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# BETTY B. WATKINS SEED LIBRARY

Free vegetable, fruit, herb, and flower seeds.

## Growing Guide Spring 2023

## Arugula

**Sowing:** When all danger of frost has passed, direct sow arugula in full sun or partial shade, 1/4" deep and 3-6" apart in rows 10" apart. For a continuous harvest, plant a new crop every 2-3 weeks until the heat of summer; arugula tastes best when grown as a spring or fall crop, since excess heat causes bitterness in the leaves. For a fall crop, plant the *Eruca Sativa* seeds in late summer. Arugula also grows well as a container plant, or throughout the winter in a greenhouse or cold frame.

**Growing:** Arugula can tolerate light frost, but if heavy frost comes, provide protection for the plant. Keep the soil moist, and apply a layer of mulch to conserve moisture and discourage weeds. Watch out for aphids and other insect pests.

**Harvesting:** The first leaves can be harvested about two or three weeks after planting, when they reach 2-3" long. The smaller leaves have a more tender texture and delicate flavor than the larger leaves, which can be quite peppery and intense in flavor; cut the leaves just above the soil, removing the outer leaves first. By the time the plant develops flowers the leaves may be too bitter to eat, though the flowers are also edible and make an excellent garnish. The harvested leaves quickly lose their freshness and should be used within about 6 days. Before storing them, rinse the leaves thoroughly to remove any sand and dry them well. They can be stored in the refrigerator until ready to use.

**Seed Saving:** Watch the developing Arugula seed pods carefully, since they explode when they are completely mature. Remove the pods as soon as they are brown and nearly dry, and spread them to finish drying in a protected location; keep in mind that they may need to be covered to prevent losing the seed when the pods explode. Remove debris from the Arugula seeds and store in a cool, dry place for up to four years.

## Bush Beans

**Sowing:** Direct sow seeds outside at least 1 week after the last frost, since beans are quite sensitive to cold. They should be planted in rich, well-drained soil with full sun exposure. If you have never planted beans in your garden before, treat the seeds with a powder inoculant to allow the process of nitrogen fixation to begin. Sow the seeds 1" deep and 3" apart, in rows 2'-3' apart, and press down the earth above them for good soil contact. These seeds rot easily in wet soil, so do not over water them. Germination should take place 7-12 days after planting. For companion planting benefits, plant bush beans near carrots, cucumbers, or corn; avoid planting them near onions.

**Growing:** After germination, maintain soil moisture; beans have shallow roots, and need water at least once a week if the weather is dry. Mulching the plants helps conserve moisture and discourages weeds.

**Harvesting:** Expect your first beans about ten weeks after germination. Daily harvesting improves production; for best flavor and tenderness, pick the beans when they are no larger than a pencil in thickness, or from 4-8" long. Serve or preserve the same day you harvested them for the freshest taste.

**Seed Saving:** Near the end of the growing season, allow the beans to dry completely on the vine; the pods will be light brown, and the seeds will rattle inside. Remove the seeds from the pods. After the seeds are completely dry, store them in a cool, dry place for up to a year.

## Beet

**Sowing:** Direct sow Early Wonder beet seeds outside 4 weeks before the last expected frost. Soften the seeds by soaking them in water for 2 hours, then plant in full sun and well-drained soil. Sow them 1" deep and 1" apart in rows 1-2' apart. Tamp down the earth above the seeds to ensure good contact with the soil, and germination should take place in 5-15 days. Add compost or other organic matter for healthy growth. For companion planting benefits, plant beets with bush beans, onions, or members of the cabbage family; avoid planting them near pole beans.

**Growing:** Since each beet "seed" holds up to 8 actual seeds, the seedlings will need to be thinned to 3" apart. The uprooted plants do well as a second crop, as transplanting them will set them about 2 weeks behind the original plants. Take care not to bruise the seedlings when weeding. They love cool weather, and can survive temperatures down to 25F.

**Harvesting:** Beets can be harvested any time after they reach a size of 1" in diameter, usually after about two months of growth. For best taste and tenderness, do not allow beets to grow over 3" in diameter. After pulling them, twist off the tops about 1" up the stem to prevent the beets from bleeding. Early Wonder Beets produce large green tops and are among the best for beet green production. Up to one third of the tasty beet greens can also be harvested without damaging the plant.

**Seed Saving:** Since beets are wind pollinated, be sure to separate them from other varieties of chard and beet by at least two miles to preserve genetic purity. Beet plants must weather the winter in order to produce seed. In warmer climates, simply mulch the plants. In cooler climates, dig up the roots and store them in sand, without the roots touching each other, in a cool and humid location - plant them again in early spring. The plants will soon go to seed in the spring; wait until the seed heads are fully grown and dry before removing them. The Early Wonder beet seeds will readily come off the stems after they are completely dry. Store Early Wonder beet seeds in a cool, dry place for up to five years.

## Broccoli

**Sowing:** Broccoli plant seeds grow best in cool weather, so starting the Waltham 29 broccoli seeds indoors 5-6 weeks before the last expected frost will ensure a faster crop. Shortly before the last frost and when the seedlings reach about 6" tall, plant them 1-2' apart in rows 2-3' apart. For direct sowing seeds, plant them 1" deep and 3" apart in full sun and rich soil, about 2-3 weeks before the last expected spring frost; germination can take place at temperatures as low as 40 degrees F. For fall planting, direct sow the seeds in late July or August. For companion planting benefits, plant broccoli with herbs, potatoes, or onions; avoid planting it with tomatoes or pole beans.

**Growing:** Keep the young plants watered and remove weeds. Mulch helps discourage weeds and regulate soil temperature, and several applications of fertilizer or compost may also be needed. If several nights of below freezing temperatures are expected, cover the plants. If they become top-heavy as they grow, provide a stake for support.

**Harvesting:** Harvest the main head while it is still tight, and before the tiny buds begin to open; cut at least 6" of the stem. Side shoots will continue to develop along the stem, and can be harvested as well; the plant will keep producing as long as weather conditions are favorable.

