

SEED SAVING TIPS

It is a learned skill- practice now so you will be prepared in the art! Its fun-find a good book and enjoy. Your best bet is to buy the book "Seed to Seed" by Suzanne Ashworth

1. Observe the safe planting distance guidelines (and don't forget to take your neighbors into account!). Plants of the same **species** cross with one another. When you look at the Latin name of a plant, Cauliflower: *Brassica Oleracea var.botrytis*, the species is the second word, the first word being the genus and the *var.* (variety) *botrytis* distinguishes the cauliflower from other members of the *brassica oleracea* species. So, for instance, Cauliflower, Brussel Sprouts and Kohlrabi will all cross, because, unlike as they appear, they are all *Brassica Oleracea*.
2. Keep a close eye on your plants as they grow: be ruthless and remove any don't seem true to type - this is called roguing.
3. Cosset the plants that you want to save seed from: the healthier the parent is, the more vital the seed will be. Try to avoid having to save seed from weakly damaged plants.
4. Try to select for "desirable traits" - the last lettuce, brassica or beet to bolt, the most productive bean/pepper/cucumber etc plant. (With plants that crop over a long season it's thought to be best to save seed from fruits produced mid-season, when fruiting is at its peak.)
5. Make sure that the seeds are fully ripe before you separate them from their parent plant.
6. To allow good pollination and therefore seed production, and to ensure that your plant varieties preserve their genetic diversity, you must allow a certain minimum of plants to flower - in cases **the more the merrier**. Details below.
7. Do ensure that your seeds are as dry as possible before storing them. That said, don't expose them to direct heat or sun while drying. Beans and peas should shatter if stamped on/hit with a hammer; seeds you can bite should click sharply between your teeth. Store your seeds in airtight containers, in a cool dark, dry environment with minimum temperature and humidity fluctuations. The ideal is a glass container in a fridge.

Vegetable Planting and Seed Saving Instructions

Arugula

Planting: Sow seeds outdoors just beneath the surface of the soil as soon as the soil can be worked and the danger of a hard frost has past. For a continuous supply, seed a new row every three weeks throughout the summer.

Seed Saving: Arugulas will cross-pollinate. Separate varieties by 1/4 mile. Allow plants to bolt and form seed stalks. Seed heads may need to be protected from bird damage and rain when drying on the plants. Seeds are produced over a 2-3 week period and will require repeated harvesting.

Artichoke *Cynara scolymus*

Planting: 150 to 180 days. Generally grown as a perennial in mild areas and as an annual where ground freezes. Hardy to zones 5 or 6. Good winter mulch may help overwinter in marginal areas. Space plants 4-6 feet apart. Harvest before bracts open. Cut the top one first, then the secondary ones as they mature. Sow in spring

Asparagus *officinalis* Green with purple color at the tip. Rust tolerant. Soak seeds overnight before sowing. Harvest can begin after 2-3 years

Planting: Sow indoors 8 weeks before last frost, 1/4" deep at 25°C (77°F). Germination will occur in 10-14 days. Sow outdoors, 3 weeks before last frost, 1/4-1/2" deep and 1" apart. Thin or space plants to 18" apart in trenches 8-12" deep. As the seedlings grow, fill the trench back in.

Growing: Choose a sunny location with a fertile, deep, well drained soil. Soil pH should be between 6.5-6.7. Asparagus is a heavy feeder and needs regular fertilizing with well rotted manure, compost or a well balanced synthetic fertilizer worked in the top surface of the soil. Use straw mulch to control weeds and hold moisture.

Harvesting: Plants from seeds will take 4 years before you can harvest spring spears. In early spring, cut or snap spears when they are 6-8" high, before the heads separate

For fresh bush beans all summer, plant every two weeks and pick frequently.

Bush Beans

Planting: Direct seed bush beans after risk of frost when soil warms to 18-24°C (65-75°F). Sow bush beans 1" deep and 2" apart in rows 18" (bush beans) to 24" apart (shell beans). Reseed until mid summer for a constant supply all season long. If using untreated bush beans seed, plant thicker and thin to desired density.

Growing: Use Garden Inoculants at the time of planting to help boost soil fertility*. Bush beans are excellent grown with most vegetables except the onion family, basil, fennel, kohlrabi. * Inoculant refers to a type of bacteria (Rhizobia bacteria) that grows on the roots of legumes (beans, peas, clover, alfalfa) to help produce nitrogen. Simply mix the inoculant in a bag with the seed until the seed is coated. Sow seeds and harvest an improved yield

Harvesting: Use maturity days as an indicator. Harvest once the bush beans are smooth, firm and crisp. Keep bush beans constantly picked to ensure a fresh supply. Bean formation in the pod is a sure sign of over-maturity. **Dry & Shell Beans:** Harvest when the bush beans pods are completely dry and brittle. Cut or pull pods from bush bean plants and shell the beans. Store beans in an air tight container in a cool dry spot. For fresh eating of horticultural or shell beans, harvest when bean formation starts to take place within the pod.

Saving Bean Seed: Bean flowers are self-pollinating and almost never cross-pollinate. As a precaution never plant two white seeded varieties side-by-side if you intend to save seed because crossing may occur but not be visible. It is always best to save seed from plants that ripen first and are free from disease. Harvest seed pods when completely dry, crush in a cloth or burlap sack and winnow the seeds from the chaff.

Pole Beans

Planting: Plant pole beans 2" deep on slight hills around poles or teepees spaced at 16" apart. Grow 4-8 seeds on each hill. Space pole beans 3" apart if growing on a fence. Sow after all danger of frost is over and the soil is warm, 18°C (65°F). Pole beans do well with carrot, corn, chard, pea, potato, eggplant. Avoid cabbage & onion family.

Growing: Pole beans prefer an area with full sun and a rich, deeply worked soil with a pH level of 6.5. Pole beans are light feeders. The poles, teepees or a trellis should be erected after 2-4 leaves have developed. Hoe to kill weeds. A mulch of compost or straw is beneficial to control weeds and hold moisture. Keep the plants well watered in dry weather, especially if they are grown on an upright trellis or poles against a shed or house where soil tends to dry out.

Harvesting: Pick young, full size pods when smooth and crisp. Pole beans pods are over mature once the beans start to form. Harvest pole beans regularly for a constant supply. Scarlet Runner Pole beans will produce abundant, gorgeous red flowers if the beans are continually picked.

Seed Saving: Runner beans will cross-pollinate with other runner beans. Varieties must be separated by at least 1/2 mile to ensure pure seed. Another option for raising pure seed is to bag the blossoms before they open with a cloth bag. It is necessary to "trip" or shake the blossoms daily to release the pollen, imitating bee activity.

Lima Beans

Lima beans should be planted even later in the spring than bush beans because they are not as hardy. Lima beans should not be planted until well after the last frost. Lima beans also should not be planted as thickly as bush beans. Lima beans (or any beans) should not be picked when wet or dew is on the plants. Lima beans are best preserved by freezing, although dried lima beans can be used in some recipes.

Planting: Direct seed lima beans after all danger of frost when the soil reaches 18-24°C (65-75°F). Sow 1" deep, 4-6" apart in rows 30-32" apart.

Growing: Lima beans need a sunny, warm spot with very well drained soil as lima beans prefer a dry soil and a long, warm growing season. For fertility and soil pH requirements, see regular bush beans as lima beans have similar needs.

