usually grown along with vegetables in home gardens. Thus, melons are included.)

Muskmelon (Cantaloupe)—Harvest when the stem slips easily from the fruit. Lift the melon; if ripe it should separate easily. Store ripe melons in the refrigerator in a plastic bag for up to 10 days. Try freezing a few boxes of melon balls.

Squash, Summer—Harvest when fruit is small (6-8 inches long, or 3-4 inches across for round types), young, and tender. Skin should be easily penetrated with the thumbnail. Can be stored for up to a week in a perforated plastic bag in the refrigerator.

Other Vegetables

Asparagus—Harvest by snapping or cutting 6- to 8-inch spears off at ground level. Store in plastic bags in refrigerator for up to 1 week. Freeze or can any surplus.

Onions, Green—Harvest green onions when they attain sufficient size. Wash and cut off roots; remove part of top, leaving an inch or more of green. Place in plastic bags and store in refrigerator for up to 2 weeks.

Rhubarb—Harvest leaf stalks when 1/2 to 1 inch in diameter. DO NOT USE LEAFY BLADES. Rhubarb can be stored in perforated plastic bags for up to 3 weeks in the refrigerator. Surplus rhubarb can be frozen.

Sweet Corn—Harvest sweet corn when kernels are plump and tender. Silks will be dry and kernels filled. Check a few ears for maturity by opening top of ear and pressing a few kernels with thumbnail. If milky juice exudes, it is ready for harvest. Harvest at peak of quality, husk to conserve space, and store in plastic bags in the refrigerator. Freeze or can surplus corn.

Cool, Moist (45-50°F, 80-90% relative humidity)

Cucumber—Harvest cucumbers before seeds become half-size. This will vary with cultivar. Most cultivars will be 1 1/2 to 2 1/2 inches in diameter and 5 to 8 inches long. Pickling cucumbers will be a bit more blocky and not as long as slicers. Store slicing cucumbers in the warmest part of the refrigerator. Place in plastic bags. Storage life is about 1 week. Pickling cucumbers should be cooled quickly in ice water and can be kept up to 2 days in a plastic bag in the refrigerator.

Eggplant—Harvest when fruits are nearly full grown, but color is still bright. Eggplants are not adapted to long storage. Keep in warmer part of refrigerator for about a week.

Beans, Green—Bean pods will be the most tender when the small seed inside is one-fourth mature size. From this stage the pods become more fibrous as the beans mature. Store green beans up to 1 week in perforated plastic bags in the warmer part of the refrigerator. Can or freeze surplus. Cool cellar storage is also possible.

Okra—Harvest okra pods when they are 2 to 3 inches long. Over-mature pods are woody. Store in plastic bags in the warmer part of the refrigerator for about 1 week. Freeze surplus.

Pepper, Sweet—Harvest when fruits are firm and full size. If red fruits are desired, leave on plant until red color develops. Sweet peppers can be stored for 2 to 3 weeks in the warmer part of the refrigerator in plastic bags. Cool cellar storage is also possible.

Tomato—Ripe tomatoes will keep for a week in the refrigerator or at 45-50°F. Green, mature tomatoes, harvested before frost, should be kept at a temperature between 55 and 70°F. For faster ripening, raise temperature to 65-70°F. Mature green tomatoes are about normal size and have a whitish green skin color. Mature green tomatoes can be kept 3-5 weeks by wrapping each tomato in newspaper and inspecting for ripeness each week. A cellar where temperatures are about 55-58°F is satisfactory for holding mature green tomatoes.

Watermelon—Harvest when underside of fruit turns from whitish to yellowish. The tendril at the juncture of the fruit stem and the vine usually dies when the fruit is mature. Thumping an immature melon gives a ringing, metallic sound, while a mature melon gives a dull thud. Watermelons will store at room temperature for about a week or at temperatures of 45 to 50°F for 2 or 3 weeks.

Cool, Dry (45-55°F, 50-60% relative humidity)

Onions, Dry—Harvest onions when 2/3 to 3/4 of the tops have fallen over and the necks have shriveled. Remove tops, place in shallow boxes or mesh bags, and cure in open garage or barn for 3 to 4 weeks. Store in mesh bags in as cool a place as can be found at harvest time. During humid (muggy) weather, keep ventilated.

Peppers, Hot—Pull plants late in the season or string peppers together and hang to dry in a warm place. Store in a dry, cool place (usually a basement).

Warm, Dry (55-60°F, 60-70% relative humidity)

Pumpkins and Winter Squash—Harvest pumpkins and winter squash when the skin is hard and the colors darken. Both should be harvested before frost. Remove

the fruit from the vine with a portion of the stem attached. Store on shelves in single layers so air can circulate around them.

Warm, Moist (55-60°F, 80-85% relative humidity)

Sweet Potatoes—Harvest in fall before frost and freezing temperatures. Handle carefully in the digging process. Cure for 1 week at a temperature of 80-85°F. Ideal storage is at 55°F and 85 percent relative humidity. (This might be accomplished in a basement with ventilated boxes covered with periodically moistened burlap sacks.)

Finishing the Job

Don't forget to clean, repair, and sharpen your garden tools, and store them in a dry place for the winter. This makes for a longer, useful life for your tools, and saves time next spring. Wiping cleaned metal blades with an oily rag will help prevent rusting. Be sure to drain fuel and oil from power tools. Store leftover pesticides where they will be protected from extreme cold or heat and moisture, out of the reach of children and pets.

For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.
