

Table 1. Guide to Spring-planted, Cool-season Vegetables

Vegetable	Planting interval	Seed or plants per 100-foot row	Inches between rows	Inches between plants	Days to first harvest	Length of harvest season	Yield range per 100-foot row
Beets	Mar. 1 to Mar. 10	½ oz. seed	14 to 36	2 to 3	55 to 60	4 weeks	75 to 150 lbs.
Broccoli	Mar. 1 to Apr. 1	80 plants	24 to 36	15	60 to 70	4 weeks	50 to 100 lbs.
Cabbage	Feb. 20 to Apr. 1	80 plants	24 to 36	15	60 to 75	3 weeks	125 to 200 lbs.
Cauliflower	Mar. 1 to Apr. 1	80 plants	24 to 36	15	55 to 65	2 weeks	50 to 100 lbs.
Carrots	Mar. 1 to Apr. 1	¼ oz. seed	14 to 36	2 to 3	75 to 85	4 to 6 weeks	50 to 100 lbs.
Collards	Mar.	¼ oz. seed	18 to 36	15	65 to 75	4 to 30 weeks	100 to 150 lbs.
Kale	Feb.	¼ oz. seed	18 to 36	12 to 15	55 to 65	4 to 20 weeks	100 to 150 lbs.
Kohlrabi	Feb. or Mar.	¼ oz. seed	14 to 36	6	40 to 50	4 weeks	50 to 75 lbs.
Lettuce, Head	Feb. or Mar.	¼ oz. seed	14 to 36	12 to 15	65 to 80	2 to 3 weeks	50 to 100 lbs.
Lettuce, Leaf	Feb. to Apr.	½ oz. seed	14 to 36	6	40 to 50	4 to 6 weeks	50 to 75 lbs.
Mustard	Feb.	¼ oz. seed	14 to 36	5 to 10	35 to 45	3 to 6 weeks	75 to 100 lbs.
Onions, Bunch	Feb. or Mar.	400 to 600 sets	14 to 36	2 to 3	30 to 60	3 weeks	30 to 50 lbs.
Onions, Storage	Feb. or Mar.	200 to 400 sets	14 to 36	3 to 6	100 to 120	2 weeks	50 to 100 lbs.
Peas, English	Feb. 1 to Mar. 20	½ to 1 lb. seed	12 to 36	2 to 4	65 to 70	2 to 3 weeks	20 to 30 lbs.
Peas, Snap	Feb. 1 to Mar. 20	½ to 1 lb. seed	12 to 36	2 to 4	65 to 75	2 to 3 weeks	30 to 50 lbs.
Potatoes, Irish	Mar.	14 lbs. seed	30 to 36	12	90 to 110	4 months stored	100 to 120 lbs.
Radish	Feb. 15 to Apr. 15	½ oz. seed	14 to 36	1 to 2	25 to 30	3 weeks	50 bunches
Spinach	Feb.	1 oz. seed	14 to 36	3 to 4	40 to 50	3 weeks	10 to 30 lbs.
Swiss Chard	Mar.	½ oz. seed	18 to 36	6 to 8	50 to 60	4 to 30 weeks	50 to 150 lbs.
Turnip, Greens	Mar.	½ oz. seed	18 to 36	2 to 4	30 to 40	Several weeks	50 to 100 lbs.
Turnip, Roots	Mar.	¼ oz. seed	18 to 36	3	40 to 65	6 months	100 to 150 lbs.

Garden soil should not be worked when it is too wet. Pick up a handful of soil and roll it into a ball. If the soil sticks together and does not crumble when dropped, it is too wet to work. Soil worked too wet forms large, hard clods which are difficult to break up and are completely unsuitable for a seedbed.

Soil should be worked to a depth of at least 6 or 7 inches and smoothed before planting. Seed should be planted only in moist, finely aggregated soil. Soils worked into a powdery condition are more likely to crust. Small seed planted in cloddy soil usually dry out and germinate

poorly. Garden soil may be worked with farm equipment, a rototiller or spaded with a shovel.