Harvesting: Begin picking lima beans once the pods are well filled and beans are still tender. Pick regularly for continual yields

Seed Saving: Lima beans will cross with other limas, but not common garden beans, *Phaseolus vulgaris*. To ensure absolute purity, isolate from other blooming varieties by 1 mile. It is always best to save seed from plants that ripen first and are free from disease. Harvest seed pods when completely dry, crush in a cloth or burlap sack and winnow the seeds from the chaff.

Dry/ fava/broad Beans

Planting: Broad beans are easy to grow and are great for the novice and expert gardener alike. Broad beans require strong well manured soil. Sow on a sheltered border. The soil should be well drained. . Water well if weather is dry and keep weed free. The earlier broad beans are sown the less likely they are to become infested with black-fly. Broad and Fava beans can be planted as soon as the soil can be worked. Broad beans prefer a moist, cool soil for growing and will tolerate light frosts. Sow 1-2" deep and 6" apart in rows 24-36" apart. If using untreated broad bean seeds, plant heavier and when sprouted, thin to desired density.

Growing: Broad beans are light feeders, requiring a well drained soil with a pH of 6.0-6.8. A one time application of compost or well rotted manure will be sufficient. Pinching back the top of the broad bean plant when the first pods begin to form will provide a higher and more uniform yield. Large plants require support; hill soil up around the base of the broad beans as it grows.

Harvesting: Pick beans when pods appear plump or let dry on vine.

Saving Bean Seed: Bean flowers are self-pollinating and almost never cross-pollinate. As a precaution never plant two white seeded varieties side-by-side if you intend to save seed because crossing may occur but not be visible. It is always best to save seed from plants that ripen first and are free from disease. Harvest seed pods when completely dry, crush in a cloth or burlap sack and winnow the seeds from the chaff.

Beet

Planting: SEE SWISS CHARD!! Beets can be preserved by canning or freezing and they retain their taste and texture very well. To retain the color and nutrients in beets, don't cut the tip of the root and leave at least an inch of the top stem intact - this will also keep beets from "bleeding."

Sow beet seeds thinly 1/2-1" deep in rows spaced 8-12" apart. Soil temperature should be 18-24 degrees C (65-75 degrees F) for optimal germination. Thin beet seedlings 1" apart for greens and 3" apart for summer use of roots. Plant beets every two weeks, starting as early as soil can be worked until late June. Grows well with Bush bean, cabbage family, corn, leek, lettuce, onion, and radish.

Growing: Choose a full sun location. Beets require a light, well-drained, cool soil with a pH between 6.2 and 6.8. Compost or well-rotted manure along with pure wood ashes, as a supply of additional potassium, should be mixed well into the soil prior to planting. Applying Boron after 4-6 weeks of growth will prevent internal browning, particularly in dry seasons. Keep beets well-watered as drought will result in tough or woody beets.

Harvesting: Young, tender beet leaves can be used as greens. Dig beet roots when 2-3" in diameter or desired size.

Saving Seed: Biennial. Beets will cross-pollinate. Varieties must be separated by 1/2 mile from other beets the second year when going to seed. Beets are fairly frost tolerant and will overwinter in mild climates if well mulched. In northern climates trim leaves to 2" and store roots in slightly damp sawdust or sand in a root cellar over the winter. Roots store 4-6 months at 32-40° F. Replant in the spring and harvest seed heads when dry.

Broccoli

Planting: Broccoli is high in Vitamins A and C and is also considered to be a cancer-fighting food. For best flavor, cook broccoli only until tender/crisp or use raw with dips or in salads. Broccoli freezes very well, maintaining its color, texture and taste. Plant broccoli seeds 1/4 - 1/2" deep. Transplant or thin small broccoli plants to 15-18" apart in rows 32-36" apart. Broccoli transplants can be started in April for May planting. Transplant after 4-6 weeks. Use a starter fertilizer, soaking the root ball thoroughly prior to transplanting. Direct seed broccoli in late spring, as seedlings can tolerate a light frost. Broccoli can be direct seeded up until mid-late June for a continuous harvest. Soil temperature should be 21-26 degrees C (70-80 degrees F) for optimal germination in 4-7 days. Companions well with Bush bean, beet, carrot, celery, chard, cucumber, dill, lettuce, onion family, potato, spinach, tomato.

Growing: Broccoli prefers full sun, but will tolerate part shade. Prepare a rich, loose soil that holds moisture well and has a pH level of 6.0-6.5. Broccoli is a heavy feeder and will also benefit from applications of Boron, calcium and magnesium, particularly during the early stages of growth. Hollow stem in broccoli is related to boron deficiency.

Harvesting: Harvest when the broccoli buds of the head are firm and tight, cutting 5 to 10 inches down on the stalk. This will promote the growth of side shoots which will provide an abundance of smaller broccoli heads over a long period.

Pest: Broccoli can and often does get attacked by Cabbage worms and loopers (white and yellow butterflies) which can be controlled using BTK, Rotenone or Pyrethrum (however, inspecting your broccoli plants daily and simply picking off these worms and loopers is very effective - and natural). Use row covers to block out all insects including root maggots, aphids and Diamondback moths. Maintaining a soil pH of 6.8 and higher will discourage club root. Fungal and bacteria diseases such as head rot and downy mildew can be prevented by allowing good air circulation and avoiding a mid August maturity when the air humidity is higher. Strong healthy broccoli plants growing in an organically rich soil will be better able to fight disease.

Saving Seed: Biennial. Broccoli will cross-pollinate with all other Brassica oleracea, so isolate by 1 mile the second year when going to seed. Do not harvest heads on plants you intend to save for seed. Carefully dig the plants and pot them in sand. Store plants between 32-40° F. Plant back out in early spring and allow to bolt. Harvest seed pods when dry and clean by hand.

Brussels sprouts

Planting: They are an excellent source of vitamins A, B, C, E, calcium, potassium, and sulfur. Brussels sprouts are also high in carbohydrates and dietary fiber. They are best after the first frost when quickly steamed, boiled, or stir-fried. Brussels sprouts can be served alone or with a sauce, but they are not good to eat raw. Plant brussels sprouts seeds ¼-½" deep. Transplant or thin small plants to 15-18" apart in rows 32-36" apart. Brussels sprouts transplants can be started in April for May planting. Transplant after 4-6 weeks. Use a starter fertilizer, soaking the root ball thoroughly prior to transplanting. Direct seed brussel sprouts in late spring, as seedlings can tolerate a light frost. Brussel Sprouts can be direct seeded up until mid-late June for a continuous harvest. Soil temperature should be 21-26°C (70-80°F) for optimal germination in 4-7 days.

Growing: Brussel Sprouts prefers full sun, but will tolerate part shade. Prepare a rich, loose soil that holds moisture well and has a pH level of 6.0-6.5. Brussels Sprout is a heavy feeder and will also benefit from applications of boron, calcium and magnesium, particularly during the early stages of growth.

Harvesting: To encourage development of the upper sprouts, pinch out the growing tip of the brussel sprouts plant in late summer. Harvest sprouts as needed from the bottom of the stalk when they are about 1-1½" in diameter. The brussel sprouts will develop a sweeter flavor after a few light frosts.

Carrots

Planting: Sow seeds outdoors in the early spring 3-4 weeks before the last frost or as soon as the soil can be worked. Sow seeds ¼" deep making sure to firmly press soil against the seeds for good soil contact. Keep moist for optimal germination. Thin to 1-4" depending on the size of mature carrots. Avoid using fresh animal and green manures at the time of planting. Moisture is required for good carrot root formation.