**Seed Saving:** Allowing Waltham 29 broccoli to produce seed will take an entire growing season, and may require digging up the plants for the winter or mulching them well. Broccoli will cross pollinate with other members of the cabbage family such as cauliflower, and isolation of at least 1/4 a mile is recommended to prevent cross breeding. Once the flowers have bloomed and produced seed pods, let them dry and carefully remove them from the plant. Separate the seeds from the pods. Store in a dry, cool place for up to five years.

## Carrots

**Sowing:** Prepare the soil 3 weeks before the last expected spring frost or when the soil temperature reaches 45 degrees F. These long, slender carrots appreciate deeply worked, loose soil in order to reach their full length. Build up a raised mound in the row, about 8" wide; sow the seeds on it, and cover them with 1/4" very loose soil. Keep the soil moist, but do not allow the area above the seeds to become hard - this may prevent the seeds from germinating. In cooler climates, sow more seeds every 3-6 weeks for a continuous crop. Warmer climates may be restricted to spring and fall crops, since carrots cannot tolerate an excess of heat. For companion planting benefits, plant carrots with aromatic herbs or onions; this will repel the carrot fly and its maggots.

**Growing:** When the seedlings reach 2" high, gently thin them to 2-4" apart, depending on desired carrot size. The farther apart they are, the bigger they will grow. Do not allow the soil to dry out. When the tops of the carrots begin to emerge from the soil, cover them with mulch to keep them tender. Keep weeds under control to prevent the young carrots from being stunted.

**Harvesting:** Begin gathering baby carrots when grow big enough to eat, to allow the remaining carrots to reach a larger size. Scarlet Nantes is one of the best carrots for juicing. If the carrots become difficult to pull, make sure the ground is moist. To store carrots for the winter, twist off the tops but do not wash them. Layer them in damp sand or sawdust. In warmer climates, leave the carrots in the garden over winter topped with a thick layer of mulch.

**Seed Saving:** Because carrot varieties will cross pollinate with each other as well as with wild carrots, isolate the plant for seed at least two miles from other varieties or provide a protective cage. In areas where the ground freezes over winter, it will be necessary to dig up the carrots before the first heavy frost; twist off the tops and store the carrots at 35 degrees F in damp sand or sawdust over winter, making sure the roots do not touch. Plant them again in the spring. From 30-40 carrots should be harvested to preserve genetic diversity. In warmer climates, leave them in the ground and cover them thickly with mulch over winter. In the spring, allow the top of the plant to flower; when they grow brown and dry, cut them off and allow them to fully dry. Clean to remove as much chaff as possible, then store in a cool, dry place for up to three years.

## Collards

**Sowing:** For a spring crop, direct sow vates collards seeds 6-8 weeks before the last spring frost. For a fall crop, direct sow the seeds 6-8 weeks before the first fall frost. For smaller plants, plant a few seeds every 12" and 1/4 deep; later remove all but the strongest plant. If you need bigger plants, space them 2' apart. For companion planting benefits, plant collards with tomatoes.

**Growing:** Water regularly, and provide compost or organic fertilizer several times in the summer. Collards tolerate heat very well.

**Harvesting:** Begin gathering leaves when the plant reaches 10-12" high; take the outer leaves first. Eventually your plant will begin to resemble a tree, with all the leaves on the top of the stalk; at this point it may need the support of a stake. A spring crop of collards usually comes an end in the hot weather of summer, while a fall crop will produce well after frost. Frost actually makes the flavor of collards much sweeter.

**Seed Saving:** Allow the plant to flower and go to seed. The pods will look somewhat like small green beans. After the pods dry and the seeds inside are dark brown, remove them from the plant and dry them completely indoors. Clean off as much chaff as possible, then store vates collards seeds in a cool, dry place.

## Kandy Korn/ Corn

**Sowing:** Prepare the soil with compost or other organic matter. One week after frost or when the soil consistently reaches 60 degrees F, plant the corn 1" deep and 8-12" apart. Planting blocks of four short rows ensures good pollination. Germination should take place in 5-6 days. For companion planting benefits, plant corn with cucumbers, peas, or pole beans; plants that like shade also do well with corn. Avoid planting tomatoes near Kandy Korn Hybrid Yellow Sweet corn seeds.

**Growing:** After the corn emerges, keep it moist and carefully remove weeds; since corn cannot fight against weeds, mulch may be beneficial. Additional organic matter or compost helps growth, since corn is a heavy feeder. Keep in mind that corn has shallow roots which can easily become damaged by hoeing. Watch out for pests, as corn attracts many problematic insects and animals.

**Harvesting:** About three weeks after the corn silk appears, it will begin to turn brown; this signals that the corn is nearly ripe. When the kernels of sweet corn release a milky substance when pierced, they are ready to be harvested. If the substance is clear, they are not ready; if nothing comes out of the kernel, the optimum time for harvest has passed. Sweet corn usually tastes sweetest if picked in the morning, since sugar content peaks at this time; for best taste, use it the same day it is picked.

**Seed Saving:** Because this variety of corn is a hybrid, the seed it produces will either be sterile or will revert to the characteristics to one of the parent seeds; reproducing this type from its own seed will not be successful.

## Cucumber

- Plant cucumbers when average daily temperatures reach the mid-70s° F.
- Space cucumbers 36 to 60 inches apart (12 inches apart for trellised plants) in an area with abundant sun and fertile, well-drained soil with a pH of 6.0 to 6.8.
- Improve native soil by mixing in several inches of aged compost or other rich organic matter.
- Cucumbers will grow quickly with little care. Be sure they receive an inch of water every week.
- Make the most of your food growing efforts by regularly feeding plants with a water-soluble plant food.
- When soil is warm, add a layer of straw mulch to keep fruit clean and help keep slugs and beetles away.
- Harvest cucumbers when they are big enough to eat.