Fertilizer and Lime

Vegetable gardens will not reach their potential unless the soil is properly limed and fertilized. Liming decreases soil acidity, increases fertilizer availability and reduces certain physiological problems such as blossom-end-rot of tomatoes, peppers and watermelons. A soil test is the only reliable method of determining the optimum amount of lime and fertilizer to apply.

Table 2. Guide to Warm-season Vegetables

Vegetable	Planting interval	Seed or plants per 100-foot row	Inches between rows	Inches between plants	Days to first harvest	Length of harvest season	Yield range per 100-foot row
Beans, Bush Snap	Apr.10 to June 20	¼ lb. seed	24 to 36	3 to 4	52 to 60	2 weeks or more	80 to 120 lbs.
Beans, Pole Snap	Apr.10 to June 20	¼ lb. seed	36 to 48	3 to 4	60 to 65	5 to 6 weeks	100 to 150 lbs.
Beans, Bush Lima	May or June	½ lb. seed	24 to 36	3 to 4	65 to 75	3 weeks	20 to 30 lbs. shelled
Beans, Pole Lima	May or June	½ lb. seed	36 to 48	3 to 4	80 to 90	4 weeks.	25 to 50 lbs.
Cantaloupe	May	¼ oz. seed	72	24	80 to 90	3 weeks	100+ melons
Corn, Sweet	Apr. 1 to June 1	¼ lb.seed	36	8 to 12	80 to 95	7 to 10 days	90 to 120 ears
Corn, Super Sweet	Apr.15 to June 1	¼ lb.seed	36	8 to 12	80 to 95	10 to 15 days	90 to 120 ears
Cucumber, Pickling	May	¼ oz. seed	72	12	50 to 55	3 to 6 weeks	115 to 250 lbs.
Cucumber, Slicing	May or June	¼ oz. seed	72	12	50 to 65	3 to 6 weeks	115 to 250 lbs.
Eggplant	May	50 plants	36	24	65 to 80	2 months or more	75 to 150 lbs.
Okra	May 5 to May 20	1 oz. seed	36	6 to 12	50 to 60	7 to 9 weeks	50 to 100 lbs.
Peas, Field	May or June	¼ lb. seed	36	4	65 to 80	3 to 5 weeks	30 to 40 lbs.
Pepper, Sweet	May or June	60 plants	36	18 to 24	55 to 80	2 to 3 months	50 to 75 lbs.
Pepper, Hot	May or June	60 plants	36	18 to 24	60 to 70	2 to 3 months	10 to 25 lbs.
Potato, Sweet	May	100 slips	36	12	110 to 120	5 months stored	75 to 125 lbs.
Pumpkin	May	1 oz. seed	120 to 144	48	100 to 120	4 months stored	40 to 50 pumpkins
Squash, Summer	May or June	1 oz. seed	48 to 60	12 to 24	40-50	6 weeks	100 to 150 lbs.
Squash, Winter	May or June	1 oz. seed	72 to 96	24 to 36	90-110	4 months stored	50 to 200 lbs.
Tomatoes	Apr. 10 to June 10	50 plants	48	24	70-80	8 weeks or more	200-300 lbs.
Watermelon	May	¼ oz. seed	120 to 144	48	80-90	3 weeks	20-25 melons