Saving Seed: Biennial. Carrots will cross-pollinate, so isolate ¼ mile from other carrots and Queen Anne's Lace the second year when going to seed. Dig up carrots in the fall before a hard frost. Trim the tops to 1" and store roots in slightly damp sawdust, sand or leaves in a root cellar over the winter. Replant in the spring and harvest seed heads when dry.

Cauliflower

Planting: Sow indoors ¼" deep in pots or flats 8 weeks before the last frost. Thin seedlings when 2" tall and transplant into individual pots. Plant outdoors 24" apart in rows 36" apart when a light frost is still possible.

Growing: Cauliflower prefers full sun, but will tolerate part shade. Prepare a rich, loose soil that holds moisture well and has a pH level of 6.0-6.5. Cauliflower is a heavy feeder and will also benefit from applications of boron, calcium and magnesium, particularly during the early stages of growth.

Harvesting As small heads form, break over or tie together some of the tall leaves to protect heads from sunburning. Cauliflower is ready for harvest when heads are firm and still tightly clustered and adequately sized.

Seed Saving: Biennial. Cauliflower will cross-pollinate with all other Brassica oleracea, so isolate by 1 mile the second year when going to seed. Do not harvest heads on plants you intend to save for seed. Carefully dig the plants and pot them in sand. Store plants between 32-40° F. Plant back out in early spring and allow to bolt. Harvest seed pods when dry and hand clean.

Cabbage

Planting: - Cabbages thrive when planted with herbs such as dill, mints, rosemary, thyme, and chamomile. Cabbage also grows well with other vegetables and are good companions to onions, garlic, peas, celery, potatoes, broad beans, and beets. **Cabbage contains more vitamin C than oranges**, as well as a large number of minerals, including iodine, sulfur, calcium, magnesium, and potassium. The outer leaves of cabbage contain more Vitamin E and calcium than the inner leaves. Plant cabbage seeds 1/4-1/2" deep. Transplant or thin small cabbage plants to 15-18" apart in rows 32-36" apart. Cabbage Transplants can be started in April for May planting. Transplant after 4-6 weeks. Use a starter fertilizer, soaking the root ball thoroughly prior to transplanting. Direct seed in late spring, as seedlings can tolerate a light frost. Cabbage can be direct seeded up until mid-late June for a continuous harvest. Ideal soil temperature for cabbage should be 21-26°C (70-80°F) for optimal germination in 4-7 days.

Growing: Cabbage prefers full sun, but will tolerate part shade. Prepare a rich, loose soil that holds moisture well and has a pH level of 6.0-6.5. Cabbage is a heavy feeder and will also benefit from applications of boron, calcium and magnesium, particularly during the early stages of growth. To help deter Cabbage worms, use row covers in the earlier part of the growing season - this will prevent moths from laying eggs on the plant. It also helps to manually remove cabbage worms if visible.

Harvesting: Cabbage Heads are ready when firm and when the interior is dense. Heads will split when over mature; rapid growth due to excess moisture and fertility will also cause splitting.

Seed Saving: Biennial. Cabbage will cross-pollinate with all other Brassica olerace, so isolate by 1 mile the second year when going to seed. Do not harvest heads on plants you intend to save for seed. Carefully dig the plants and pot them in sand. Store plants between 32-40° F. Plant back out in early spring and allow to bolt. Harvest seed pods when dry and clean by hand.

Celery

The most common mistake with celery is not allowing enough time for growing. About a minimum of 90 days are required to grow good celery plants. Celery seed is small and germinates slowly. Start seeds for transplanting several weeks before you expect to plant celery in your garden.

Planting: Start celery indoors 10 weeks before last frost. Soak celery seed for 24 hours, scatter seeds on soil mix and lightly cover with 1/8" of soil, as light is needed for germination along with a soil temperature of 21°C (70°F) and constant moisture. Celery will take 7-14 days to germinate. When seedlings are about 1" tall, transplant to individual pots. Transplant celery after all risk of frost, spacing about 6-9" apart in rows 24-32" apart. Can be planted with everything **except** carrot, parsley, dill and parsnip.

Growing: Full sun required. Celery is a heavy feeder and grows best in soil rich in organic matter with a pH of 6.5. Before planting add plenty of compost and rotted manure. Celery has a shallow root system. To conserve moisture and cut back on weeds, mulch around the plants and water during dry spells. Lack of boron may cause stem cracking. Blanching is not necessary but it does improve flavor.

Harvesting: Young celery stalks on the outside of the plant can be harvested anytime. The entire celery plant is harvested once a desirable size is reached; remembering celery has a long maturity of 100-120 days. For best flavor and longer storage, water celery plants the day before harvest.

Corn

Planting: Sow seeds outdoors only after the danger of frost has passed. Corn will not germinate properly when the soil is still cold in the spring. Sow seeds 1" deep every 3-4" in rows 3-4' apart. Thin the seedlings to 8" apart after the plants come up. Corn should be planted in a 3-4 row block (instead of one long row) to ensure well filled-out ears. For a continuous crop, stagger plantings a few weeks apart or choose corn varieties with different maturities. Plant with Bush bean, beet, cabbage, cantaloupe, cucumber, parsley, pea, early potato, pumpkin, squash.

Growing: Corn is wind pollinated, so it must be planted in a block of several rows for even pollination. Sow corn seed 3-4" apart and about 1/2-1" deep in rows 24-32" apart. Thin the corn seedlings to 10-12" as ears will be greatly reduced in size or not form at all on crowded plants. Ornamental corn must be isolated from sweet corn. Planting corn in cool soil will set back seedlings, especially if a frost is still possible. Best to plant corn when the soil has warmed to 21-24°C (70-75°F). Plant several different varieties of varying maturities to ensure a longer season of harvest. Full sun is required. Corn is a heavy feeder and requires fertile, well-drained soil with a pH of 6.0-6.5. Prepare the soil by working in well-rotted manure or other organic matter. A side dressing of nitrogen, applied when corn plants are about knee high, will give corn an added boost in growth. Try blood meal, partially rotted manure or a liquid fertilizer. Corn needs plenty of moisture. Hill soil around the base of the plant when they are 6" high. This will help to anchor the plants and keep the roots covered and cool. Use a mulch to keep down weeds and conserve moisture.

Harvesting: Corn is ready when the ears are completely filled and a pierced kernel shows a milky white liquid. A good sign of corn cob readiness is when the silk turns brown and crisp. **Saving Seed:** All corn varieties are wind-pollinated and will cross-pollinate with each other. Varieties should be hand-pollinated or isolated by 1 mile to ensure purity. Allow ears to dry on the plants, harvest and shell.

Cucumbers

Planting: Sow 6-8 seeds outdoors 1" deep in 12" diameter hills spaced 6' apart each way a week after the last frost when soil is warm. Pinch off all but 3-4 of the strongest seedlings. Can be started indoors in pots or flats 3-4 weeks before the last frost for an earlier harvest. Plant with Bush bean, cabbage family, corn, dill, eggplant, lettuce, radish, pea, tomato are all good companions for cucumbers.

Growing: Cucumbers require full sun. As they are heavy feeders, an application of compost or well rotted manure worked into the planting area will help. Regular applications of a complete soluble fertilizer during the growing season is beneficial. Cucumber plants should not be allowed to wilt. Make sure cucumbers are well watered before transplanting. Spread mulch around plants before they start to vine, to cut down on weeds and conserve moisture.

Saving Seed: Cucumbers will cross-pollinate, so isolate 1/4 mile from other cucumbers. Fruits for seed should ripen past edible stage and begin to soften and turn yellow. Cut lengthwise, scoop out seeds, wash clean and dry. Seeds are dry when they break instead of bending.

