FAMILY / SURVIVAL SEED PACK GROWING GUIDES

AMARANTH (MAROG)

Start:	Direct seed
Germination:	8 - 12 days, 15°C to 30°C
Seed Life (viability):	3 - 10 years
Soil:	Well drained, rich in nitrogen & phosphorous
Sunlight:	Full sun
Sow Seeds:	5mm deep, 8-10cm apart in rows 45cm apart.
Transplant/Thin to:	15 - 30cm apart
Ave. Days to Harvest:	Young greens in 30-40. Flowers in 45-70. Grain - 75 to 110
Good Companions:	Corn, carrots, beetroot, radish, onion, potato

Sowing & Planting:
Amaranth is very responsive to nitrogen and phosphorous. Plants grown in average garden soil will be 1.2 to 1.8m tall, while those grown in rich soil or compost may reach over 2.5m. Optimum soil is a well-drained loam but plants will do well in all but poorly aerated clay soils.

Amaranth is grown from seed. Amaranth seeds are best directly seeded into your flower garden but can also be started indoors for transplanting later.

Amaranth plants are susceptible to frost and prefers warm weather. If planting outdoors, sow Amaranth seeds after the soil has begun to warm in the spring. Indoors, start six to eight weeks before the last frost in your area.

Sow seeds early in the season and cover lightly with soil. Final space seeds or seedlings at 15 to 30cm apart. They will tolerate a little crowding and look good in clumps or groups. Since the seed is very small, you can avoid considerable thinning by mixing it with sand or radish seed before sowing, as is sometimes done with carrots.

Growing:
Amaranth is very easy to grow. It prefers a warm climate, full sun and a well drained soil. Water well during dry periods, once or twice per week, although Amaranth is pretty heat and drought tolerant.

Add a general purpose fertilizer once or twice a season. Amaranth is a low-maintenance crop but weeds, especially at the beginning, should be discouraged by cultivation or mulching.

Harvesting:
Amaranth keeps on flowering until hit by the first hard frost. Seed will often ripen many weeks before that, usually after about three months. The best way to determine if seed is harvestable is to gently but briskly shake or rub the flower heads between your hands and see if the seeds fall readily (numerous small and appreciative birds may also give hints as to when to start doing this).

An easy way to gather ripe grain is, in dry weather, to bend the plants over a bucket and rub the seed heads between your hands. Another threshing method is to rub the flower heads through screening into a wheelbarrow and then to blow away the finer chaff using a strong fan. Cutting and hanging plants to dry indoors does not work very well - the plants become extremely bristly and it is difficult to separate the seed from the chaff.

BEANS

Start:	Seeds
Germination:	8 to 15 days, 20°C to 30°C
Seed Life (viability):	4-5 years
Soil:	Well drained, slightly acidic
Sunlight:	Full sun
Sow Seeds:	2.5 to 5 cm apart
Thin to:	7.5 to 10 cm apart
Ave. Days to Harvest:	60 to 100
Good Companions:	Beetroot (not for runner beans though), Cabbages, Carrots, Cauliflower, Celery, Eggplant, Lettuce, Peas, Potatoes, Pumpkins, Rosemary, Sage, Savoury, Spinach, Sweet corn, Yarrow.
Bad Companions:	Basil, Chives, Garlic, Fennel, Leeks, Onions.

Sowing & Planting:
Beans generally do not respond well to transplanting, and are usually direct sown around or just after the last spring frost. The most important point about growing beans is not to plant them too early. They will rot in cool, damp soil. Even so, many beans require a long growing season of 80 days or more. To get an earlier start, you can put down black plastic, to warm the soil.

Most beans should be sown with the eye of the bean facing downward. The ideal site will be sunny, well-drained, moderately fertile, and slightly acidic (pH 6.0-7.0). Additionally, bean plants should be well-ventilated to promote proper development and deter mildew or mould that can trouble the plants. Beans should not be grown in the same spot more than once every three years, and can be mutually beneficial with corn, strawberries and cucumber.

Plant bush beans in either rows or blocks, with 10-15cm between each seed and 60cm or more between rows. Plant the seeds 2 1/2 - 5cm deep and be sure to water the soil immediately after sowing and then regularly until it the seeds sprout.

Growing:
Pole (climbing or vine) beans will need some type of support to grow on. Be sure the trellis, tee-pee, fence or whatever is in place before you sow your seed. If using a tee-pee type trellis then plant the seeds at a rate of about 3-6 seeds per tee-pee or every 15cm apart.

When watering, try to avoid getting the leaves wet as this can promote fungus or other damaging conditions that beans can be susceptible to. Most types of beans are somewhat drought resistant, but check the surface of the soil frequently and water when the top layer has become dried out.

Once established, beans generally will not require fertilizing and will generate their own nitrogen. However, if the leaves of young plants are pale this is an indication of nitrogen deficiency and starts can be fertilized with fish emulsion or other natural nitrogen rich fertilizer.

Bush beans begin producing before pole beans and often come in all at once. Staggered planting, every 2 weeks, will keep your bush beans going longer. Pole beans need time to grow their vines, before they start setting beans. The pole bean crop will continue to produce for most of the season.

Pole beans may need some initial help in climbing. Keep the bean plants well watered. Mulch helps keep their shallow roots moist. Long producing pole beans will benefit from a feeding or a side dressing of compost or manure about half way through their growing season.

Harvesting:
Depending on whether the bean is a snap, shell, or dry variety will impact when and how the bean should be harvested.

Harvesting snap beans is an ongoing process. You can start to harvest anytime, but gardeners usually wait until the beans begin to firm up and can be snapped. They are generally about as thick as a pencil then. Don't wait too long, because beans can become overgrown and tough almost overnight. Harvest by gently pulling each bean from the vine or by snapping off the vine end, if you are going to be using the beans right away.

Snap beans are harvested while the pod and enclosed seeds are still relatively immature. Compared to the other two types of beans, snap beans have the smallest window for an ideal crop. Beans that are harvested too early will not develop the proper flavour and texture. On the other hand, beans that are allowed to develop on the plant too long will be tough and somewhat unpalatable.

Perhaps the best simple indicator for snap beans is the diameter of the pods. Generally, most varieties will yield the best snap beans with a diameter between 3-6mm. Of course, the best way to determine suitability for harvest is to sample a pod or two before making a complete harvest. It is worth noting that many varieties of snap beans that are allowed to develop completely also make good dry beans.

Shell beans are harvested at a later time than snap beans, once the pods have started to fill out and the enclosed seeds developing inside are apparent. Beans of these varieties are removed from pods and are often eaten fresh, but are sometimes dried.

Dry beans are not harvested until the pods and enclosed seeds have reached complete maturity, and will often require threshing to remove extraneous pod material. When growing dry beans, it is especially important that growing plants have plenty of space and ventilation so that pods will dry out properly. If experiencing a spell of rain late in the season once pods have matured, plants can be removed from ground and hung upside down indoors to allow drying to continue.

BEETROOT

Start:	Seeds or seedlings
Germination:	5 to 8 days, 5°C to 30°C
Seed Life (viability):	4 years
Soil:	Tolerates low fertility
Sunlight:	Full sun, part shade
Sow Seeds:	2.5 cm apart
Transplant Seedlings:	7 to 10 cm apart
Ave. Days to Harvest:	50 to 55
Good Companions:	Lettuce, Kohlrabi, Onions, Brassicas, Catnip, Garlic, Basil, Mint, Sage
Bad Companions:	Runner or Pole Beans

Sowing & Planting:
Plant beetroot in early spring, as soon as you can work the soil, 2 cm deep and 2.5 cm apart in rows 30 to 45 cm apart. For continuous harvests, make successive plantings every three weeks until midsummer. For cold winter storage, sow a crop about 10 weeks before the first heavy freeze.