Table 3. Guide to Fall Vegetables

Vegetable	Planting interval	Seed or plants per 100-foot row	Inches between rows	Inches between plants	Days to first harvest	Length of harvest season	Yield range per 100-foot row
Beans, Bush Snap	July 15 to Aug. 15	1/4 lb.	24 to 36	3 to 4	52 to 602	weeks or more	80 to 120 lbs.
Broccoli	July 15 to Aug. 15	66 plants	24 to 36	18	60 to 70	4 weeks	50 to 100 lbs.
Cabbage	July 5 to Aug 15	66 plants	24 to 36	18	60 to 75	3 weeks	125 to 200 lbs.
Cabbage Chinese	July 1 to July 30	100 plants	24 to 36	12	40 to 50	4 weeks	200 to 300 lbs.
Cauliflower	July 15 to Aug. 15	66 plants	24 to 36	18	55 to 65	2 weeks	50 to 100 lbs.
Collards	July 1 to Sept.1	¼ oz. seed	18 to 36	18	65 to 75	4 to 30 weeks	100 to 150 lbs.
Cucumber, Pickling	July 1 to Aug. 1	¼ oz. seed	72	12	50 to 55	3 to 6 weeks	115 to 250 lbs.
Cucumber, Slicing	July 1 to Aug. 1	¼ oz. seed	72	12	50 to 65	3 to 6 weeks	115 to 250 lbs.
Kale	July 1 to Sept. 1	¼ oz. seed	18 to 36	12 to 15	55 to 65	4 to 20 weeks	100 to 150 lbs.
Kohlrabi	July 15 to Sept 1	¼ oz. seed	14 to 36	3 to 6	40 to 50	4 weeks	50 to 75 lbs.
Lettuce, Leaf	July 1 to Sept. 15	½ oz. seed	14 to 36	6	40 to 50	4 to 6 weeks	50 to 75 lbs.
Mustard	July 1 to Sept. 1	¼ oz. seed	14 to 36	5 to 10	35 to 45	3 to 6 weeks	75 to 100 lbs.
Potatoes, Irish	July 1 to July 31	14 lbs. of seeds	30 to 36	12	90 to 110	4 months stores	100 to 120 lbs.
Radish	Aug. 1 to Sept. 15	½ oz. seed	14 to 36	1 to 2	25 to 30	3 weeks	50 bunches
Spinach	Sept. 10 to Sept. 20	1 oz. seed	14 to 36	3 to 4	40 to 50	3 weeks	10 to 30 lbs.
Squash, Summer	July 15 to Aug. 15	1 oz. seed	48 to 60	12 to 24	40 to 50	6 weeks	100 to 150 lbs.
Tomatoes	July 1 to Aug. 1	50 plants	48	24	70 to 80	8 weeks or more	200 to 300 lbs.
Turnip Greens	Aug. 1 to Sept. 30	½ oz. seed	18 to 36	2 to 4	30 to 40	Several weeks	50 to 100 lbs.
Turnip Roots	Aug. 1 to Sept. 15	¼ oz. seed	18 to 36	3	40 to 65	6 months	100 to 150 lbs.

Table 4. Approximate Pounds of Fertilizer to Apply to 100-Foot Rows to Equal Recommended Rates

Recommended soil test rate		Fertilizer rates in pounds per 100-foot rows for various row widths*				
Per acre	Per 1000 sq. ft.	18 inches	24 inches	30 inches	36 inches	48 inches
435	10 lbs.	1.5	2.0	2.5	3.0	4.0
650	15 lbs.	2.3	3.0	3.8	4.5	6.0
870	20 lbs.	3.0	4.0	5.0	6.0	8.0
1090	25 lbs.	3.8	5.0	6.3	7.5	10.0
1305	30 lbs.	4.5	6.0	7.5	9.0	12.0

* One pint of dry fertilizer will weigh about one pound.

Table 5. Recommendations for Sidedressing Vegetable Crops

Crop	Ammonium nitrate per 100-foot row	Ammonium nitrate per plant	Time of application
Cucumbers, Cantaloupe, Pumpkins, Squash, Watermelon	1 to 1½ pounds	1 tablespoon	When vines are 1 foot long.
Tomatoes, Pepper, Eggplant	1 to 1½ pounds	1 tablespoon	When first fruits are 1 inch or more in diameter.
Sweet Corn Okra Lettuce	1 to 1½ pounds	-----	When 12 to 18 inches long. After the first picking. Three to four weeks after seeding.
Greens, (Turnips, Spinach, Collards, Kale, Mustard)	2 to 3 pounds	-----	Six weeks after seeding.
Broccoli, Cabbage, Cauliflower, Brussels Sprouts	1 to 1½ pounds	½ tablespoon	Three to four weeks after transplant.