### Soil, Planting, and Care

Cucumbers need warm, fertile soil with a pH of 6.0 to 6.8, although they will tolerate a bit more alkaline soil to 7.6. To improve the soil and help create the root environment needed for a big harvest, work several inches of aged compost-enriched Miracle-Gro® Performance Organics® All Purpose In-Ground Soil into the top few inches of your existing garden soil. (Compost or composted manure will work, too.) Plant seedlings 36 to 60 inches apart, depending on variety (check the stick tag). For vines trained on a trellis, space plants 1 foot apart.

In areas where spring is long and cool, you can warm the soil 3 to 4 degrees by covering the hill or row with black plastic. If you do not plant in black plastic, then mulch with pine straw, wheat straw, chopped leaves, or your favorite organic mulch shortly after planting. If the weather is unseasonably cool, you can wait a while to mulch until the ground is warmed by the sun. Mulch is especially important to keep the fruit clean for bush

types and vines not growing on a trellis. Straw mulch is also thought to be uncomfortable for slugs and creates an uneasy footing for cucumber beetles, helping to keep them at bay.

If you can, trellis your vines. This keeps the fruit clean and saves space. A 12- to 18-inch diameter cage made from 4- or 5-foot welded wire fencing or hog wire will support 2 or 3 vines. Wire is easy for the tendrils of climbing cucumbers to grab as the plant grows.

Cucumbers grow fast and don't demand a lot of care. Just keep the soil consistently moist with an inch of water per week (more if temperatures sizzle and rain is scarce). Inadequate or inconsistent moisture causes oddly shaped or poor-tasting fruit. If possible, water your cucumbers with a soaker hose or drip irrigation to keep the foliage dry. This helps prevent leaf diseases that can ruin the plant.

For best results, high quality plant food is just as important as starting with great soil. You can fertilize with a water-soluble food, such as Miracle-Gro® Performance Organics® Edibles Plant Nutrition, applying it directly to soil around plant stems. Or, you can use a continuous-release fertilizer, like Miracle-Gro® Performance Organics® Edibles Plant Nutrition Granules, worked into the soil. Both plant foods feed both your plants and the beneficial microbes in the soil that help them thrive. Either way, be sure to follow label directions.

### Troubleshooting

If vines bloom but don't fruit, something is probably interfering with pollination. First, make sure that you see both male and female blooms. Male blooms usually appear first and then drop off, so don't be alarmed if this happens. Within a week or two, female flowers will also appear; each one has a small cucumber-shaped swelling at the base that will become a cucumber. If you're still not seeing those swellings turn into fruit, you may need to do a bit of hand-pollination.

Several pests bother cucumbers. Squash bugs may attack seedlings. Slugs like ripening fruit. Aphids can colonize leaves and buds. Straw mulch helps keep slugs at bay, as can trellising vines to get the fruit off the ground. Vines are also bothered by cucumber beetles, which chew holes in leaves and flowers and scar stems and fruits, but worse than that, they spread a disease that causes the plants to wilt and die. Powdery mildew is a disease that leaves white, mildew-like patches on the leaves. Apply fungicides at the first sign of its presence. To minimize disease spread, avoid harvesting or handling vines when leaves are wet.

### Harvest and Storage

You can pick cucumbers whenever they're big enough to use. Check vines daily as the fruit starts to appear because they enlarge quickly. Vines produce more fruit the more you harvest. To remove the fruit, use a knife or clippers, cutting the stem above the fruit. Pulling them may damage the vine. Don't let the cucumbers get oversized or they will be bitter, and will also keep the vine from producing more. Yellowing at the bottom (blossom end) of a cucumber signals over ripeness; remove the fruit immediately. Harvest lemon cucumbers just before they begin turning yellow. Although they are called lemon cucumber because the little oblong or round fruits turn yellow and look like a lemon, by the time the fruit turns yellow it may be a little too seedy for most tastes.

You can keep harvested cucumbers in the refrigerator for 7 to 10 days, but use them as soon as possible after picking for best flavor. If you don't eat a slicing cucumber all at once, cover the unused portion in plastic wrap to prevent dehydration in the refrigerator. In fact, it's a good idea to wrap your whole cucumbers in plastic or store them in a zipper bag in the fridge to keep them crisp.

## Dill

**Sowing:** Since dill does not transplant well, direct sowing is the best method for planting; plant the Mammoth Long Island Dill seeds for sale after the last spring frost in well drained, fertile soil and full sun. Sow the seeds 1/4" deep and 8" apart in rows 18" apart, thinning to 12-15" apart when the seedlings develop.

**Growing:** Keep the seedlings watered, and apply a layer of mulch to conserve moisture and control weeds. Since mature plants may bolt if the soil dries out, keep the soil consistently moist.

**Harvesting:** Harvest the fern-like dill leaves as needed as soon as they reach a desirable size; the best time to harvest is in the morning after the dew dries. Peak quality of the leaves occurs when the tiny flowers on the heads begin to open. Though the flavor is best when the leaves are fresh, they can be stored in the refrigerator for up to 2 days, dried, or frozen. The heads can be gathered as soon as most of the tiny flowers have opened. To gather the seeds, allow the heads to dry on the stems until the seeds ripen to a light brown. Cut the seed heads and spread them out to finish drying, then rub them gently to remove the seed. Store the seed in an airtight container.

**Seed Saving:** Dill reseeds itself readily if left alone after flowering, but the seeds can easily be gathered. Remove the umbrella shaped seed heads as soon as the seeds ripen to a light brown. Spread them out to dry in a location out of direct sunlight, then rub them gently to separate the seeds from the stems. Store the seeds in a cool, dry place for up to 5 years.