Beetroot prefers well-drained sandy loam to silt loam soil, high in organic matter, with pH between 6.5 and 7 and free of large stones. A good loose soil structure is important because growth is improved by good soil aeration.

The wrinkled, compound "seed ball" usually contains two to four viable seeds, making it necessary to thin to 7 to 10 cm spacing's if you plan to harvest young, small or cylindrical-shaped roots, or 15 cm spacing's for larger roots.

Begin thinning when seedlings are about 10 to 12 cm tall, and eat the thinnings. Cut rather than pull plants when thinning to avoid disturbing roots of other plants. Unlike most root crops, beets can be started inside or in cold frames and transplanted into the garden.

Growing:
Use floating row covers to discourage insects early in the season. Keep well-weeded. Competition and uneven watering can make beets stringy and tough. Beets tolerate average to low fertility. Too much nitrogen will encourage top growth at the expense of root development. Best colour and flavour develop under cool conditions and bright sun. When beets mature in warm weather, they are lighter coloured, have less sugar and have more pronounced colour zoning in the roots. Fluctuating weather conditions produce white zone rings in roots.

Beets are closely related to Swiss chard and spinach so avoid following these crops in rotation. Beets are biennials grown as annuals for the roots and greens. Normally, they produce an enlarged root during their first season. Then after overwintering they produce a flower stalk. If they experience two to three weeks of temperatures below 7°C after they have formed several true leaves during their first season, a flower stalk may grow prematurely. Many newer varieties are less sensitive to this problem.

Harvesting:
Beetroot can be harvested whenever they grow to the desired size. About 60 days are required for the beetroot to reach 4 cm in diameter, the size often used for cooking, pickling or canning as whole beets. They then enlarge rapidly to 7 to 8 cm with adequate moisture and space. With most varieties, beetroot larger than 7 to 8 cm may become tough and fibrous.

When harvesting beetroot, separate the green tops from the roots as soon as possible, leaving 2 to 3 cm of stem on the beetroot, otherwise the greens will quickly start drawing the moisture from the root greatly reducing flavour and the beetroot will become shrivelled. Beetroot greens are packed with nutritional value but must be prepared separately.

After separating, beetroot store well for about a week in perforated plastic bags in the refrigerator. Do not allow them to freeze. Use beetroot while they are still firm and fresh.

BROCCOLI

Start:	Seeds or seedlings
Germination:	4 - 7 days, 7°C to 30°C
Seed Life (viability):	3 to 5 years
Soil:	Well drained and fertile
Sunlight:	Full sun
Sow Seeds:	15 cm apart
Transplant Seedlings:	30 to 45 cm apart
Ave. Days to Harvest:	55 to 60
Good Companions:	Beans, Celery, Chamomile, Dill, Mint, Nasturtium, Onion, Oregano, Potato, Rosemary, Sage
Bad Companions:	Lettuce, Strawberry, Tomato

Sowing & Planting:
Broccoli is a member of the cabbage family and is a biennial plant grown as an annual for its edible, immature flower heads. One of the most nutritious vegetables, it contains high levels of antioxidants. Choose varieties touted for their abundant side shoots to extend the harvest; once the central head is harvested, these side shoots will continue to produce small heads for weeks.

Requires good soil, timely planting and protection from pests. This cool-season crop grows best when daytime temperatures are in the range of 15°C to 20°C. Depending on your climate you can grow broccoli in both spring and autumn but avoid growing during summer as hot weather can cause premature bolting.

For spring crops, sow seeds indoors in seedling trays 5 to 7 weeks before the last average frost date and keep the soil warm (about 24°C) until germination. Then keep the plants at around 15°C. Provide direct sun so seedlings don't get leggy. When seedlings are 4 to 6 weeks old, transplant into garden 30 to 45 cm apart. Use the wider spacing's if you want to harvest large central heads. Closer spacing's will produce smaller central heads. If you harvest secondary heads you will get a greater total yield from the closer spacing's.

Protect transplants from hard frosts with newspapers, plastic cones, paper bags, or baskets and provide a windbreak to reduce transplant shock and moisture loss.

For autumn/winter crops you can also direct seed straight into the garden 85 to 100 days before the average first frost date (around mid-summer).

Broccoli prefers well-drained, fertile soil high in organic matter, pH 6.0 to 7.5. Can tolerate slightly alkaline soil. Needs plentiful, consistent moisture. Select a site with full sun and well-drained soil. Broccoli can also tolerate light shade but this will slow maturity. Prepare the garden bed by using a garden fork or tiller to loosen the soil to a depth of 30 to 40 cm, then mix in a 5 to 10 cm layer of compost.

Growing:
Consistent temperatures are key to getting good heads, some cultivars will form small "button" heads if the weather suddenly turns warm following a week or two stretch when high temperatures only reach the 5°C to 10°C range.

Apply a good layer of compost halfway through the season or use a low nitrogen fertilizer at planting (too much nitrogen fertilizer may cause hollow stems). Plants have shallow root systems so try and avoid even shallow cultivation. Mulch well to protect roots, reduce weed competition and conserve moisture.

Use floating row covers to help protect from early insect infestations. To help reduce disease, do not plant broccoli or other cole crops in the same location more than once every three or four years.

Harvesting:
Harvest for peak quality when the buds of the head are firm and tight. If buds start to separate and the yellow petals inside start to show, harvest immediately.

CABBAGE

Start:	Seeds or seedlings
Germination:	4-7 days, 7°C to 30°C
Seed Life (viability):	5 years
Soil:	Well drained and fertile
Sunlight:	Full sun
Sow Seeds:	4 to 5 cm apart
Transplant Seedlings:	30 to 40 cm apart
Ave. Days to Harvest:	60 to 90
Good Companions:	Beans, Beets, Chamomile, Chives, Cucumber, Dill, Endive, Hyssop, Leek, Lettuce, Mint, Nasturtium, Peas, Radish, Rhubarb, Rosemary, Sage, Spinach, Yarrow
Bad Companions:	Oregano, Strawberry, Tomato

Sowing & Planting:
This cool-season crop grows best when daytime temperatures are in the range of 15°C to 20°C. Direct-seed or transplant spring crops for fresh use in summer. Plant fall crops for winter storage or sauerkraut. Some green varieties have a bluish cast. Can tolerate light shade but will slow maturity. Light shade can be beneficial in warm weather.

For spring crops, sow seeds indoors in seedling trays 6 to 8 weeks before average last frost. Keep soil warm (about 24°C), until germination. Then keep plants around 15°C. Provide direct sun so plants don't get leggy. When plants are 4 to 6 weeks old, transplant into garden 30 to 60 cm apart in rows 45 to 80 cm apart. Use closer spacing's for smaller, early varieties, wider spacing's for larger, late-season varieties.

Can be direct seeded as soon as you can work the soil. Will germinate at soil temps as low as 5°C. Plant 1 to 2 cm deep, about 8 cm apart. When seedlings are 10 to 12 cm tall, thin or transplant to stand 30 to 60 cm apart.

Growing:
Apply a good layer of compost halfway through the season. Plants have shallow root systems though, so try and avoid even shallow cultivation. Mulch well to protect roots, reduce weed competition and conserve moisture.

Use floating row covers to help protect from early insect infestations. To help reduce disease, do not plant cabbages or other cole crops in the same location more than once every three or four years.

When heads are mature they are prone to splitting in response to any stress or a heavy rain following a dry period. Avoid splitting by choosing varieties that resist splitting, spacing plants closer together (20 to 30 cm for early varieties, 30 to 40 cm for later varieties) or using a shovel to sever roots on one side (about 15 cm from the plant) or by twisting the plants, after the heads have firmed, to break some of the roots.