Eggplant

Planting: Start seedlings indoors 6 weeks before the last frost. Thin when 2" tall and transplant into individual pots. Transplant outdoors 24" apart in rows 36" apart. Using landscape cloth or black plastic can accelerate growth and productivity in cooler climates. Eggplant is very sensitive to cold weather and should be started indoors long before planting in the garden. Eggplant requires a long warm season for best yields. Eggplant seeds must be started indoors 8-10 weeks prior to last frost. Sow seeds 1/4" deep and provide a soil temperature of 24-27°C (75-80°F). Even moisture is essential while the seed is germinating-it is slow (up to 2 weeks). Gradually harden off seedlings, but do not allow temp. to go below 15°C (60°F). Transplant 18" in beds or rows 20-30" apart. Plant with Bush bean, pea, pepper & potato.

Growing: Heat loving eggplant require a full sun and sheltered area. Black paper or plastic mulch will help draw heat to the soil and encourage an early maturity. It will also help to conserve moisture and keep weeds down. Eggplants are moderate feeders and do well in very fertile soil with a pH level of 5.5 to 6.8. Apply compost and well rotted manure along with bonemeal.

Harvesting: Harvest eggplant anytime after the fruit reaches half of their size. Harvesting eggplant early prevents fruit from becoming too seedy and will encourage more production and eggplant yield.

Pest: Colorado potato beetles love eggplant, even more so than potatoes and they can cause serious damage to these eggplants. Rotenone dust and/or hand picking insects and egg masses (orange masses on the under sides of the leaves) will keep damage to eggplants to a minimum.

Seed Saving: Eggplants will cross-pollinate, so isolate ¼ mile from other eggplants or plant in insect-proof cages covered with screen. Let the fruits grow far past maturity. Seeds are much easier to remove from overripe fruits. Most seeds are brown and are usually located in the bottom portion of the fruit.

Kale

Planting: Kale does not do well in hot weather, but doesn't mind the cold. Depending on your climate kale can also be sown in October for spring use if covered with straw during the winter. Kale is rich in Vitamins A and C, high in potassium, calcium and iron, and is a good source of fiber. Kale maintains flavor best when frozen. Kale is also great in salads. Plant kale as soon as the ground can be worked, very frost tolerant. Sow ¼-½" deep, 1" apart in rows 18-30" apart. Thin seedlings to 8-12" apart. Kale germinates easily in cool or warm soil temperatures with even moisture. Plant with Bush bean, beet, celery, cucumber, lettuce, onion, potato.

Growing: Choose an area with full sun and a soil pH of 6.0-7.0. Enrich the soil with compost or well rotted manure. Flavor of kale is improved if the plants grow quickly. Kale benefits from additional feedings of liquid fertilizer during the growing season.

Harvesting: Kale leaves can be used at any time for salads or as garnishes. Leaves are "cropped", leaving the bud to grow new leaves, or the entire kale plant is harvested at one cutting. For a fall crop, wait until the kale plants are touched by a frost to sweeten the taste.

Pest: Cabbage worms and loopers on kale (white and yellow butterflies) can be decreased with the use of row covers to block out all insects including root maggots, aphids and Diamondback moths. Maintaining a soil pH of 6.8 and higher will discourage club root. Fungal and bacteria diseases on kale such as head rot and downy mildew can be prevented by allowing good air circulation and avoiding a mid August maturity when the air humidity is higher. Strong healthy kale growing in an organically rich soil will be better able to fight disease.

Saving Seed: Biennial. Kale will cross-pollinate with all other Brassica oleracea, so isolate by 1 mile the second year when going to seed. Do not harvest heads on plants you intend to save for seed. Carefully dig the plants and pot them in sand. Store plants between 32-40° F. Plant back out in early spring and allow to bolt. Harvest seed pods when dry and clean by hand.

Kohlrabi Kohlrabi has edible purple or white globes that form at the base of the stems. Kohlrabi is an easy crop to grow. Kohlrabi requires cool temperatures and plenty of moisture and sunshine. Since kohlrabi is a cool-weather crop, most gardeners' plant it in late winter or early spring and again in the late summer or early fall in order to get two crops a year. Kohlrabi is good for eating raw or cooked. Kohlrabi grows quickly, going from seed to table in 60 to 65 days.

Planting: Sow kohlrabi seed ¼-½" deep early in the spring once the soil has warmed to 10-18°C (50-65°F). Thin kohlrabi plants to 4" apart in rows spaced 12-18" apart.

Growing: Kohlrabi do well with bush bean, beet, celery, cucumbers, lettuce, onion, potato, tomato. Choose an area with full sun and soil pH of 6.0-7.0. Enrich the soil with compost or well rotted manure. Kohlrabi benefits from additional feedings of liquid fertilizer during the growing season.

Harvesting: For fresh use, pull kohlrabi plants when the stem has swollen to 2" in diameter. For storage, allow the kohlrabi stems to grow up to 4-5" in diameter. Clean or trim leaves. Kohlrabi stores well in the fridge or cold room.

Pest: Cabbage worms and loopers (white and yellow butterflies) - Use row covers to block out these insects including root maggots, aphids and Diamondback moths. Maintaining a soil pH of 6.8 and higher will discourage club root. Fungal and bacteria diseases such as head rot and downy mildew can be prevented by allowing good air circulation and avoiding a mid August maturity when the air humidity is higher. Strong healthy kohlrabi plants growing in an organically rich soil will be better able to fight disease.

Leek Soil should be prepared for leeks by adding large amounts of compost and manure. Leeks can be planted in late summer and harvested in winter and early spring, or leek can be planted indoors three to four weeks before the last killing spring frost. Keep the soil moist during early stages of leek development; but as the leek mature, it is best to keep the soil somewhat dry. Leeks add subtle flavor to soups and enhance the taste of many dishes.

Planting: Start leek indoors 8-10 weeks prior to the last frost. Sow leek seeds ¼" deep and provide a soil temperature of 24°C (75°F) with even moisture. Thin and transplant young leek seedlings once they reach 2" tall into 2¼" Jiffy pots. After all risk of frost, leek seedlings may be set in a trench about 5" deep, filling in enough soil to cover the roots. Space leek plants 6" apart in rows 24" apart. Gradually fill the trenches in during the season. Planting this way blanches the shaft of leeks. Leek can be direct seeded after risk of frost. As leek grows be sure to hoe the soil up around the plants during the season to blanch the shaft.

Growing: Leeks do well with bush bean, beet, carrot, celery, garlic, onion, parsley, tomato. Leeks prefer full sun and a soil pH of 6.0-6.5. Leeks are moderate feeders and require very deep, rich soil. Add compost and well rotted manure prior to planting leek. Use mulch to conserve moisture and to keep the weeds down. Good soil moisture helps to keep the leek stems tender and juicy. Water during dry spells.

Harvesting: Harvest leek in late summer or early fall before frost. The leek shafts should be 1½"-2" in diameter. Mulch with straw if frost threatens.

Lettuce

Planting: Sow seeds outdoors ¼" deep and 1" apart. Thin to 8" apart for loose-leaf and 12" for head lettuce. Does well when soil temperature is below 80° F., try to avoid planting in the middle of summer. Keep soil moist for up to two weeks after planting. Leaf lettuce types - 6" apart with 12" rows; Iceberg lettuce - 12" apart with 18" row spacing; Romaine lettuce - 8-10" apart with 12-16" rows Butterhead/Batavia lettuce - 10-12" apart with 12" row spacing. Start lettuce transplants indoors 4-6 weeks before last frost date for transplants. Make succession plantings every 1-2 weeks to ensure a constant harvest.