## Eggplant

**Sowing:** Though gardeners with long growing seasons will be able to direct sow their eggplant seed when the soil reaches 70 degrees F, starting the seed indoors is best in most areas. About 8-10 weeks before the last expected spring frost, plant the seeds in pots 1/4" deep. Keep them in a sunny window or under a grow light, maintaining a temperature of around 80 degrees. Germination of eggplant can be spotty, and may take several weeks. Keep the seedlings moist and provide organic matter for the best development. Gradually expose them to the elements by leaving the pots outdoors during the day. When the average air and soil temperature reach 70 degrees, or about 3 weeks after the last frost, plant the seedlings in well-drained soil in full sun; for fullest growth, allow each plant 2-3' in all directions. Eggplant also grows very well in container gardens; most northern gardeners depend on this method in order to succeed in growing this heat loving plant.

**Growing:** Black Beauty eggplants thrive in the full heat of summer; row covers, black plastic, or other methods to conserve heat may be necessary in some climates. If temperatures threaten to fall below 55 degrees F, cover the plants. As soon as the seedlings become established, mulch them to conserve moisture and control weeds. Keep the soil evenly moist, and apply fertilizer or organic matter once monthly.

**Harvesting:** When the skin of an eggplant begins to take on a high gloss, it is nearly ripe. To test for ripeness, press gently on the skin; if the flesh remains indented, it is ready to be harvested. Eggplant reach their best eating quality at about 1/2 their mature size, since oversized eggplant can turn tough and bitter. For freshest taste, use immediately. If necessary, eggplant can be stored in the refrigerator for up to a week. If the seeds inside begin to turn brown, this indicates that it is overripe. Keep in mind that some parts of the leaves and flowers are poisonous if ingested.

**Seed Saving:** Because eggplant pollinates itself without the help of insects, cross pollination is not likely; however, separate different varieties by about 40' to guarantee genetic purity. When the fruit is fully ripe, it will drop off the plant; at this stage it will be dull and purplish brown with slightly puckered flesh. Cure for two weeks. Several methods for separating the Black Beauty eggplant seeds from the flesh are effective. Some seed savers grate the bottom portion of the eggplant, which contains the seeds - since these Black Beauty eggplant seeds have a protective coating and are very slippery, they will not be damaged. Place the grated mixture in a bowl with water and work it with your fingers; the good seed will sink to the bottom. Another method is to cut the eggplant into 1/2" squares, put them in a blender, and pulse for a few seconds; next, proceed with washing the seeds. Remove the Black Beauty eggplant seeds at the bottom of the container of water to a flat surface, and allow them to dry; store in a cool, dry location for up to five years.

## **Kale**

**Sowing:** Since kale thrives in cool weather and sweetens with frost, it grows best as a fall crop. For an earlier crop in areas with a cool summer, sow the red Russian kale seeds in early spring; plant three seeds in a cluster, 1/2" deep and 16-18" apart in rows 2-3' apart. Thin the clusters to the strongest plant when the seedlings emerge. Kale appreciate very rich, moist soil that drains well, since they taste best when allowed to grow quickly. For a fall crop, plant the red Russian kale seeds in the same way about three months before the first expected frost. For companion planting benefits, buy these kale seeds and plant them with cabbage or potatoes.

**Growing:** Keep weeds controlled and conserve moisture by applying mulch. Keep the soil evenly moist, but stop watering after the first frost. Red Russian kale survives cold temperatures up to -10 degrees F.

**Harvesting:** Harvest baby leaves as soon as they grow big enough for salad; harvest bigger leaves as needed. Use a scissors or a knife to cut the leaves, to avoid tearing the stems. To harvest the entire plant, cut it off an inch above ground level. To make the fresh leaves last longer in the fridge, dip the stems in water after cutting them; they should stay fresh for up to a month. Kale also freezes well. Expect to harvest well after frost, since most varieties of kale can survive freezing temperatures.

**Seed Saving:** Since kale will cross pollinate with other members of the cabbage family such as broccoli, cauliflower, and collards, be sure to isolate it to preserve genetic purity. Kale must overwinter before producing seed; since it survives cold well, a thick layer of mulch should protect it sufficiently even in colder climates. In the spring, allow it to flower and go to seed. Some of the leaves can still be harvested for eating without damaging the seed development. The tall stalk will develop pods that ripen from the bottom up; wait until the pods turn light brown before harvesting them. Another method is to pull the entire plant when most of the pods have turned brown, and hang it upside down in a warm, dry place. Thresh the seeds by crushing the pods and sifting out the chaff. Store red Russian kale seeds in a cool, dry place for up to 4 years.

## **Lettuce**

- Sow lettuce seeds in average soil in full sun in early spring for first crop. Sow in late summer for fall crop.
- Sow every two weeks to extend harvests.
- In late summer, sow in a protected are that stays below 75 degrees F.
- Sow thinly in rows 12 inches apart and cover with ¼ inch of fine soil.
- Follow the spacing recommended on the seed packet for specific varieties.
- Firm lightly and keep evenly moist.
- Seedlings emerge in 7-10 days.

### **How to Grow**

- Thin to stand 8 inches apart when seedlings are 1-2 inches tall.



- Keep lettuce plants well-watered during dry periods to promote rapid, uninterrupted growth.
- Lettuce is shallow-rooted, so avoid disturbing the soil around the plants when weeding.
- Unless there is regular rainfall, lettuce plants must be watered deeply at least once a week and more frequently during periods of drought.
- Mulch with a layer of compost or clean straw to help the soil retain moisture.

#### Tips

- For the best quality, pick lettuce early rather than late as lettuce allowed to grow too long may be bitter and tough.
- Try to harvest in the morning when the leaves are crisp, sweet, and full of moisture.
- Harvest loose-leaf types anytime the leaves are large enough to use.
- Harvest butterhead types when they have formed heads and the leaves are a good size.
- Cut the heads below the crown.
- On leaf types, you can just pick a few leaves at a time, if you like.
- Store for 5-7 days in a plastic bag in the refrigerator. Many gardeners wrap leaves in moist paper towels.
- Lettuce is a classic ingredient in salads. It adds crispness to sandwiches and can be used as a garnish, braised, or added to soups. Many of the loose-leaf cultivars are also decorative in the garden.