Harvesting:
Cabbage can be harvested anytime after the heads form. For highest yield, cut the cabbage heads when they are solid (firm to hand pressure) but before they crack or split. When heads are mature a sudden heavy rain may cause heads to crack or split wide open. The exposed internal tissue soon becomes unusable. Harvest and salvage split heads as soon as possible after they are discovered.

In addition to harvesting the mature heads of the cabbage, you can also harvest a later crop of small heads (cabbage sprouts). These sprouts develop on the stumps of the cut stems. Cut as close to the lower surface of the head as possible, leaving the loose outer leaves intact.

Buds that grow in the axils of these leaves (the angle between the base of the leaf and the stem above it) will later form sprouts. The sprouts develop to 5 to 10 cm in diameter and should be picked when firm. Continue control of cabbage worms and other pests. If this control cannot be maintained, remove and destroy or compost the stumps because they serve as a breeding ground for diseases and insect pests.

CAULIFLOWER

Start:	Seeds or seedlings
Germination:	4-7 days, 7°C to 30°C
Seed Life (viability):	5 years
Soil:	Well drained and fertile
Sunlight:	Full sun
Sow Seeds:	5 to 8 cm apart
Transplant Seedlings:	40 to 60 cm apart
Ave. Days to Harvest:	68 to 75
Good Companions:	Beans, Beets, Celery, Chamomile, Dill, Oregano, Yarrow
Bad Companions:	Peas, Potato, Strawberry, Tomato

Sowing & Planting:
The most finicky and difficult of the cole (cabbage family) crops to grow, cauliflower flourishes when temperatures are moderate. Heads will not develop properly in hot or dry weather so timing is crucial. Will tolerate cold as well as other cole crops but mature heads are not resistant to hard freezes.

In addition to tying heads to blanch white-headed varieties, cauliflower requires good soil, timely planting and protection from pests.

This cool-season crop grows best when daytime temperatures are in the range of 15°C to 20°C. Consistent temperatures are key to getting good heads, some cultivars will form small "button" heads if the weather suddenly turns warm following a week or two stretch when high temperatures only reach the 5°C to 10°C range.

For spring crops, sow seeds indoors in seedling trays 4 to 6 weeks before average last frost. Keep soil warm (about 24°C), until germination. Then keep plants around 15°C. Provide direct sun so plants don't get leggy. When plants are 4 to 6 weeks old, transplant into garden 40 to 60 cm apart in rows 60 to 90 cm apart. Wait until soil temperature is 10°C or above and danger of frost is past before transplanting. Direct seeding is more difficult than with other cole crops, especially in spring.

For autumn/winter crops, plant seed in late summer 1 to 2 cm deep, about 8 cm apart. Thin to final spacing's. Cauliflower prefers well-drained, fertile soil high in organic matter, pH 6.0 to 7.5. Can tolerate slightly alkaline soil. Needs plentiful, consistent moisture. Select a site with full sun and well-drained soil. Cauliflower can also tolerate light shade but this will slow maturity. Light shade can be beneficial in warm weather. Prepare the garden bed by using a garden fork or tiller to loosen the soil to a depth of 30 to 40 cm, then mix in a good 5 to 10 cm layer of compost.

Growing:
Apply a good layer of compost again halfway through the season. Plants have shallow root systems though so try and avoid even shallow cultivation. Mulch well to protect roots, reduce weed competition and conserve moisture.

Use floating row covers to help protect from early insect infestations. To help reduce disease, do not plant cauliflowers or other cole crops in the same location more than once every three or four years.

When the curd flower head is 5 to 8 cm in diameter, pull three or four large leaves over the curd and fasten with a rubber band at the tips to shade and blanch the curd. Normal blanching time is 3 to 4 days, but may take much longer in the autumn. Self-blanching types do not require this type of curd covering process.

From tying to harvest may take less than a week in summer or as long as a month in autumn. Too much sun, heat or nitrogen fertilizer during this period can cause "ricey" heads where the curd separates into small, rice-like grains.

Plants started in midsummer for an autumn harvest will withstand light fall frosts and develop superior quality produce with a milder flavour than those that mature in hot weather. Light frosts will control insect pests allowing for fewer insect problems upon harvest.

Harvesting:
Cauliflower should be harvested while the curd is still firm. When it is over-ripe, it becomes grainy or "ricey." When pulling off the curd, don't pull off all of the leaves - leave a row of leaves around the curd to prolong storage quality.

CARROTS

Start:	Seeds
Germination:	7 to 21 days, 10°C to 30°C
Seed Life (viability):	3-5 years
Soil:	Well drained, loose
Sunlight:	Full sun
Sow Seeds:	2.5 to 5 cm apart
Thin to:	5 to 10 cm apart
Ave. Days to Harvest:	65 to 80
Good Companions:	Beans, Celery, Chicory, Chives, Dill, Garlic, Chard, Leeks, Lettuce, Marjoram, Onions, Peas, Peppers, Radish, Rosemary, Tomatoes, Yarrow.
Bad Companions:	Parsnips, Sage

Sowing & Planting:
Good quality carrots require plentiful moisture and a soil that is deep (at least 20-25cm), loose, free of stones and high in organic matter. Roots can become twisted and forked in heavy or stony soil. Carrots prefer a soil with a pH of 6.0 to 6.8 but can tolerate 5.5 to 7.5. They require only moderate nitrogen, too much nitrogen in the soil can also cause root branching and/or 'hairy' roots.

Although carrots can endure summer heat in many areas, they grow best when planted in early spring. Midsummer plantings, that mature quickly in cool autumn weather, produce tender and sweet "baby" carrots that are much prized.

Germination can take up to three weeks and the seedlings may not emerge uniformly. If heavy rains occur after sowing, compacting the soil surface, no seedlings may emerge. Thin the seedlings when they are about 2.5cm tall to no more than three seedlings per 3cm for finger carrots; one or two seedlings per 3cm for carrots that will be harvested young; and one seedling per 5cm for larger varieties that will be allowed to develop to full size. Cutting rather than pulling reduces disturbance of the remaining plants.

Tip: To improve germination in dry weather, make a small furrow about 5cm deep. Sow seed thinly and cover with about 1cm of soil. Cover the furrow with a plank or stiff board to retain the soil moisture until the seeds germinate. You can also sow radishes in the same row. They germinate quickly, break the soil crust, and mark the row. Thin and/or harvest radishes before they compete with carrots. When sowing, mix seed in roughly equal proportions with sand, fine vermiculite, or dried coffee grounds to make it easier to sow evenly.

Growing:
Use a good mulch to keep the soil cool, conserve moisture and to keep any exposed carrot "shoulders" from turning green and bitter. Another option is to hill soil over the shoulders.
Make additional plantings every three weeks through midsummer for a continuous supply and for autumn harvests. Sowing in very early spring is possible, but some varieties will bolt if temperatures are too cold. Plant crops for autumn harvest about 10 to 12 weeks before the first frost.

Root quality is best when soil temperatures are 15-20C. The shape of the root is determined within the first few weeks after germination when the new plant extends its taproot deep into the soil. If it encounters obstacles (such as rocks or high water table) or is damaged, shape and quality of the root will suffer. Young carrot seedlings are weak and grow slowly. It is essential to keep weeds under control for the first few weeks.

To prevent diseases, don't plant carrots in the same spot more than once every 3 years.

Harvesting:
Carrots can be harvested or "pulled" when the roots are at least 1cm in diameter. Under usual conditions, carrot tops may not be strong enough to withstand actually being pulled from the ground and a little digging with a fork to loosen the soil helps to remove the roots without damage.