Saving Seed: There is only a slight chance of cross-pollination between lettuces. As a precaution separate by 25' from other varieties that are going to seed. Allow plants to bolt and form seed stalks. Seed heads may need to be protected from bird damage and rain when drying. Seeds are produced over a 2-3 week period and will require repeated harvesting.

Melons

Planting: Best when direct seeded in warm soil after the danger of frost has passed. Plant 6-8 seeds 1" deep in 12" diameter hills spaced 6' apart each way. After germination pinch off all but 3-4 of the strongest seedlings. For best results start watermelon seed indoors, 4 weeks prior to the last frost. Sow 2-3 seeds ½" deep in 2¼" Jiffy strips. Provide a warm soil temperature, 24-27°C (75-80°F) and even moisture. Thin to one seedling per pot. Transplant watermelon plants outdoors after all risk of frost in rows 4-6' apart with 36"(melons) - 48"(watermelon) between plants. For direct seeding, wait till all risk of frost has passed and soil has warmed. Sow melon seed in rows and space properly or sow into mounded 1'x2' hills, leaving 2 watermelon plants per hill, with hills spaced at 4-6'. Melons and watermelons require a bright, warm growing season of about 3 months duration. row covers or black mulch is highly recommended for extending growing season, to ensure maturity and to increase yield. Best planted with Corn.

Growing: Full sun and sheltered location with a soil pH of 6.0-7.0. Melons are moderate feeders which require plenty of compost added to the soil. Regular feedings during the season with a well balanced fertilizer or compost tea are highly beneficial to watermelons.

Harvesting: Muskmelons - when the melon easily slips off the stem. Watermelon - when the curly tendril that intersects the main stem with the stem on the fruit has completely dried and turned brown and the underside of the melon, where it sits on the ground, is yellow.

Saving Seed: Melons will cross-pollinate, so isolate ¼ mile from other "melons" (cantaloupes, muskmelons, honeydew, snake melon and Armenian cucumbers will all cross). Always save seeds from disease-free, early ripening melons. Wash seeds from ripe melons in a strainer and dry. Seeds are ready to store when they break instead of bend.

Saving Seed: Melons will cross-pollinate. Separate varieties by ¼ mile or hand-pollinate. Always select disease-free early maturing melons to save.

Okra

Planting: Sow seeds outdoors ½-1" deep when the soil temperature has warmed. Okra thrives in warm weather and should only be planted in full sun. Plants should be thinned to 6-8" after germination. Okra will produce abundantly if kept well picked. Okra should be sown late in the spring or early summer when the ground is warm. Okra should then be thinned so the plants are spaced 12 to 18 inches apart. Okra is a tall and attractive plant, okra grows very quickly and should be harvested frequently while it is still tender. Harvesting every few days will prevent toughness. Okra is great vegetable fried, or in stews and gumbos. Soak okra seeds in warm water for twenty-four hours before planting and keep the soil temperature at 24°C (75°F) or above. Soil should be fertile and high in potash with a pH of 6.0-6.8. Sow okra ¼" deep in flats 7-8 weeks before transplanting. Germination may take up to two weeks.

Growing: Transplant okra in a sunny location after last frost. Space 1-2' apart in rows 2' apart. row covers or plastic mulch will encourage early pod set. Okra is a tropical plant therefore requiring warm weather conditions. Keep moist and fertilize well.

Harvesting: For most tender and flavorful quality, harvest okra when pods are 3-4" long and cook as soon as possible. Pick okra on a weekly basis to encourage continual fruit set.

Seed Saving: Okra's large decorative blossoms are cross-pollinated by insects very easily. Varieties can be kept pure by covering blossoms with cloth bags before they open, or you can isolate varieties by 1 mile from each other. Allow the okra pods to turn brown and dry on the plant. Harvest before seedpods split open enough to drop seeds onto ground.

Onion

Planting: Start seedlings indoors 4-6 weeks before transplanting. Sow seeds in flats ¼" deep and spaced 1" in all directions. Onions grow best in rich soil that drains well. But, onions will also grow in sandy or clay soils that have been built up with organic material. Onion seed should be planted as soon as the soil can be worked, depending on spring weather. Onions can be planted until mid June - depending on your climate. Since onion seedlings are fairly tolerant to cold, they survive in the soil in cold weather as long as the ground does not freeze. I have found that planting onions in slightly raised rows has produced good results with nice sized bulbs. Plant onion seed as soon as the soil can be worked in the spring. Onion seed germinates in a wide range of soil temperature, 18-29°C (65-85°F). Sow and cover onion seed with ½" of soil and keep moist. Onions can be started indoors 6-8 weeks prior to planting in the spring. Thin or transplant to 3-4" apart in rows 18-24" apart. To plant onion sets, simply press sets into the soil about 2" apart. Later thin to about 4-6" apart to allow bulbs to mature. Bunching onions can be left at 1-1½" apart. Space shallots 1" apart in rows 4" apart. Onions do well with beets, cabbage family, carrot, kohlrabi, lettuce, parsnip, pepper, spinach, strawberry, tomato, turnip.

Growing: Onions benefit from full sun, a soil pH of 6.0-7.5 and a well drained soil with plenty of compost or well rotted manure added. Feed onions with a complete balanced fertilizer during the growing season, particularly when the bulbs start to form.

Harvesting: Bunching onions are used when young and green. To harvest storage onions: when onion tops begin to fall over, turn brown and wither, it is time to harvest. Tipping bulbs over to break some of the roots will speed drying. Pull and place onions in dry, warm airy location out of direct sun for up to 3 weeks to cure. After curing process is complete, store in cool, dry location. The drier the onions, the better they store.

Seed Saving: Biennial. Onions cross-pollinate and should be isolated by 1 mile from other onions going to seed. Select only the best bulbs for seed. Bulbs store 3-6 months at 32-45° F. Plant out bulbs in early spring and allow them to form seed heads. When the heads start to dry, cut off, dry further and thresh.

Parsnip

Planting: Parsnip seed does not keep well from year to year; use only fresh seed. Sow parsnip as early as ground can be worked. Sow seed 1/2" deep in rows 18-24" apart. Thin to 3 inches apart. Adequate moisture and a cool soil temperature of 15-18°C (60-65°F) is essential for good germination with parsnip, which may take up to 21 days.

Growing: Parsnips do well with Bush bean, garlic, onion, pea, pepper, potato, and radish. Parsnip enjoy full sun with a soil pH of 6.5. Requires a rich, deeply cultivated soil with plenty of organic matter, incorporate compost or well rotted manure prior to planting.

Harvesting: Harvest parsnips any time once roots are adequately sized. Parsnips are tender and flavorful in the fall. A few light frosts will improve the flavor. Parsnips may also be mulched and left in ground over winter and dug as the ground thaws.

Peas

Planting: Peas can be sown as soon as the soil can be prepared in the spring. Sow seeds 1/2" to 1" deep with 3" between seeds in rows 24" apart. Climbing peas will need support. Double rows can be planted on each side of a trellis. Peas thrive in cool weather. If there is one vegetable I remember most growing up, it is peas. Nothing beats picking some pea pods and tasting the fresh sweetness. Peas can be started as soon as the last major frost has passed. There are many varieties: all peas prefer a soil that is well-drained with limestone or wood ashes. Pick peas on a regular basis to encourage more growth and a better harvest. Try not to get the plant wet when watering, instead, use a weeper hose or low level watering device. Harvest peas while young for the sweetest flavor. Peas retain their flavor best when frozen much better than when they are canned.