## Navy Beans

**Sowing:** Direct sow white dry navy beans in rich, well-drained soil in full sun at least a week after the last expected frost, since beans are quite sensitive to cold. If you have never planted beans in your garden before, treat the seeds with a powder inoculant to allow the process of nitrogen fixation to begin. Plant them 1" deep and 3-6" apart, in rows about 2' apart; press down the earth above them for good soil contact. These seeds rot easily in wet soil, so do not over water them. Germination should take place 7-10 days after planting. For companion planting benefits, plant beans near carrots or beets; avoid planting them near onions.

**Growing:** After germination, maintain soil moisture; beans have shallow roots, and need water at least once a week if the weather is dry. Mulching the plants helps conserve moisture and discourages weeds.

**Harvesting:** If frost or inclement weather threatens before your beans are fully dry, pull them and allow them to continue drying under shelter. A good method for drying is to hang them upside down from their roots until the seeds rattle in the pods and are very hard. They should be completely dry 10-15 days later. Remove the seeds from the pods by hand, or thresh them by putting them in a bag and applying a heavy weight.

**Seed Saving:** Thresh the beans by removing them from their pods. Store dry white navy beans in a dry, cool place; for best germination, use them in the next growing season.

## Okra

**Sowing:** Okra loves heat, so gardeners with short growing seasons may need to start their Clemson Spineless okra seeds indoors; plan to set them out 3-4 weeks after the last frost. Before planting the seeds, soak them overnight to encourage faster germination. Plant 2-3 seeds in one peat pot, and keep them at 80-90 degrees F until germination; thin to the strongest plant by cutting off the rest. When the air temperature reaches a consistent 60 degrees F, plant the seedlings in full sun 12-15" apart in rows 3' apart. For direct sowing in warmer climates, sow Clemson Spineless okra seeds 3/4" deep and later thin the plants to 12-15" apart.

**Growing:** When the seedlings reach a height of 4", apply mulch to conserve moisture and control weeds. Keep the Clemson Spineless okra plants moist during dry weather. In cooler climates, it may be necessary to apply black plastic or provide row covers for adequate heat.

**Harvesting:** Clemson Spineless okra should be harvested at 3" for best taste and tenderness. This variety is spineless for a painless harvest.

**Seed Saving:** When saving seed from okra, keep in mind that it will cross pollinate with other varieties of okra and should be separated from them. Allow the pods to fully mature, and cut them off after they turn brown; if they begin to split, cut them immediately to prevent seed loss. Twisting the pods or putting them in a bag and applying pressure should remove the seed. Spread Clemson Spineless okra seeds out to dry for a week, then store in a cool dry place for up to 2-3 years.

## **Onions**

**Sowing:** Since most onions take a few months to mature from seed, gardeners with a short growing season may want to start their green onion seed indoors. Plant the seeds 1/4" deep in a flat 2-3 months before the last frost date; keep the soil moist and at room temperature. When the tops begin to flop over, cut them off to 3" to focus the growing on the roots. Four weeks before the last frost or when the soil reaches at least 50 degrees F, transplant the seedlings 3" apart in rows 12" apart. For direct sowing, sow three seeds per inch 1/4" deep in light, rich soil and full sun. Thin the seedlings 3" apart. Thinned onions can be transplanted or used for fresh eating. For companion planting benefits, plant onions with members of the cabbage family, lettuce, or tomatoes; avoid planting onions with peas or beans.

**Growing:** Onions need moisture especially in their first several weeks of growth, and they cannot fight against weeds; mulching onions can help with both moisture and weed control. Evergreen White Bunching onions tolerate cold and light frost, since they are the most cold hardy bunching onion available. Green onion seeds are slow to bolt and resistant to PR, thrips and smut.

**Harvesting:** Bunching onions can be harvested any time after 60 days; the longer they remain in the ground, the stronger the taste will be. If protected sufficiently from the cold, the green onion plants will overwinter for spring bunching. This variety of onion can be used for both green onions and scallions, but does not store well long term.

**Seed Saving:** Onions need to overwinter before producing seed. In warmer locations, simply apply a thick layer of mulch and remove it in the early spring. In areas with very cold winters, pull up the onions and cut off half the stem; store them at 32-40 degrees F in a dry place until spring, when they can be replanted. Before planting, cut an X in the top of the onion to allow the stalk to emerge. The green onion plants will flower and go to seed. Remove the seed heads when the seeds become visible, taking care not to shatter the heads and lose the seed. Spread the heads out in a dry place with good ventilation, and let them dry for several weeks. Thresh out the green onion seeds and store them in a cool, dry place for up to 2 years.

## **Parsley**

**Sowing:** Most gardeners sow parsley seed indoors to give the plants a head start; soak the seeds overnight, then plant them 1/4" deep and keep them at 65-70 degrees F. Because parsley has a notorious habit of slow germination, don't expect to see sprouts for 3-5 weeks. Keep the soil evenly moist. Transplant the seedlings when the average outdoor soil temperature reaches 60 degrees F, spacing them 6" apart in full sun or partial shade. Parsley also grows well as a container plant.

**Growing:** Parsley has shallow roots, and should not be allowed to dry out for long. Mulch to help conserve moisture and control weeds.

**Harvesting:** Harvest the leaves as needed, taking the large outer leaves first and removing at least 10" of stem with the leaves to keep the plant healthy. The whole plant can be harvested at once, cutting it off just above ground level; more leaves will grow. Use immediately or freeze to preserve freshness. Italian Giant flat parsley tends to have stronger flavor than the curled types.