Finger carrots are usually ready to harvest within 50 to 60 days. Other varieties should be allowed to grow until they have reached a diameter of at least 2cm (about 60 to 70 days after planting). They may then be harvested over a 3 to 4 week period. Summer planted carrots may be left in the ground until a killing frost. Some gardeners place a heavy straw mulch over the row so that carrots can be harvested throughout the winter.

For carrots to be stored, cut off the tops 2cm above the root and place in storage at 0-4°C with a high humidity. Carrots may be placed in a refrigerator, buried in lightly moist sand in an underground cellar or stored in the garden in a pit insulated with straw. Under proper storage conditions, carrots can keep for 4 to 6 months.

CORN / MAIZE

Start:	Direct seed
Germination:	7- 10 days, 15°C to 29°C
Seed Life (viability):	4 - 6 years
Soil:	Well drained, high fertility
Sunlight:	Full sun
Sow Seeds:	3 - 5cm deep with 8cm between seeds in rows 45 - 60cm apart
Transplant/Thin to:	20 - 30cm apart
Ave. Days to Harvest:	75 - 120
Good Companions:	Amaranth, beans, eggplant, cucumber, dill, globe artichoke, lettuce, squash, melons, parsnip, peas, petunia, potato, radish, sunflower
Bad Companions:	Beetroot, celery, tomato

Sowing & Planting:
Corn requires rich, fertile soil. Add plenty of compost or well rotted manure in autumn. Consider planting a legume cover crop, the season before planting corn, to help meet the nutrient needs of this heavy feeder. Make first planting after last frost date. Soil should be at least 18°C for fast germination (corn will not germinate if soil temperature is less than 12°C). To speed increase in soil temperature, consider covering soil with black plastic for several weeks before planting.

Plant in blocks of at least 4 rows (as opposed to planting fewer and longer rows) to ensure good pollination and well-filled ears. Plant seeds 3 - 5cm deep with 8cm between seeds in rows 45 - 60cm apart. Thin to 20 - 30cm spacing's when the plants are 10 to 15cm tall. Increase seeding rates to ensure a good stand if soils are cold.

For a sequential harvest, make first planting using an early variety. Two weeks later plant another block of an early variety, plus blocks of mid- and late-season varieties. Continue making plantings until early to mid-summer, depending on the length of your growing season.

Growing:
Corn plants have many roots close to the surface so cultivate around them with care. You can hill soil up around the base of plants as they grow to bury any small weeds in the row and to give the corn a better foothold.

After the soil has warmed you can mulch corn to help suppress weeds and retain moisture. It is not necessary to remove suckers (side sprouts growing from the base of the plant), studies show that removing them may actually reduce yields.

Corn is a heavy feeder - particularly of nitrogen - and may require several side dressings of fertilizer for best yields. Look for signs of nutrient deficiency, purple-tinged leaves are a sign of phosphorus deficiency and pale green leaves are a sign of nitrogen deficiency.

For miniature or baby corn, plant seeds 10 - 20cm apart and harvest as the silks emerge from the ear or harvest secondary ears from normally spaced plantings, allowing the main ear to fully mature.

Harvesting:
Of all the vegetables grown, corn is the one most often harvested too late. With corn, it is essential to pick it at the right time to get the best quality and flavour. Corn also starts to lose its quality quickly after it is harvested.

Within 24 hours after being picked most corn loses more than half its natural sugars by converting them to starch. Ideally, you should harvest your corn at the time you are ready to cook it.

Check sweet corn for ripeness when the silks have turned brown but are still damp to the touch. Pull back the husk partially and puncture a kernel. If a clear liquid spurts out, the corn is not ready. If a milky liquid spurts out, it is ready and should be picked immediately! If no liquid emerges then the corn is past its prime.

Beware however, that though pulling back the husks is a reliable method of checking for ripeness, it does have a major disadvantage if the corn is still immature when you do the checking. Once you open an immature ear, it becomes susceptible to insect and other pests as it continues to ripen. Attack by birds also becomes more likely.

With a little experience and practice you'll be able to judge the ripeness of corn fairly accurately, just by feeling the ends of the ears and not have to worry about that problem.

CUCUMBERS

Start:	Seeds or seedlings
Germination:	3 to 10 days, 15°C to 35°C
Seed Life (viability):	5 years
Soil:	Well drained, high fertility
Sunlight:	Full sun, part shade
Sow Seeds:	5 cm apart
Transplant/Thin to:	20 cm apart
Ave. Days to Harvest:	50 to 65
Good Companions:	Beans, Beetroot, Cabbages, Celery, Dill, Fennel, Garlic, Lettuce, Onion, Peas, Sweetcorn, Yarrow
Bad Companions:	Kohlrabi, Potato

Sowing & Planting:
Cucumbers require well-drained, fertile soil, high in organic matter and with a near-neutral pH. Consistent and plentiful moisture is needed, especially when fruit is ripening.

Most cucumbers are vining varieties and can climb up to 2m with support, or hug the ground if allowed to sprawl.

Cucumbers are very sensitive to cold. They need warm soil and air, whether direct-seeded or transplanted. Don’t rush to plant too early. Seed will not germinate if soil temperature is below 10 C and only germinates slowly at 18 C.

Direct-seed 2.5cm to 3cm deep, either in rows (5cm apart in rows 1.5 - 1.8m apart) or in hills (3 to 6 seeds per hill, hills spaced 90cm to 1.5m apart). Thin to 25 to 30cm apart in rows or 2 to 3 plants per hill. Snip off plants when thinning (rather than pulling the seedlings) to avoid disturbing the roots of nearby plants.

For early crops, use black plastic sheet mulch and row covers or other protection to speed warming and to protect plants. Direct seed into holes in the plastic. Cucumbers seeded into black plastic usually produce larger yields, as well earlier ones.

For extra early crops, start plants inside about 3 to 5 weeks before transplanting. Sow 3 seeds per pot in 10cm pots. Thin to one or two plants per pot. Grow above 21 C during the day and above 15 C at night. Be careful when hardening-off plants not to expose them to cold temperatures.

Plants with one or two true leaves transplant best. Transplant into black plastic mulch or warm garden soil after all danger of frost has passed and weather has settled. Be careful not to damage roots when transplanting. If using row covers, remove when the flowers begin to blossom to assure good pollination.

Growing:
For a continuous harvest, make successive plantings every 2 to 3 weeks until about 3 months before first frost date. About 1 month before first frost, start pinching off new flowers so that the plants channel all their energy into ripening the existing fruit.

To save space, train cucumbers up a trellis or a 'tee-pee' (make sure the trellised plants don't shade other sun-loving plants). This also increases air circulation (reducing disease problems), makes harvesting easier and produces straighter fruit. Set up the trellis before planting or transplanting to avoid root injury. Pinch back vines that extend beyond the trellis to encourage lateral growth.

Tip: Most cucumbers have both male and female flowers. The male flowers often blossom first, sometimes as much as two to three weeks before any female flowers start to appear. You will recognise the female flowers once they finally blossom, as they form on the ends of the immature fruits and, once pollinated, then fall off as the fruit develops.

Cucumbers are heavy feeders and require fertile soil, nitrogen rich fertilizer and/or additions of high-N organic matter sources. Pale, yellowish leaves indicate a nitrogen deficiency. Leaf bronzing is a sign of potassium deficiency.

To reduce pests and diseases, do not plant cucumbers where you have grown them in the previous two years. Choose resistant varieties to prevent many diseases and/or trellis vining varieties to encourage good air circulation.

Harvesting:
Generally, the time to harvest for cucumbers is approximately sixty to seventy days from planting to harvest. Cucumbers can be picked at anytime there is fruit, of course depending on the cucumber variety and the use of the fruit (pickling or salads etc). Cucumbers should be picked early in the morning and refrigerated immediately. The larger a cucumber gets, the more of its flavour is lost, becoming bitter and unpalatable. Cucumbers that have turned yellow are long past their peak.