Table 6. When to Harvest Garden Vegetables

Vegetable	Vegetable appearance
Asparagus	When spears are 6 to 9 inches tall.
Beans, lima	When pods are full but seeds are green.
Beans, snap	While pods snap easily and are still smooth.
Beets	1½ - to 2½-inch beets have highest quality.
Broccoli	Before flowers show yellow color.
Cabbage	When heads become firm and heavy.
Cantaloupe	When melons can be lifted and the vine slips without pressure.
Carrot	Any time roots are firm and brittle.
Cauliflower	Before curd loosens and discolors.
Collard	When leaves are large but still green and firm.
Corn	When kernel juice is milky, silk begins to dry and ears are full to end.
Cucumber	When seeds are small, flesh is firm and color is green.
Eggplant	Before color begins to dull.
Kale	When leaves are large but before they yellow.
Kohlrabi	When 2 inches or more in diameter but still tender.
Lettuce	When tender and mild flavored. Before bolting.
Mustard	When leaves are crisp and tender.
Okra	When pods are 2½ to 3½ inches long.
Onion	For green onions: when bulb is ¾ to 1 inch in diameter. For storing: after the tops have died down.
Parsnip	After cool weather has improved quality.
Peas, English	After pods have filled but before they turn yellow.
Peas, snap	After pods form but before yellowing.
Peas, Southern	For fresh use or freezing: When pods shell easily. For drying: After pods are dry and brittle.
Pepper, hot	After pods reach full size.
Pepper, sweet	When pods are full size and still firm.
Potato, Irish	For immediate use: After tubers are 1 inch in diameter. For storage: After vines have died and skin has set.
Potato, sweet	After reaching desired size but before cool fall rains.
Pumpkin	After they are full grown and mature colored. Before frost.
Radish	When firm and brilliantly colored.
Rutabaga	Before becoming tough.
Spinach	When leaves are crisp and dark green.
Squash, summer	When large end is 1-2½ inches in diameter and skin is still tender.
Squash, winter	When rind is not easily scratched by fingernail.
Swiss, chard	When leaves are crisp, tender and still green.
Tomato	When fully colored but still firm.
Turnip greens	While leaves are green and crisp.
Turnip roots	After 2 inches in diameter but while still tender.
Watermelon	When tendrils adjacent to fruit die and rind on ground becomes yellow.

to use them on weed-free soils or only on small areas, as they will have to be removed to control weeds.

There are also various kinds of small plastic tunnels used to protect plants. They consist of plastic strips 5 or 6 feet wide. The plastic may be clear or translucent with numerous slits or holes down the sides, or it may be solid.

The plastic is supported by 6-foot lengths of #10 wire bent into a hoop shape and inserted over the row at 6- to 10-foot intervals. The edge of the plastic must be well covered with soil to prevent its removal by wind.

Install plastic row covers immediately after planting or transplanting. Much of their benefit comes from increased soil temperature, which requires time to achieve. They are often used with black plastic mulch, which assists in weed control.

Table 7. Vegetables Suited to Multiple Row or Bed Planting

Double row only	Multiple row or bed
Beans, Bush	Beets
Beans, Pole	Carrots
Collards	Chard, Swiss
Corn, Sweet	Lettuce
Kale	Mustard
Peas, English	Onions
Pepper	Radishes
	Spinach
	Turnips