**Seed Saving:** Though most varieties of parsley can survive below zero temperatures when mulched well, another method of overwintering is to dig up the entire plant, cut down the stems to 1", and plant Italian Giant parsley seeds in sand; keep it in a 32-40 degrees F location until spring replanting. Watch the developing Italian Giant parsley seed heads carefully, since they tend to shatter easily; pick each one as it becomes dry and mature. Additional drying time may be needed. Clean the seed by rubbing the heads through a screen or shaking them. Store Italian Giant parsley seeds in a cool, dry place for up to 4 years.

## **Pea**

**Sowing:** Because peas thrive in cool weather and do not transplant well, they should be planted outside 4-6 weeks before the last frost or when the average soil temperature reaches at least 40 degrees F. If planting later, remember that most peas won't tolerate weather above 75 degrees F. If planting peas in your soil for the first time, keep in mind that a powder inoculant of beneficial bacteria should coat the seeds. Plant the peas 2" apart and 2" deep in light soil and full sun; plant in double rows 6-8" apart to allow for a trellis. For an early spring crop, plant in the same manner in the fall. Peas do not do well when planted near onions or garlic.

**Growing:** As the vines begin growing, a trellis will support their climbing habit; any kind of support 5-6' tall should be sufficient. Before they bloom, pea plants need to be kept moist but not wet; after blooming, slightly increase the watering. Remove weeds carefully to avoid disturbing the plants; mulch may be helpful to conserve moisture and control weeds. Sugar Snap is tolerant of wilt, but not mildew.

**Harvesting:** Snap peas taste best when harvested as soon as both the pod and the peas are filled out; test their ripeness by breaking them in two. If they snap cleanly, they are ready to harvest. Sugar Snap peas freeze very well.

**Seed Saving:** To save seed from garden peas, let the pods mature fully on the vine; they will turn brown, and the peas should rattle inside when they have dried completely. Pick them individually, or pull the entire plant and hang it upside down in a warm, dry location to finish drying. Shell the peas after 1-2 weeks of drying. Store sugar snap pea seeds in a cool, dry place for up to three years.

## **Radish**

**Sowing:** Direct sow the first crop of Cherry Belle red radish seeds in rich soil, about four weeks before the last expected spring frost. Plant them in deeply worked up soil about 1/2" deep and 1" apart; later, thin the seedlings 2-3" apart or more for larger radishes. For a continuous harvest, plant a new crop every two weeks. Since most radishes do not tolerate heat well, it is best to avoid planting them in the heat of midsummer. For a fall crop and winter storage, plant red radish seeds about two months before the first expected fall frost.

**Growing:** Radishes do well with consistently moist soil and the addition of organic matter such as compost. Do not allow the soil to dry out, but also avoid overwatering as this can cause splitting.

**Harvesting:** This variety tastes best when harvested at 1" in diameter. Cherry Belle radishes are very sweet and crisp, do not grow woody, and store well in the refrigerator.

**Seed Saving:** Radishes will cross pollinate with all other varieties of radish, and must be isolated by at least half a mile from other varieties to protect genetic purity. Allow the radish plant to fully mature and send up a flowering stalk; the pods will form and turn from green to brown. Pick the brown pods and allow them to dry for several days. Thresh out the seeds by opening the pods by hand, or by applying pressure to crush them. Store the seeds in a cool, dry place for up to five years.

## **Spinach**

**Sowing:** Because spinach loves cool weather and can survive sub-zero temperatures when protected sufficiently, it should be planted as soon as the ground can be worked in spring, or after the heat of summer for a fall crop. Gardeners in regions with warmer winters will be able to grow spinach all winter long. Sow the seeds in deeply worked soil 1/2" deep and 2" apart in rows 12-18" apart, later thinning the seedlings to 4-8" apart. For a continuous crop, plant more Giant Noble spinach seeds every 10 days until the summer heat begins; spinach seeds go dormant above temperatures of 80-85 degrees F. Spinach loves shade, and can be planted underneath tall plants such as corn or pole beans.

**Growing:** Because pulling weeds can disturb the roots of spinach, apply a layer of mulch. Keep the soil moist but not too wet, since an imbalance in the water supply can cause bolting. If the temperature rises above 80 degrees F, provide some sort of shade.

**Harvesting:** Begin harvesting the spinach leaves as soon as they grow big enough for eating. If only individual leaves are being harvested, take the larger ones on the outside of the plant. Otherwise, harvest the entire plant by cutting it off at ground level; new leaves will grow. If the plant bolts and sends up a flower stalk, the leaves will be much stronger in flavor but can still be used.

**Seed Saving:** Since spinach easily cross pollinates with other varieties of spinach, isolation may be necessary. For the best genetic diversity, save Giant Noble spinach seeds from 15-20 plants; do not save seed from plants that bolt early or have negative tendencies. Long days and warm temperatures will cause the plant to send up a flowering stalk. The seed pods will be mature soon after the leaves of the plant turn yellow. When handling the plant, gloves may be useful, as the pods can be prickly. The entire plant can be pulled to dry in a protected location, or left to dry outdoors if the weather is agreeable. Strip the pods from the stalk by running your hands up and down its length. Remove the dried leaves and other debris from the pods. The prickly pod can be removed or it can be planted just as it is. Store Giant Noble spinach seeds in a cool, dry place for up to three years.

## **Squash**

**Sowing:** Gardeners with short growing seasons may want to start their yellow summer squash early prolific straightneck seeds indoors a month before the last expected frost. Since squashes do not take well to transplanting, peat pots are the best option. Plant two seeds per pot, later clipping off the weaker seedling. Harden the seedlings by exposing them to the weather for several hours at a time during the week before transplanting. About a week after the last frost or when the soil temperature reaches an average of 65 degrees F, plant the seedlings in very rich soil 8-10' apart in rows 10-12' apart. Another option is to plant the seedlings in hills of two, 8-10' apart. To direct sow, plant yellow summer squash early prolific straightneck seeds when the soil temperature reaches at least 70 degrees F. Plant them 1/2" deep, 3-4' apart and thin to 8-

10' apart. For companion planting benefits, plant squashes along with corn but avoid planting them with potatoes.