Once the first cucumbers are ready to be harvested, cut the vine about 1cm above the fruit. Harvest all of the vegetables before maturity to ensure quality fruits and higher yields. If cucumbers are allowed to mature and turn yellow on the vine, the plant will stop producing. During harvest time, cucumbers should be picked at least every other day, with daily harvesting being ideal.

EGGPLANT / AUBERGINE / BRINJAL

Start:	Seeds or seedlings
Germination:	7 to 10 days, 20°C to 35°C
Seed Life (viability):	4 years
Soil:	Well drained, high fertility
Sunlight:	Full sun, part shade
Sow Seeds:	0.5 cm deep in seed trays
Thin to:	60 - 70 cm apart
Ave. Days to Harvest:	75 to 140
Good Companions:	Amaranth, Beans, Catnip, Marjoram, Tarragon, Yarrow
Bad Companions:	

Sowing & Planting:
Eggplants, also called Aubergines or Brinjals, prefer a fertile, well-drained, slightly acid soil that is high in organic matter for the best growth and yield, but will tolerate a much broader range of soil types as well. They have moderate to high moisture needs and require a long, warm growing season.

Start the seeds indoors about 6 weeks before last frost date (or about 8 weeks before expected transplanting). Sow the seeds 1/2cm deep in seed trays. Keep the soil quite warm (about 20-25C if possible) until the seeds have germinated. Eggplant seeds will not germinate in a cool soil.

Wait until the weather has settled, all chance of frost has passed and the soil is at least 15C before transplanting. Cool conditions can weaken young plants and frost will kill them. Harden off the seedlings carefully before transplanting them outdoors.

Eggplants are very cold-sensitive vegetables so consider using raised beds or black plastic mulch to warm the soil and speed early-season growth. If using organic mulches to help retain moisture, do not apply until the soil has warmed. Transplant out at 45-50cm apart in rows 75-90cm apart. Small fruited, miniature and dwarf varieties can be transplanted out at 20-30cm apart.

Growing:
Use row covers to help protect the transplanted seedlings from cool, early season weather as well as to protect the succulent young plants from harmful insects. If the growing season is too cool, fruit set may be inconsistent. Give the plants support and feed every 14 days with an organic fertiliser. Eggplants are heavy feeders but avoid high-nitrogen fertilizers which may encourage lush foliage growth at the expense of fruit.

Tip: Tap the flowers daily to assist pollination.

At the end of the growing season, pinch off any blossoms 2 to 4 weeks before the first expected frost so that the plants channel all their remaining energy into ripening the existing fruit and not producing new ones. To help reduce disease, do not plant eggplants or other tomato-family crops in the same location more than once every three or four years.

Harvesting:
Harvest the fruits after they develop their colour but before they lose their glossy shine. Size is not always an indication of maturity. To test, hold the eggplant in your palm and gently press it with your thumb. If the flesh presses in but bounces back, it is ready for harvesting. If the flesh is hard and does not give, the eggplant is immature and too young to harvest. If the thumb

indentation remains, the eggplant to over mature and may be completely brown inside and bitter with large tough seeds. Many eggplant varieties have small prickly thorns on the stem and calyx, so exercise caution or wear gloves when harvesting.

Eggplants bruise easily so harvest gently. Always cut the eggplant with the cap and some of the stem attached. Eggplants do not like cool temperatures so they do not store well. Harvest and use them immediately for the best flavour. If you must store them, wrap them in plastic and store for 1 to 2 days in the refrigerator. Be careful as it will soon develop soft brown spots and become bitter. Use them while the stem and cap are still greenish and rather fresh-looking.

KALE

Start:	Seeds or seedlings
Germination:	4-7 days, 7°C to 30°C
Seed Life (viability):	4 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	3 cm apart
Transplant Seedlings:	30 to 45 cm apart
Ave. Days to Harvest:	55 to 75
Good Companions:	Basil, Beans, Dill, Garlic, Hyssop, Lettuce, Marigold, Mint, Onion, Radish, Rosemary, Sage, Thyme, Tomato
Bad Companions:	Grapes, Rue

Sowing & Planting:
The tender young leaves from these fast-growing plants can be eaten raw or cooked for soup or stir fries. Very cold hardy, kale will continue to grow even through snow. Prefers full sun in spring and autumn but can benefit from light shade during hot weather. Kale prefers well-drained, fertile soil high in organic matter, pH 6.0 to 7.5. Can tolerate slightly alkaline soil. Prefers plentiful and consistent moisture. Can tolerate drought but quality and flavour of leaves suffer.

Direct seed about three months before expected first frost. Plant seeds 0.5 to 1 cm deep, 3 cm apart in rows 45 to 75 cm apart. Thin to 30 to 45 cm spacing's. Eat or transplant the thinnings. Similar to cabbage and other cole crops, you can also set out transplants in spring 4 to 6 weeks before average last frost, 30 cm apart, rows 45 to 60 cm apart.

Growing:
Older plants with smooth leaves can be coarse. As plants mature and the lower leaves are harvested, the plants begin to look less like a clump and start to resemble small palm trees with a cluster of leaves at the top of a long stem.

Kale doesn't seem to be as troubled by pests as most other cole crops. Use floating row covers to help protect from early insect infestations. To help reduce disease, do not plant kale or other cole crops in the same location more than once every three or four years.

Harvesting:
Kale is a hearty vegetable that prefers the cold weather and if cared for correctly can produce a surplus of leaves throughout every season, including the winter. The time frame for harvesting kale is a personal decision loosely based on flavour preferences. For those that require a lighter side to kale's taste, younger leaves will suffice. For those that like the more pungent and bold flavour of kale the matured leaves of fall are preferable.

Harvest your kale immediately after the first frost. Frost actually enhances the flavour of kale, and for plants that were sown in the spring, their autumn maturity will allow them to survive through winter. Pick what you need throughout the season.

Kale can be harvested soon after the plants begin to grow leaves. Younger leaves can be a tasty addition to some salads and the more mature leaves become more flavourful as they grow. Protect your kale with a thick layer of mulch if you wish to continue harvesting throughout the winter. Since kale prefers colder temperatures, their flavours become intensified in the winter.

Remove the outer leaves of the Kale plant, as it matures, for a continuous cycle of growth. The centre of the kale plant containing the bud will continue to produce fresh leaves when the outer ones are removed. By following this rule of thumb you can expect a vast amount of kale production to suit your needs. Choose leaves that are bright green and fresh, as opposed to yellowed leaves, when harvesting kale for eating. The yellowish leaves can produce an undesirable taste and their limp appearance may be unappetizing.

KOHLRABI

Start:	Seed or seedling
Germination:	4 - 7 days, 7°C to 30°C
Seed Life (viability):	4 years
Soil:	Well drained, fertile
Sunlight:	Full sun
Sow Seeds:	3cm apart
Transplant/Thin to:	15cm apart
Ave. Days to Harvest:	50 - 60
Good Companions:	Asparagus, bush beans, beetroot, celery, leek, lettuce, onion, pea, potato, radish, spinach
Bad Companions:	Cucumber, tomato

This cool-season cole crop produces a turnip-flavoured swollen stem in as little as 6 weeks. In addition to spring crops, you can tuck in transplants or sow seeds anywhere that space becomes available in summer

Sowing & Growing:
Prefers well-drained, fertile soil high in organic matter and with a pH 6.0 to 7.5. Can tolerate slightly alkaline soil. This heavy feeder also needs plentiful, consistent moisture. Prefers cooler weather but is sensitive to extreme cold. Even a brief exposure to freezing temperatures can cause plants to bolt. A week of temperatures below 10°C can also induce flowering.