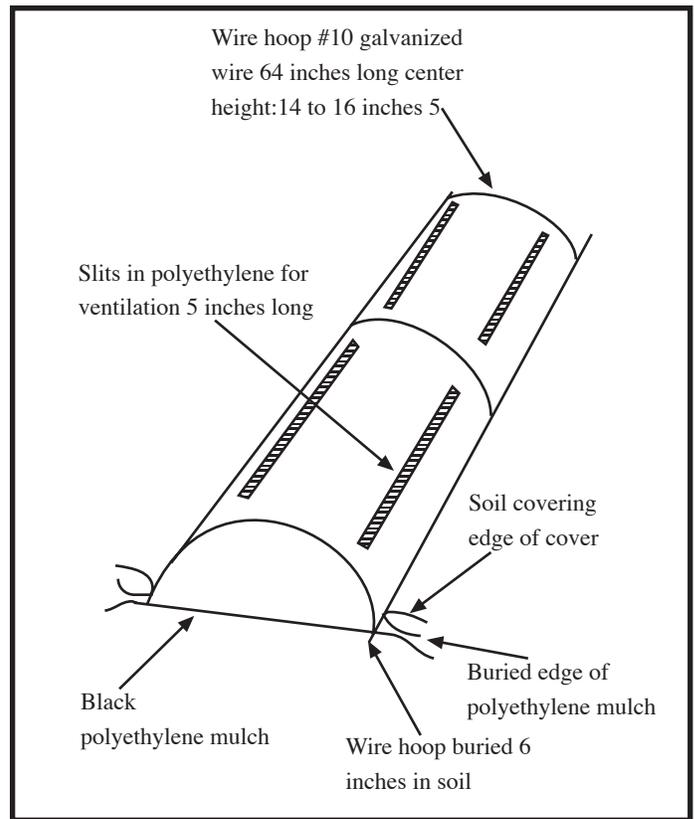


Figure 18. Slitted row cover.

Table 8. Recommended Spacings for Vegetables Planted in Double or Multiple Rows

Vegetable	Inches between rows	Inches between plants
Beans, Bush	10 to 12	3 to 4
Beans, Pole On Wire	8	3 to 6
Beets	6	2 to 3
Carrots	4	2 to 3
Chard, Swiss	8	6 to 8
Collards	12	12
Corn, Sweet	12	8
Kale	6	6
Lettuce, Head	12	12 to 15
Lettuce, Leaf	6	6
Mustard	6	6
Onions	4	3
Peas, English	6	3
Pepper	10 to 12	12
Radishes	4	1 to 3
Spinach	6	3 to 4
Turnip, Greens	4	2 to 3
Turnip, Roots	6	3

Saving Seed

You may occasionally acquire vegetable seed that you do not plant immediately. Sometimes, only part of a seed packet is planted. You may even wish to preserve a favorite heirloom variety. How can seed best be stored?

Seed is alive and must remain alive if it is to grow. The best way to keep it alive is to keep it cool and dry.

Begin by resealing partially filled seed packets with tape. Place the seed packets in containers such as glass jars with lids, plastic containers or boxes with tight-fitting lids.

Add a small envelope of calcium chloride or powdered milk to the container to absorb moisture, and then refrigerate or freeze the seed. Seed kept dry and cool will remain free of insects and may remain viable for several years.

Be careful what seed you attempt to collect and save. Seed of hybrid varieties should never be saved, because plants grown from it may vary considerably from the parent

plants. Seed of cross-pollinated plants, such as vine crops, may not grow into plants exactly like the parents either. Some seed can also carry diseases. Bean and pea seed are examples that often carry bacterial or viral diseases. Therefore, saving seed is always risky. The best way to ensure healthy seed is to purchase fresh seed each year.

If you do have old seed, it may be wise to test it. Roll 10 to 20 seed in a paper towel and moisten the towel. Put the moistened towel in a glass jar with a top or in a plastic container with a tight-fitting lid so the paper towel will not dry out. Place the container where it will remain warm. After eight to 10 days, check to see how many seed appear to be vigorously sprouting. If less than half are sprouting, discard the remaining seed. If about half are sprouting, you may wish to plant the remaining seed thickly. If most are sprouting, then the seed may be planted at normal thickness.

Table 9. Details of Transplant Production

Vegetable	Approximate growing time (wks.)	Germination temperature (degrees F)	Growing temperature (degrees F)	Conditions for hardening
A. Cool-Season				
Broccoli	5 to 7	70	60 to 65	50 to 55F for 10 days
Cabbage	5 to 7	70	60 to 65	50 to 55F for 10 days
Cauliflower	5 to 7	70	60 to 65	50 to 55F for 10 days
Head Lettuce	5 to 7	70	60 to 65	Lower temperature and moisture
B. Warm-Season				
Cucumber	2 to 3	75	65 to 75	Reduce moisture
Cantaloupe	2 to 3	75	65 to 75	Reduce moisture
Eggplant	6 to 8	75	70 to 75	Reduce temperature and moisture
Pepper	7 to 9	75	60 to 70	Reduce temperature and moisture
Squash	2 to 3	75	65 to 75	Reduce moisture
Tomato	5 to 7	75	60 to 70	Reduce temperature and moisture
Watermelon	2 to 3	80	65 to 75	Reduce moisture