**Growing:** Since squash seedlings do not tolerate frost, provide protective coverings if the temperature drops below 65 degrees F. Keep the soil moist at all times, but avoid getting the leaves wet as this can cause diseases such as rot or mildew. When the vines begin to develop, a layer of mulch will help conserve moisture and control weeds; mulch also will keep the squashes clean and protect them from too much soil contact.

**Harvesting:** These squashes generally taste best when harvested at a length of 4-8". When the plant begins to produce mature squashes, they should be picked every day or two. Prolific Straightneck squashes keep well in the refrigerator for about two weeks and freeze well.

**Seed Saving:** By the time the squash reaches its mature size, the seeds are mature. Cut the squash open, remove the pulp and seeds, and rinse off the pulp. Put the mixture in a bowl of water to remove the remaining pulp; the good seeds will sink. Remove the good seeds and spread them out to dry for 2-3 weeks, stirring them at times to make sure they dry completely. Store yellow summer squash early prolific straightneck seeds in a cool, dry place for up to 4 years.

## **Sulphur Cosmos**

**Sowing:** In early spring or after the last frost, scatter the tall orange sulphur cosmos seeds on the surface of loose soil. Keep the soil lightly moist until germination, which should take place within 10-20 days at soil temperatures from 65-75 degrees F. Cooler soil temperatures may delay germination. Seedlings do not need to be thinned, but can be transplanted if they appear too crowded. Since these Cosmos Sulphureus seeds germinate quickly in warm soil, they can be sown at any time before midsummer for another crop of flowers. To start the seed indoors, sow on the surface of a flat 6-8 weeks before the last frost of spring; keep the soil evenly moist and at a temperature of 70-75 degrees F until germination. When there is no chance of frost, transplant them outdoors.

**Growing:** As soon as seedlings appear, only water them in very dry weather. This flower must not be over-watered, and thrives in drought conditions and heat; if prolonged drought occurs, give the plants one deep watering. If blooming begins to decrease, cut the plant back to 12" for new growth; more blossoms will come in about 4 weeks. If allowed to self-seed, this flower will produce a new crop of flowers next year. This flower attracts birds, butterflies, and bees.

**Harvesting:** Cosmos blossoms make lovely, long lasting cut flowers. Cut long stems of blossoms that have just opened, and remove any foliage that will fall below the water level. These flowers usually have a vase life of 7-10 days. Cosmos blossoms also make attractive dried flowers.

**Seed Saving:** Allow the flowers to drop their petals and develop into spiky seed heads. When ripe, the heads will be brown or dark brown and easily broken apart to reveal the narrow, sharp tall orange sulphur cosmos seeds. Remove the ripe seed heads and spread them out to dry away from direct sunlight. When they have completely dried, break apart the heads to separate the Cosmos Sulphureus seeds from the husk. Store the cleaned seed in a cool, dry place.

## Swiss Chard, Rainbow

**Sowing:** Direct sow rainbow Swiss chard seeds for planting about a week after the last spring frost, planting it 1/2" deep in compost-enriched soil in full sun. For harvesting the entire plant, space the plants 4-5" apart; for continual harvesting of the outer stalks, space the plants 8-10" apart for larger growth. For a continuous summer crop, plant more Swiss chard every two weeks. Germination should occur in about a week. Swiss chard can survive light frosts, and can be planted as a fall crop.

**Growing:** Keep the soil evenly moist and weed free with a layer of mulch. Moisture is especially crucial to the seedlings in the first stages of their growth.

**Harvesting:** Individual leaves can be harvested for greens as soon as they reach a height of 6-8". The whole plant can be cut at the surface of the soil, but to ensure continued growth and another harvest, leave an inch of stem. Outer stalks can also be harvested individually, leaving the heart to grow.

**Seed Saving:** Since Swiss chard is wind pollinated, be sure to separate them from other varieties of chard and beet by at least two miles to preserve genetic purity. Chard plants must weather the winter in order to produce seed; in warmer climates, simply mulch the plants. In cooler climates, dig up the roots and store them in sand, without the roots touching, in a cool and humid location; plant them in early spring. In the spring, the plants will go to seed; wait until the seed heads are fully grown and dry before removing them. Rainbow Swiss chard seeds for planting will readily come off the stems after they are completely dry. Store the seed in a cool, dry place for up to five years.

## Swiss Chard

**Sowing:** Direct sow large white ribbed Swiss chard about a week after the last spring frost, planting it 1/2" deep in compost-enriched soil in full sun. For harvesting the entire plant, space the plants 4-5" apart; for continual harvesting of the outer stalks, space the plants 8-10" apart for larger growth. For a continuous summer crop, plant more large white ribbed Swiss chard every two weeks. Germination should occur in about a week. Swiss chard can survive light frosts, and can be planted as a fall crop.

**Growing:** Keep the soil evenly moist and weed free with a layer of mulch. Moisture is especially crucial to the seedlings in the first stages of their growth.

**Harvesting:** Individual leaves can be harvested for greens as soon as they reach a height of 6-8". The whole plant can be cut at the surface of the soil, but to ensure continued growth and another harvest, leave an inch of stem. Outer stalks can also be harvested individually, leaving the heart to grow.

**Seed Saving:** Since large white-ribbed Swiss chard is wind pollinated, be sure to separate them from other varieties of chard and beet by at least two miles to preserve genetic purity. Chard plants must weather the winter in order to produce seed; in warmer climates, simply mulch the plants. In cooler climates, dig up the roots and store them in sand, without the roots touching, in a cool and humid location; plant them in early spring. In the spring, the plants will go to seed; wait until the seed heads are fully grown and dry before removing them. The seeds will readily come off the stems after they are completely dry. Store the seed in a cool, dry place for up to five years.