Begin direct-seeding about a month before last frost. Plant about 1cm deep and 3cm apart in rows 30cm apart. Thin to about 15cm spacing's. For autumn harvests, transplant or direct-seed into the garden in summer as space becomes available. Crops planted midsummer for autumn harvest generally have fewer insect problems and are a less bitter flavour.

Harvesting:
The edible portion of kohlrabi is the rounded, swollen stem that develops just above the soil line. Harvest kohlrabi when the stem widens to 5cm. The fruit will become tough and fibrous if allowed to mature too much.

LEEKS

Start:	Seeds or seedlings
Germination:	5 - 7 days, 7°C to 35°C
Seed Life (viability):	3 years
Soil:	Well drained, high fertility
Sunlight:	Full sun, part shade
Sow Seeds:	3 cm apart
Transplant Seedlings:	12 to 15 cm apart
Ave. Days to Harvest:	50 to 75
Good Companions:	Cabbage, carrot, celery, endive, kohlrabi, lettuce, pepper, strawberry, tomato, yarrow
Bad Companions:	Beans, beetroot, onion, peas

Sowing & Planting:
Leeks are milder flavoured than most other onion-family crops and you can mulch long-season varieties in fall for winter and spring harvest. Choose a weed-free, well-drained location with rich soil, high in organic matter. Optimum pH is 6.2 to 6.8. Requires plentiful, even moisture for good yields. Raised beds are ideal. Leeks are good for intercropping with other garden plants, especially early-maturing spring greens. Do not plant where other onion family crops have been grown in the past 3 years.

You can direct-seed leeks or start seedlings indoors. Long-season varieties are best started indoors. Start seedlings about 8 to 10 weeks before last frost date. Sow seeds in flats about 0.5 cm apart and 1 cm deep. Transplant to cell-type containers when they are about 5 cm tall. If you skip this step and continue growing in open flats, simply tease apart and trim roots when transplanting into the garden.

Around the average last day of frost, set hardened-off transplants 10 to 20 cm deep, 10 to 15 cm apart, in rows 50 cm apart. Deep planting reduces the need for hilling to blanch the base of the plants. Transplants should be about 15 to 30 cm tall - the bigger, the better. Only a few centimetres of leaf need to show above the soil. An easy method of transplanting leeks is to use a piece of an old broom handle (about 2cm diameter) to make your planting holes about 15cm deep. Drop a leek seedling into a hole and, instead of filling the hole with soil by hand, simply water in well with a watering can. Let the water wash the soil down around the roots. The leeks will then grow out to fill the rest of the hole.

Direct seed about 4 weeks before average last frost 1 cm deep, 1 cm apart, in rows 50 cm apart. Thin to 10 to 15 cm apart.

Growing:
Hill or mound soil around stems several times to blanch as leeks grow (a single large hilling while plants are young can cause them to rot). Or place a portion of cardboard paper towel centre around the lower part of the stem. Leeks have shallow root systems and need consistent moisture and good weed control. Water weekly if the weather is dry and mulch well to retain moisture and suppress weeds.

Harvesting:
Leeks are easy to harvest. They have a relatively long growing season, meaning you can harvest leeks all summer long in some areas. After the harvest begins, prolong it by only picking the leeks you plan to use, allowing the rest to continue growing.

<u>When to Harvest</u> - Leeks are typically harvested during late summer or early autumn. In practice, leek harvesting can begin about 60 days after planting and continue until the harvest is complete, or the weather makes further harvest unfeasible. Be aware of the weather and fully harvest all remaining leeks ahead of the first hard freeze.

<u>How to Harvest</u> - Vegetable garden leeks should be removed whole. If you grip the top of the plant and pull, it is likely to break, and much of the leeks will be lost. Instead, loosen the soil with your fingers and lift out the leeks by their root systems.

<u>Prolong Harvest for Soil Protection</u> - You can continue growing leeks until the first hard frost kills them back. By harvesting slowly, you allow the un-harvested leeks to grow larger and more flavourful. Only pick what you need until the danger of a freeze prompts completing the full harvest.

LETTUCE

Start:	Seeds or seedlings
Germination:	7 to 14 days, 5°C to 30°C
Seed Life (viability):	3-4 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	1 cm apart
Transplant/Thin to:	15 - 25 cm apart
Ave. Days to Harvest:	25 to 75
Good Companions:	Asparagus, Beans, Beetroot, Cabbages, Carrots, Celery, Cucumber, Dill, Fennel, Kohlrabi, Leeks, Mint, Onions, Peas, Pumpkins, Radish, Strawberry, Sweetcorn, Tomatoes, Yarrow
Bad Companions:	Parsley, Parsnip

Sowing & Planting:
Lettuce is adaptable to many growing conditions, but likes it cool - around 15 C to 18 C. Generally, better results will be obtained by growing during the cooler months. Lettuce grows best in full sun, though excessive heat can cause plants to bolt to seed, or leaves to wilt.

Tip: South African full sun, especially during summer, is generally too hot for lettuce production and they should be grown under shade - 30 to 40% shade cloth would be ideal. Also, if growing during hot summer conditions, be sure to keep the top few centimetres of soil moist at all times (a good mulch helps). Lettuces are very shallow rooted plants and even a few hours of dry soil will send the plants into survival mode (i.e. they will bolt / go to seed).

For an early start, seeds can be started in seed trays 4 weeks prior to the last frost and transplanted outdoors in early to mid-spring.

Lettuce is tolerant of a wide range of soils, but prefers well-drained, cool, loose soil with plentiful moisture and pH 6.2 to 6.8. To encourage tender and tasty growth, make sure location is rich in organic compost matter. Amend prior to planting if needed.

Direct seed or transplant in early spring, as soon as you can work the soil. Prepare beds by working in manure or compost and raking smooth to leave a fine seedbed. Seeds need light to germinate; sow at a very shallow depth (best to sow on top of the soil and then cover with a thin sprinkling of growing medium).

Direct-seeding: Sow seed 2-3mm deep, 2.5cm apart in rows 30 to 45cm apart. When plants have two or three true leaves, thin to 30cm spacing's for crisp-head varieties, 15 to 25cm for other types. You can also lightly broadcast seed (particularly of loose-leaf varieties) in a patch instead of a row.

Transplants: Sow in seed trays 3 to 4 weeks before transplanting outside. Harden seedlings for 3-5 days before transplanting.

Growing:
Use row covers or cloches to protect very early plantings from cold, to protect young plants from insects and (supported by hoops) to shade crops when warm weather arrives.

Make succession plantings every week or two, and grow several varieties with different maturity dates for a continuous supply. Lack of moisture, stress and high temperatures, particularly at night, encourage bolting. As the season progresses, plant more bolt-resistant varieties. Locate plants where they will be partially shaded by taller nearby plants, latticework or other screen.

Mulch to retain moisture and to suppress weeds. Fertilizing can be helpful to promote faster growth, especially a fish emulsion type that is not high in nitrogen that can cause greens to become bitter. Water lightly but consistently.

Harvesting:
Many varieties of lettuce can be harvested as micro-greens, baby greens, leaves, or the entire plant. Ideally, greens should be collected early in the day, before the onset of midday sun, to prevent wilting.

Micro-greens are usually harvested within 2 weeks after germination by cutting the entire plant just above the ground, once it is around 10cm tall.

Baby greens are harvested between 28 and 35 days after germination. Loose-leaf, butterhead and romaine types can typically be harvested as baby greens, while iceberg lettuce is not suitable as baby greens.

Mature leaves can be harvested from all types of lettuce, except for iceberg, any time in the growing cycle, until a central stem begins to form. This indicates that the plant is preparing to bolt to seed and greens collected from such plants are often too bitter for consumption.