Sow: As peas can prefer cool growing conditions and will tolerate light frosts, they may be planted as soon as the ground can be worked and will germinate in a wide range of soil temperatures, 4-24°C (40-75°F). Sow pea seed 1 to 1 1/2" deep, 1-2 inches apart in double rows spaced 3-6" apart, 24" between the next double row. Pea plants will tolerate crowding so may be spaced 2" apart. All peas, including dwarf types, are natural climbers, will be more productive and not as susceptible to rot, if given some support or planted along a fence or trellis. Pea seed is available in both treated and untreated; if using untreated pea seeds, avoid planting in cold, wet, poorly aerated soils, as you risk losing the seed to rot. Peas do well with Carrot, celery, corn, cucumber, eggplant, early potato, radish, spinach, pepper, and turnip.

Growing: Peas prefer full sun to partial shade with a soil pH of 6.0-7.0. And require a well-drained, rich and sandy soil. Work organic matter, including rotted manure or compost into the soil for best results. An application of Garden Inoculant, either to the soil or to the pea seeds themselves before planting, can be very beneficial. Even soil moisture is essential especially during flowering and pod set. Use mulch to conserve moisture and keep weeds down around your peas.

Harvesting: For best tasting peas, harvest as pods become plump, but are still young and tender. Pick peas regularly to promote continued production. When you pick, is partially personal preference. If you prefer small, sweet peas, pick early. Experiment until you find which size and flavor you prefer.

Saving seed: Peas should be separated by 50' to ensure pure seed. Select the healthiest plants for seed. Allow pods to dry on the plant before harvesting and separate seeds from pods by hand. If birds start eating the seeds before the pods are completely dry, they can be harvested slightly green and brought indoors to dry.

Peppers

Planting: Start seedlings indoors 8 weeks before transplanting. Sow seeds 1/4" deep. Keep soil moist and near 80° F. using bottom heat. Peppers may take two weeks to germinate. Transplant outdoors when daytime soil temperatures are near 80° F. and nighttime temperatures are above 50° F. Peppers are one of the most versatile vegetables in the garden and will grow in many areas, including northern Canada. Sow pepper seeds indoors or in hot beds in very early spring for good germination, and then keep the seedlings warm. Mulching well help to keep the ground moist and produce quality peppers.

Peppers require a long, warm growing season. Pepper seed should be started indoors in March or 8 weeks prior to transplanting. To start pepper seed indoors, sow 2-3 seeds 1/4" deep, into 1x1" cells and provide constant moisture and a soil temperature of 26-29°C (80-85°F). After germination (1-2 weeks), thin pepper seedlings to one per cell. Once

seedlings develop 2-3 true leaves, transplant into larger containers, 2x2" or 3x3". At transplanting time, set pepper transplants 18" apart in rows 30" apart. Peppers do well with carrots, onions, parsnip, peas and basil.

Growing: Peppers prefer sheltered, full sun area with a soil pH of 6.0-6.8. Peppers are moderate feeders and require plenty of compost and well rotted manure mixed into the soil prior to planting. Fertilize sparingly until pepper plants start to set fruit. Too much nitrogen causes an excess of foliage and dropping of flower buds. Provide even moisture, particularly during flowering and fruit set on pepper plants. Use black plastic or paper mulch to attract heat, hold water and prevent weeds.

Harvesting: Begin harvest when peppers reach a useable size. Cut peppers rather than pull from branch.

Problems: Blossoms will drop when temperature falls below 60°F (15°C) or goes above 80°F (27°C). *Blossom End Rot* Pepper fruits blacken and decay at the blossom end due to a calcium deficiency. *Poor Fruit Set* usually due to cold weather. Excessive nitrogen fertilizer during early growth may also delay fruit set.

Saving Seed: Peppers will cross-pollinate, so separate by at least 500' or plant in insect-proof cages covered with window screen. Select peppers that are ripe, fully colored and show no signs of disease to save for seed. Remove seeds off core and place on a paper plate to dry.

Radish

Planting: Sow seeds outdoors as soon as the soil can be prepared in the spring. Successive plantings can be made every 3-4 weeks throughout the summer and fall to provide a continual harvest. Seeds should be planted ½" deep and 1" apart in rows 12" apart. Radish is another perfect vegetable for kids. They are fast-growing, colorful, like to be watered and are easy to harvest - not many kids like to eat them though.

Radishes do not like hot, dry weather. Radishes also grow very fast and need a lot of moisture. Their flavor will be "hotter" in hot weather and milder in cool unless you consume huge amounts of radishes, there is no need to dedicate a specific spot in the garden to radishes. Use radishes to mark the start and ends of other rows of plants. Plant at different times and grow radishes throughout the garden and you will have a steady supply all season. Radishes are used mainly in salads and as a garnish.

Begin sowing radish as soon as the ground can be worked. Radish does best in the spring and fall when the soil is cool, 4-18°C (45-65°F) and the days are short. Summer production of radish may not be as uniform. Sow radish ½" apart and ¼" deep in rows 12-18" apart. Thin radishes to approx. 35 seeds/ft. Make successive sowings every 5-7 days to keep a constant supply of fresh radish all season. Grow with Lettuce, bean, beet, carrot, parsnip, pea, spinach. Radish improves the flavor of lettuce.

Growing: Radish requires full sun location, with a pH of 6.0-7.0. Radishes are extremely light feeders; no special soil preparation is required. Sufficient water is essential as the faster the radish grows, the better the flavor. Plant radish in rows with slow germinating seeds like carrots, parsnip and beets to help break the soil and aid in the germination of the slower seeds.

Harvesting: Harvest radishes as soon as roots reach a desired size, 20-25 days.

Pest: Radishes may be attacked by flea beetles, small, shiny, hopping insects that leave small holes in the leaves. Avoid planting too early, use row covers or Rotenone dust to control insects. Also, planting with taller growing companions will help to hide the plants from insects.

Saving Seed: Radishes will cross-pollinate and must be isolated by ½ mile or planted in insect-proof cages covered with screen. Radish seed stalks will grow up to 3' tall. Always PULL UP the early bolting plants, since they are not the best plants to save for seed. The seed stalk is harvested when the stalk and pods are dry. Seeds can then be separated by hand.

Pumpkin

No vegetable is more exciting to a child than the pumpkin. If you want to spark a child's interest in gardening, encourage them with their very own pumpkin patch. Theirs to nurture, care for and "weed". They may fuss a little when it is time to work, but when they see that pumpkin start to grow and then carve it at Halloween - they'll be hooked. Pumpkins grow quickly and can reach very large sizes - perfect for the kids. Of course, many adults get the same thrill from growing

pumpkins. Pumpkins benefit from a rich soil and a sunny location. For perfect pumpkins on Halloween place a good thick layer of straw underneath each pumpkin - this will keep moisture away from the pumpkin skin and produce better color. Pumpkin is used in cooking for pies, cakes, bread and so on.

Planting: Plant pumpkins after all danger of frost has past and when the soil has warmed to 21°C (70°F). For early plantings, use floating row covers to raise soil temperature, increase early growth and protect tender pumpkin plants from wind injury. Sow pumpkins 1" deep, 6" apart in rows 48-72" apart. Thin pumpkin plants to 24-36" apart. Plant vineing pumpkins at the edge of the garden to prevent the plants from over-taking the entire site. Space bush type pumpkins 24" apart in rows 36-48" apart. Pumpkins do well with celery, corn, onion, and radish.