## Tomato

**Sowing:** Start tomatoes indoors 6-8 weeks before the last frost of spring, sowing the seeds in a flat 1/4" deep and 1" apart. Keep the temperature at 70-75 degrees F until germination, as well as providing adequate light in a sunny window or under a grow light; keep the soil moist, but make sure drainage is adequate. When the second set of leaves emerges, transplant the seedlings into individual pots; bury the stems up to the lowest set of leaves to grow strongly rooted plants. A week before planting the seedlings outside, begin exposing them to the weather during the day to harden them; tomatoes cannot endure cold weather, and should not be transplanted outside until all threat of frost has passed. When the soil temperature reaches at least 70 degrees F, plant the seedlings in full sun and very rich soil; once more, bury the entire stem up to the lowest set of leaves. If providing a trellis, space the plants 2' apart, but if allowing the vines to spread, space the plants 3-4' apart. For companion planting benefits, plant tomatoes with carrots or onions, but avoid planting them with cabbage or tomatoes.

**Growing:** Indeterminate tomato varieties often perform best when provided with a trellis or support, since this protects them from various pests and diseases in connection with too much soil contact. Put the supports in place before the seedlings develop vines. As the vines begin to grow, tying them to the support helps their development. Since temperatures below 55 degrees F can damage production, protect the plants if temperatures drop. A thick layer of mulch helps conserve moisture and control weeds; water the plants once a week, but avoid getting the leaves wet. Pruning the "suckers," or shoots that grow between the main stem and the branches, will greatly improve the production and strength of the plant.

**Harvesting:** Test the ripeness of tomatoes by pressing them gently; the flesh should yield slightly. The mature color also indicates ripeness. If the stem does not come easily off the vine, cut it with a scissors. Vine ripened tomatoes have the best flavor, but as soon as frost comes, all tomatoes should be harvested, even the green ones. Unripe tomatoes will ripen eventually if kept in a warm place out of direct sunlight.

**Seed Saving:** Since cross pollination between most tomato varieties is unlikely, isolation is not a concern. Pick fully ripe tomatoes and cut them in half horizontally, across the middle; squeeze out the pulp into a container. An alternative method for smaller tomatoes is to put them in a blender and pulse the mixture, since the seeds are hard and slippery and will not be harmed. Let the mixture ferment for several days or until a thick layer of mold has formed; this process removes the gelatinous layer on the seeds. Pour off the mold and debris, saving the good seeds on the bottom. Rinse the seeds in a strainer under running water until they are clean, then spread them out to dry in a protected location away from direct sunlight. Stir them twice a day, and provide a fan to speed drying if the air is humid. Once the seeds are completely dry, store them in a cool, dry location for up to four years.

## Turnip

**Sowing:** A cool weather crop, turnips thrive when planted three weeks before the last frost in the spring, or after the hottest part of summer for a fall crop. Direct sow Purple Top White Globe turnip seeds in rich, deeply worked soil and full sun, 1/2" deep in rows 12-18" apart; as the seedlings grow, thin them to 4-6" apart.

**Growing:** Apply mulch to conserve moisture and control weeds. Watch out for pests such as the red and black harlequin bug, which must be removed to prevent damage.

**Harvesting:** Harvest greens as soon as they reach a good size for eating; if using both the greens and the root, harvest only 2-3 leaves per root. Since small turnips have the most tenderness and flavor, pull them when they reach a size of 1-3". To store them for extended periods, cut the top down to 1/2" and store in a cool, dark place without washing off the dirt. Gardeners with warmer winters will be able to apply a layer of mulch and leave the crop in the ground all winter. Purple Top White Globe turnips store very well.

**Seed Saving:** Turnips will cross pollinate with other varieties of turnips, and should be isolated to ensure genetic purity. This vegetable must overwinter before producing seed. In warmer climates, a layer of mulch will be sufficient for protection. In colder climates, dig up the turnips; cut the tops to 1" and store them in damp sand at 33-40 degrees F until replanting in spring. The roots will send up flowering stalks. When the seed pods begin to turn brown, remove them before they shatter or dig up the entire plant and hang it upside down in a protected location to dry. Thresh the seed from the dry pods by crushing them. Store the seeds in a cool, dry place for up to 4 years.

## **Watermelon, Charleston Grey**

**Sowing:** In cool climates, Charleston Gray watermelon seeds should be started indoors, but no sooner than a month before transplanting; plant three seeds per peat pot, 1/4" deep. Provide heat to keep the soil at least 80-85 degrees F. Cut off all but the strongest seedling as soon as true leaves appear, and transplant about a week after frost; put two or three plants in each hill with a 6-8' space in all directions. Gardeners in warm climates will be able to direct sow watermelons as soon as the soil temperature reaches at least 75 degrees F, planting six seeds per hill with 6-8' of space in all directions. Thin to the strongest two or three plants as soon as the seedlings appear. Watermelons should be planted in full sun and rich, loose soil. Young seedlings may benefit from black plastic to warm up the soil.

**Growing:** As soon as the vines begin to develop, apply a thick layer of mulch to control weeds and protect the melons from soil contact. Keep the soil moist until the fruit begins to grow, then water only if the soil dries out completely. Watch out for insect pests, which can be a problem. Charleston Grey is resistant to anthracnose and fusarium wilt.

**Harvesting:** Gardeners use many different methods of testing whether their watermelons are ripe, but knowing the approximate mature size of the melon helps to determine when it is nearing ripeness. One test is to knock on the watermelon with your knuckles, listening for a dull thump rather than a hollow ring. Another method is to check the underside of the melon where it rests on the ground; the skin should be a rich yellow. Also, the curling tendril closest to the stem of the melon often indicates ripeness when it begins to turn brown. Watermelons usually keep for several weeks in a cool place.

**Seed Saving:** Watermelons will cross with other varieties of watermelon, so isolation may be necessary to ensure genetic purity. When the melon is ripe, the Charleston Gray watermelon seeds will be mature. Cut open the melon and remove the seeds; wash them to remove the sticky residue. Spread Charleston Gray watermelon seeds out to dry for a week, then store them in a cool place for up to four years.