Entire plants can be harvested in mid-development while the leaves are still plump and tender, but before a stem has started to form. Many varieties of loose-leaf lettuce can be harvested numerous times during a single growing season.

Some other general guidelines when harvesting the entire plant: Leaf lettuce can be cut as soon as it is large enough to use, usually in 50 to 60 days from planting. Cutting every other plant at the ground will give remaining plants more space for growth.

Romaine and Butterhead lettuce can be harvested in about 60 to 70 days from planting.

Iceberg (crisp-head) varieties take longer and should be harvested as soon as a head develops but before outer leaves turn brown. If seed stalks appear, pick the lettuce immediately and store in the refrigerator to prevent bitterness.

To store lettuce, first wash it well by immersing in water and swishing it around. Place it in a colander and rinse then drip dry. When it is dry, place it in a plastic bag in the refrigerator or wrap in paper towels and place in a bowl in the refrigerator. Avoid storing lettuce with apples, pears or bananas as they release a natural ripening agent that will cause brown spots and the leaves will decay quickly.

MELONS

Start:	Seed or seedling
Germination:	3 - 5 days, 15°C to 35°C
Seed Life (viability):	4 years
Soil:	High fertility
Sunlight:	Full sun
Sow Seeds:	30cm apart
Transplant/Thin to:	120 - 180cm apart
Ave. Days to Harvest:	65 - 86
Good Companions:	Petunia, radish, corn, yarrow
Bad Companions:	

Sowing & Planting:
Melons prefer warm, well-drained soil, high in organic matter with a pH 6.5 to 7.5. Consistent and plentiful moisture is needed until fruit is about the size of a tennis ball. Soil temperatures below 10°C inhibit growth. If you have a long, hot growing season then direct-seed straight into the garden. To ensure ripening in areas with shorter growing seasons and cooler weather, choose fast-maturing varieties, start plants inside, use black plastic mulch to warm the soil and use fabric row covers to protect plants.

Direct-seed 1 to 2 weeks after average last frost when soil is 20°C or warmer. Plant 1cm deep, 6 seeds per hill, hills 120 - 180cm apart; or 30cm apart in rows 150cm apart. You can plant at closer spacing's if the plants are trellised. Thin to 2 to 3 plants per hill.

For transplanting, sow seeds indoors 5mm deep in pots (5cm square or bigger), 2 to 4 weeks before setting out. Plants should have one or two true leaves when transplanted. Transplant at same spacing's as direct-seeded crops. Transplants are delicate and roots are sensitive to disturbance. If you need to thin, use scissors so as not to disturb the roots of remaining plants. Keep the soil intact around the plant when transplanting.

Growing:
Mulch plants after soil has warmed to help maintain consistent moisture and suppress weeds. If using fabric row covers, remove them at flowering to allow pollination by bees. Good pollination is critical to fruit set.

Plants require consistent moisture until pollination. Once fruits are about the size of a tennis ball, only water if the soil is dry and leaves show signs of wilting. To prevent insect damage to developing fruits, place melons on pots or pieces of wood up off the soil. If growing melons on a trellis, support fruit with slings made from netting, fabric, or pantyhose. Trellising improves air circulation around plants and can help reduce foliar disease problems. Choose small-fruited varieties and reduce plant spacing.

To reduce insect and disease problems, avoid planting cucumber family crops (melons, squash, pumpkins) in the same spot two years in a row.

Harvesting:
Harvest muskmelon or cantaloupe when the stem pulls easily and cleanly from the fruit. If the stem has to be removed forcibly from the melon it is not fully mature. In addition, mature muskmelons have a distinct, musky aroma and the end opposite the stem should be slightly soft.

MUSTARD GREENS

Start:	Seeds or seedlings
Germination:	4-7 days, 7°C to 30°C
Seed Life (viability):	4 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	3 cm apart
Transplant Seedlings:	15 to 45 cm apart
Ave. Days to Harvest:	35 to 65
Good Companions:	Cabbage, Cauliflower, Radish, Brussels sprouts

Sowing & Planting:
This cool-season green adds a peppery zing to salads and also makes an attractive addition to ornamental plantings. Some varieties have contrasting white or purple stems and veins or have crinkled or savoyed leaves.

When plants bolt (i.e. go to seed), harvest the flowers and seedpods for salads too. Mustards will benefit from some shading during warm weather. They prefer well-drained, fertile soil high in organic matter, pH 6.0 to 7.5. Can tolerate slightly alkaline

soil. Needs plentiful, consistent moisture. Mustard and mustard greens can be grown most of the year round, except during the very coldest periods of mid-winter and the very hottest periods of mid-summer.

Sow seeds 0.5 to 1 cm deep, 3 cm apart in rows 15 to 20 cm apart. Thin to 15 cm spacing's for smaller varieties or up to 45 cm for large ones. Plant every 2 weeks for continuous harvests. Some plantings may bolt quickly in response to increasing temperatures and day length. High temperatures and lack of moisture increase the peppery taste.

Growing:
Use floating row covers to help protect from early insect infestations. To help reduce disease, do not plant mustards or other cole crops in the same location more than once every three or four years.

Harvesting:
The leaves and leaf stalks are eaten. The seeds can be ground and used as a condiment. Pick off individual leaves as they grow, or cut the entire plant at ground level. Harvest when the leaves are young and tender; in summer, the texture may become tough and the flavour strong. Harvest the entire crop when some of the plants start to go to seed.

ONIONS

Start:	Seeds or seedlings
Germination:	4 - 5 days, 7°C to 35°C
Seed Life (viability):	1 year
Soil:	Well drained, high fertility
Sunlight:	Full sun
Sow Seeds:	1 cm apart
Transplant Seedlings:	10 cm apart
Ave. Days to Harvest:	65 to 75
Good Companions:	Beetroot, carrot, chamomile, cucumber, dill, kohlrabi, lettuce, pepper, savory, strawberry, yarrow, zucchini
Bad Companions:	Beans, leek, parsley, parsnip, peas, potato, tomato

Sowing & Planting:
Whether harvested early for bunching onions/scallions (green or 'spring' onions), for summer meals or for winter storage, onions need rich, well-drained soil and good weed control. Tightly spaced green onions fit well in ornamental plantings. Onions require plentiful, even moisture for good yields.

Onions can be direct-seeded, grown from seedlings started inside, or from sets (small bulbs about 1 cm in diameter grown from seed the previous season). Choose a weed-free, well-drained location. Raised beds are ideal.

Onions are good for intercropping with other garden plants, especially early-maturing spring greens. Do not plant where other onion family crops have been grown in the past 3 years. Direct-seeding in the garden may not allow enough time for long-season varieties to mature but is fine for shorter-season varieties or for bunching onions/scallions - green onions harvested before the bulb forms.

Direct-seed in early spring when the soil reaches 10°C. Plant seed 0.5 cm deep, 1 cm apart, in rows 30 to 45 cm apart. Thin to 10 cm spacing's for large bulbs, 5 cm spacing's for smaller bulbs but higher yields, or 3 cm spacing's for scallions.

Start transplants inside about 8 to 10 weeks before last frost date. Plant 4 or 5 seeds in each cell, or sow in flats 0.5 cm deep and 1 cm apart. If tops grow too tall and begin to droop, trim back to about 8 cm tall with scissors. After hardening off, transplant 2 to 4 weeks before last frost date. Space 10 cm apart for large bulbs, 5 cm apart for smaller bulbs, or 3 cm apart for scallions.

From sets: Choose bulbs no larger than 2 cm in diameter. Large bulbs are more prone to bolting. Plant sets about 3 cm deep 2 to 4 weeks before last frost date. Space 10 cm apart for large bulbs or 5 cm apart for smaller bulbs.