Growing: Pumpkins prefer full sun and a soil pH of 5.5-6.5. Pumpkins are moderate feeders; prefer a rich loamy soil of good fertility and moisture retention. Mix plenty of organic matter into soil. Even and sufficient soil moisture is essential. Pumpkins benefit from mild feedings with a fertilizer high in phosphorous to initiate fruit formation.

Harvesting: Harvest pumpkins before a killing frost or when pumpkins are deep orange in color. Simply cut pumpkins from the vine leaving 4-6" of stem attached to the fruit. Store in a cool, dry area.

Squash & Zucchini

Planting: Sow seeds outdoors after the danger of frost has passed. Plant 6-8 seeds 1" deep in 12" diameter hills spaced 6' apart each way. Pinch off all but 3-4 of the strongest seedlings. Squash plants, which include zucchini, are best known for the ease at which they can be grown, making any novice gardener look like a pro. Squash prefer soil with lots of organic matter such as aged manure or compost. Harvest squash and zucchini while they are young and still shiny, and before their seeds are well-developed. The many varieties of squash are used in everything from appetizers to desserts. Squash are excellent sautéed or steamed and when used in casseroles, breads or cakes.

Plant squash after all danger of frost has past or when the soil has warmed to 21-27°C (70-80°F) as seed will not germinate in cool soil. For early plantings, use floating row covers to raise soil temperature, increase early growth and protect tender plants from wind injury. Sow summer squash 1" deep, 6" apart, thinning to 12" apart in rows 36-48" apart. Sow winter or vineing squash similarly, using a spacing of 24-36" between plants with 48-60" row spacing. Squash do well with celery, corn, onion, and radish.

Growing: Squash prefer full sun and a soil pH of 5.5-6.5. Squash are moderate feeders; mix plenty of organic matter into soil as squash prefers a rich loamy soil of good fertility and moisture retention. Even and sufficient soil moisture is essential. Squash benefits from mild feedings with a fertilizer high in phosphorous to initiate fruit formation.

Harvesting: Harvest summer squash when they are 4-8" long and when their skin is still shiny. Winter squash can be cut later in the summer or early fall before frost, or when the skin is hard enough so that you can not cut it with your finger nail. Simply cut from the vine leaving 4-6" of stem attached to the fruit. Store in a cool, dry area.

Saving Seed: Squash within the same species will cross-pollinate, so isolate species by ¼ mile. Seeds should be taken from fruits that have gone past maturity by 3 weeks. Remove seeds, wash and let dry. (Note: There are four species of squash: *C. maxima*, *C. mixta*, *C. moschata* and *C. pepo*. This allows you to grow four different species of squash and save pure seed in the same garden.)

Spinach Spinach is mainly an early-spring and late-fall crop, but in some areas, where summer temperatures are mild, it may be grown continuously from early spring until late fall where temperatures changes are not severe.

Spinach will grow on almost any well-drained, fertile soil where sufficient moisture is available. Spinach is very sensitive to acid soil. If a soil test shows the need, apply lime to the part of the garden used for spinach, regardless of the treatment given the rest of the area. Use thinned spinach plants in salad - they are very nutritious and taste great!

Planting: Spinach thrives in cool weather, so plant as soon as the soil can be worked or when soil temperatures are between 10-24°C. For a fall crop, plant spinach again in late August or early September. Sow spinach thinly, about ½" deep. Thin to 1-3" apart in rows 12" apart. Spinach does well with bush beans, cabbage family, celery, lettuce, onion, and pea.

Growing: Spinach prefers full sun to partial shade with a soil pH of 6.5-7.5. Spinach are moderate feeders require a fertile, well cultivated soil. Enrich soil with plenty of compost and some partially rotted manure or fertilizer high in nitrogen. Spinach needs even moisture for good growth. Drought and warm temperatures will cause premature bolting in spinach.

Harvesting: Cut spinach as soon as leaves are big enough to eat. If spinach is looking old and tired, cut the entire plant back to 1" tall to stimulate young, tasty growth. If spinach showing signs of bolting, harvest the whole crop - it freezes well.

Saving Seed: Spinach will cross-pollinate with wind-blown pollen from other spinach varieties. Commercial seed crops are separated by 5-10 miles to ensure purity, but home gardeners can reduce that distance. Harvest seeds when they are completely dry on the plant. It may be necessary to wear leather gloves because the seeds can be very prickly

Strawberries

Strawberries require direct, full sunlight for best production. Strawberries bloom early in the spring, so don't plant them in frost pockets (low-lying areas) in which cold air drains or areas (surrounded by tall trees, for example) where cold air is trapped. Avoid planting strawberries where tomatoes, peppers, potatoes, eggplant, strawberries, raspberries, or black berries have grown in the past 3 years. These plants can all act as hosts for fungi, such as Verticillium wilt, and insect pests that build up in the soil unless you place these crops on at least a 3-year rotation schedule. Protect strawberry plants from deer as they will appreciate fresh young plants early in the season.

Planting: Strawberries take care of propagating themselves very well by sending out runners or daughter plants that root nearby. These can be used to renew the strawberry patch. Allow these to root and then transplant to a new strawberry bed. It is highly recommended to buy plants if you have no existing strawberry beds.

Growing: Plant your strawberry roots as soon as your soil has warmed. If you must keep them for a short period, keep the roots slightly moist and cool. Choose a sunny location in your garden with a soil pH of 6-6.5 and set plants out on a cloudy day or in the evening to avoid the stress of heat on the young plants.

While preparing the beds, soak roots with water. Till in compost and dig a shallow trench for each row with rows 4' apart. With your hands, form a small dome of soil every 12" in the row. Trim your strawberry roots to 5" long to encourage healthier, new root development. Drape roots over soil dome, with the crown centered at the peak. Add soil, tamp down and water. Crown of plant should be at the soil surface. Keep the bed weed free and side-dress one month after planting. Pinch off all flowers the first summer to send more energy to the development of runners (daughter plants). Use a seed and weed free mulch in the late fall and place directly over the plants to protect from freeze and thaw cycles. Remove mulch after last frost in spring and place into paths between rows. Strawberries will produce a vigorous crop of juicy berries in the early summer of your second year which will be followed by heavy runner production. To keep production strong and healthy, plant new roots into a new area after your second year of harvest. (the temptation does not run as typical strawberries)

Harvesting: During the second growing season pick berries as they ripen. Do not allow berries to over-ripen as this will attract wasps and hornets.

Care: In addition to value for weed control, mulching is necessary to provide winter protection for the plants. Apply straw that is free of weed seeds two to three inches deep over the plants after they have been subjected to several sharp freezes in the low 30s or high 20s in fall. This is generally between November 15 and 30, but no later than December 15.

Strawberry flower buds are very susceptible to spring frosts. Mulches used for winter protection should be pulled from plants in early spring, before there is much leaf yellowing. The mulch should be left in the alleyways and can be used to cover blossom in the spring when frost is predicted, especially with early cultivars. Frost protection could be the difference between a good crop and no crop.

Saving Seed: Take ripe fruits and crush them in a bowl. Add water to the bowl and the seeds will sink and the skin and pulp will float. Separate the contents and wash the seeds in a strainer. Allow seeds to dry.

Swiss chard

Swiss chard is one of the easiest vegetables to grow, it will keep growing right through the winter in mild climates. Swiss chard is a good source of beta-carotene. Also known as chard, these greens come from a variety of beet grown for its stems and leaves, not the roots. Unlike many greens, the stalks of Swiss chard are completely edible - many people consider it the best part of the plant. Unless the swiss chard is young, the stalks should be separated from the leaves and cooked a little longer.

Planting: Swiss Chard thrives in cool weather, so plant as soon as the soil can be worked, or at soil temperatures of 10-29°C (50-85°F). For a fall crop, plant again in late August or early September. Sow swiss chard thinly, about ½” deep. Thin plants to 1-3 inches apart, in rows 12-24 inches apart.

Growing: Swiss chard prefers full sun, but will tolerate light shade, with a soil pH of 6.2-7.0. Moderate feeder, requires a fertile, well cultivated soil. Enrich soil with plenty of compost and well rotted manure. Needs even moisture for good growth. Drought and warm temperatures will cause premature bolting. For all season production, provide regular feedings with a well balanced fertilizer or compost tea.

Harvesting: The tender, flavorful vitamin-rich swiss chard leaves may be cut as soon as they are big enough to eat. Harvested regularly, Swiss Chard will continue to produce fresh greens.

Saving Seed: Biennial. Varieties must be separated by ½ mile from all other *Beta vulgaris* (BEET/ SPINICH) when going to seed. Will overwinter in mild climates if well mulched. In northern climates trim leaves to 2" and store roots in sawdust or sand in a root cellar. Roots will store 4-6 months at 32-40° F. Replant in the spring and harvest seed heads when dry. If growing spinach and beets –try rotating the years you save seeds for ea variety.

**Beets and chard are biennial plants, meaning that they do not flower until their second growing season. They require at least a month of cold weather after their roots have matured. In mild winter areas it is possible to obtain seed by planting in summer, and allowing the plants to overwinter; they will bolt to flower the following spring. In cold climates, the plants must be dug before the first hard freeze and stored until spring when they can be returned to the garden. The beet family (Chenopodeae) includes beet and Swiss chard (*Beta vulgaris*) as well as spinach (*Spinacia oleracea*).

Plants are grown as an annual for edible leaves and as a biennial for seeds. Two methods are used:

**Seed to seed.* Sow seeds in late summer. Mulch in late fall to ensure winter survival. The following spring, select the finest young plants and transplant using 45-cm spacing. The optimum transplant diameter is 2.5 cm. The tops may be trimmed, but not the root.

**Root-to-seed.* Harvest first-year roots in fall. Select desirable roots and trim tops 2–5 cm above root. Store at 4 °C in a humid location. Replant in early spring at 45-cm spacing with tops just showing above soil. In either method, only transplant the most desirable plants.

Tomato

Indeterminate vines will require support. For the earliest tomatoes, start growing tomato plants indoors and transplant to the garden after there is no longer a danger of frost. Place individual tomato plants, including roots and dirt, in watered holes. Garden soil should be enriched with compost or aged manure. Use mulch while the tomato plants are still only a few feet tall to ensure moisture retention. For best results with your tomato plants, be sure to use a fertilizer with a high calcium content. This will help prevent blossom-end rot. Do not allow moisture levels to fluctuate too much - this will help prevent cracking. Water directly onto the soil, not the plant.

Planting: Tomatoes are tender plants and are very susceptible to frost damage. Start seeds indoors 6-8 weeks before the last frost date in your area. Sow 2-3 tomato seeds in 1x1” cells and thin to 1 plant after germination. Cover tomato seeds with ¼” soil and provide a constant soil temperature of 21-26°C (70-80°F). Once tomato plants are up, a growing light is necessary or seedlings will become tall and spindly. After tomato plants develop 1-2 sets of true leaves, transplant into 3x3” or 4x4” pots. Use a water soluble fertilizer every two weeks starting at half strength and increasing to full strength over 6 weeks. Tomato Seedlings benefit from watering with Epsom salts, use 1 Tbsp of Epsom salts per gallon. Transplant tomatoes after all danger of frost has passed. When transplanting , space 24-36” apart with rows at least 36-48” apart. Tomatoes do well with asparagus, basil, bush bean, cabbage family, carrot, celery, chive, cucumber, garlic, lettuce, onion,

pepper.

Growing: Tomatoes prefer a full sun location, preferably with good air circulation. Soil pH of 6.0-6.5. Tomatoes are heavy feeders and prefer a warm, well drained soil of good fertility and cultivation. Add plenty of compost and well rotted manure prior to planting tomatoes. Feed regularly during the growing season with a compost tea or well balanced fertilizer. Avoid excessive nitrogen, particularly before fruit set. Provide even moisture during fruit set and development. Excessive watering can increase tomato size but decrease flavor. Use Epsom salts to improve growth, mix 2 Tbsp/gallon of water and feed to plants every other watering.

Harvesting: Pick tomatoes when fruit is firm and turning red. Overripe tomatoes rot quickly. Just before the end of season burst of really cold weather-pull plants and hang upside down in a garage and let fruit ripen. Fruit has been known to last until January and stays nice and fresh this way.

Saving Seed: Cross-pollination between modern tomato varieties seldom occurs, except in potato leaf varieties which should be separated by the length of the garden. Heirloom Varieties will need to be separated. Do not save seeds from double fruits or from the first fruits of large-fruited varieties. Pick at least one ripe fruit from each of several plants. Squeeze seeds and juice into a cup and let ferment until mold begins /wash in a fine metal strainer, spread on a paper plate and dry.

Tomatillo

Planting: Sow indoors ¼" deep in pots or flats 6 weeks before the last frost. Thin seedlings when 2" tall and transplant into individual pots. Plant outdoors 24" apart in rows 36" apart. Culture is very similar to tomatoes. Plants can be trellised to keep well contained and the fruits off of the dirt, or the plants can be allowed to sprawl on the ground.

Seed Saving: Tomatillos will not cross-pollinate. Select fully ripe fruits to save for seed. Pick at least one ripe fruit from each of several plants. Squeeze seeds and juice into a strainer and wash, spread on a paper plate and dry.

Turnip

Turnip & Rutabaga are at their best about the time other vegetables in the garden are withering. If growing turnips mainly for the tasty tops, sow thickly and don't thin too much. Harvest turnips and rutabagas when smaller for best flavor. For a winter crop, sow in late July or early August. "Rutabaga", also called "swede" or "winter turnip", is globe shaped with yellow flesh and maroon colored skin. Commonly grown for winter storage. "Summer Turnip", is flatter in shape, and the flesh is usually white and roots are harvested during the summer.

Planting: Sow turnip thinly ¼-½" deep. Space young turnip plants to 4-6" apart in rows 24-30" apart. Sow turnip seed as early as the soil can be worked to mature crop for early market. For the main storage crop, plant turnips in late June or early July, so that roots can develop in the warmer weather. Late plantings are less susceptible to turnip root maggot damage. Turnip do well with the Onion family and peas.

Growing: Turnips prefer full sun with a soil pH of 6.5. Turnips are moderate feeders; require a deep, loose cultivated soil with medium water retention. Apply generously, compost and well rotted manure prior to planting. Turnips benefit from regular feedings with a compost tea or fertilizer with higher amounts of phosphorous and potassium for good root development. Boron is a key trace element for the prevention of Brown Heart (water core). (Boron may also be applied separately as a spray 4-6 weeks after planting).

Harvesting: Turnips (summer): when they reach 3" in diameter. Rutabagas (winter): when roots are 4" in diameter up until they are 5-6". You can leave your rutabagas in the ground until just before it freezes. Sweet flavor of rutabagas is enhanced by light frosts.

Pest: Clubroot can develop where turnips or cole crops have been frequently grown and will remain in the soil for 7 or more years. Clubroot thrives in acidic soil, keep the soil pH above 6.0. **Practice good crop rotation.** Root maggots in turnips can be avoided early in the season by covering plants with row covers.