Growing:
Onions have shallow root systems and need consistent moisture and good weed control. Water weekly if the weather is dry and mulch well to retain moisture and suppress weeds. Onions usually do not flower unless grown from sets that are too large (more than 1 to 2 cm in diameter) or if young plants (direct seeded or transplanted) are stressed by abnormally cold weather.

Harvesting:
You can always tell when onions have stopped growing. The leaves will lose their colour, weaken at the top of the bulb and flop over. Each year a few new gardeners watch the leaves die and wonder "What's wrong?" There's nothing wrong, it's just nature's plan. The leaves' job is done - they've put the last of their energy into the bulbs. Let most of your onion tops fall over by themselves - maybe 80% or 90% of them - then bend over the rest of the tops. Once they're down, leave the bulbs in the ground for another 10 days to two weeks to mature fully.

It's not good to leave the onions in the ground for longer than two weeks after the tops die because they become open to organisms that can cause rot in storage, or they might even start growing again.

Pull your onions up on a sunny day if you can and let them sit in the sun for another day or so to dry (in hot climates this usually takes just a few hours). This drying kills the root system at the bottom of each bulb. The roots will be like little brittle wires when they're dry. Picking the right day to pull the onions can determine how well the onions will keep. If you harvest them after some rainy weather they'll have a lot more moisture in them and won't dry out as well.

PEAS

Start:	Seeds
Germination:	9 - 13 days, 5°C to 30°C
Seed Life (viability):	3 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	3 to 10 cm apart
Transplant/Thin to:	3 to 10 cm apart
Ave. Days to Harvest:	54 to 72
Good Companions:	Beans, beets, cabbages, carrots, corn, cucumber, dill, fennel, lettuce, sage, yarrow
Bad Companions:	Cauliflower, garlic, leek, onion, potato, shallots, tomato

Note: Snap peas, also known as sugar snap peas, are a cultivar group of edible-podded peas that differ from snow peas in that their pods are round as opposed to flat. The name mangetout (French for "eat all") can apply both to snap peas and snow peas. The snow pea pod is eaten flat, while in sugar/snap peas, the pod becomes cylindrical, but is eaten while still crisp, before the seeds inside develop fully.

Garden peas are also known as 'shelling' peas and only the pea seeds themselves are eaten after shelling.

Sowing & Planting:
Like sweet corn, peas are at their tastiest immediately after harvest. Whether you choose shell or edible-pod peas, they grow best during cooler weather (early spring and late autumn/early winter) when temperatures are between 15°C to 20°C. Yields best in full sun.

Prefers well-drained soil, average fertility, high in organic matter with pH 6.0 to 7.0. Widely adapted, but prefers cool, damp weather. Good soil structure is important. Avoid compacting soil by working it when it's still too wet. Leafless varieties have particularly fine texture.

Sow seed direct. Peas planted in cold soil (5°C) are slow to germinate. Later plantings made when the soil is warmer (15°C or more) often catch up quickly with earlier plantings. Use raised beds if your soil is slow to drain. Make additional plantings early in the season, or plant varieties with different maturity dates to increase the harvest period.

Plant seeds 3 to 5 cm deep, 3 to 10 cm apart in rows 45 cm apart. Shallow planting is best when soils are cool and wet. Plant deeper if soil is dry. A quick way to sow seed is to make a furrow or trench with a hoe, place seed in the furrow, cover and firm. Do not thin.

Growing:
Erect a trellis for tall-growing, vining types at planting using chicken wire, brush or other suitable trellis material. If trellising, increase row spacing to 1.2 to 1.8 m. Keep soil moist, but avoid heavy watering during flowering, which can interfere with pollination.

Intercrop peas with fast-growing cool-season crops such as spinach or radishes. Sow autumn crops about 8 to 10 weeks before first frost date. Autumn crops can be disappointing if hot weather persists. Powdery-mildew-resistant varieties are best for autumn crops.

Do not use high-nitrogen fertilizers. Too much nitrogen will result in lush foliage but poor flowering and fruiting. Do not plant peas in the same place more than once in every 4 years. Avoid planting where in places where peas have suffered before from root rot

Harvesting:
Pea pods usually measure anywhere from 4 to 15 cm. They are best harvested when they are slightly immature as this will give you the sweetest taste. The peas that are ready first will be located at the bottom of the plant and once they are ready start picking because this will encourage the plant to produce more. You will know they are ready when the pod looks green, shiny, and puffy and you pinch the pod you can feel fully formed round fruit.

To pick peas hold on to the pod with one hand and vine with the other and tug it off. They tend to want to hold on to the vine so make sure you don't tug the vine out of the ground. If you are growing snow or snap peas, make sure to pick them before the peas inside the pod fill out as their sweetness diminishes as the seed grows. Snow peas should be harvested when the pods are still flat.

Peas quickly lose their sweetness after harvesting so make sure to use them immediately. If you don't need them right away make sure to freeze them to preserve their flavour.

PEPPERS & CHILLIS

Start:	Seeds or seedlings
Germination:	7 to 25 days, 20°C to 35°C
Seed Life (viability):	3-4 years
Soil:	Well drained
Sunlight:	Full sun
Sow Seeds:	45 - 60 cm apart
Thin to:	45 - 60 cm apart
Ave. Days to Harvest:	65 to 100
Good Companions:	Basil, Carrots, Chives, Garlic, Leeks, Marjoram, Onion, Oregano, Tomatoes, Yarrow
Bad Companions:	Fennel, Kohlrabi

Sowing & Planting:
Peppers are a long, warm season crop and are best started indoors about 8 weeks before the last frost is expected. Sow seeds ½ cm deep in a well-drained starting medium. Seeds require a warm environment to germinate; your growing medium should be between 20 - 35°C with 30°C being the ideal. Additionally, young starts will fare much better with additional light. Place in a window or sunny location that receives lots of sun exposure. Consider supplementing with artificial lighting if possible.

Transplant seedlings 2 to 3 weeks after the last frost when the soil has warmed and the weather has settled. Peppers can be temperamental when it comes to setting fruit if temperatures are too hot or too cool. Night time temperatures below 15°C or above 23°C can reduce fruit set.

Tip: Wait until soil temperatures exceed 10°C at all times before placing into the ground. Pepper plants can be fairly close to one another, so that there is slight contact between plants.

Growing:
Peppers need a steady supply of water for best performance but be careful not to overwater. A well drained soil will prevent water logging. If fertilizing, be careful not to overdo it on nitrogen as this will give you nice lush and leafy plants but will deter fruit growth. Organic fertilizers and soil should be rich in phosphorus, potassium and calcium.

Mulching with black plastic or similar material is a good way to maintain heat and soil moisture. Additionally, floating row covers over your beds can help to protect against cold early in the growing season. Use caution when using row covers not to overheat plants and cause them to drop their blossoms.

Tip: Stake tall varieties for earlier and heavier harvest.

Harvesting:
You can pick bell type peppers, when they are smaller, in the beginning of summer. They may be taken from when they are the size of a golf ball and frequent picking will encourage near-continuous fruit production. Immature bell peppers are soft and pliable with thin pale walls.

Otherwise, take fully mature bell peppers when they are 10 to 12cm long and have full, well-formed lobes. The older the fruit is, the thicker the skin will be.

Tip: Allow peppers to ripen to their final colour later in the season to get fruit of different colours. Ripe peppers may be yellow, red, orange or purple, depending on the variety. You can continue to harvest peppers right up until the first frost.

RADISH

Start:	Seed or seedling
Germination:	3 - 4 days, 13°C to 30°C
Seed Life (viability):	4 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	2 - 3cm apart
Transplant/Thin to:	5cm apart
Ave. Days to Harvest:	30 - 60
Good Companions:	Beans, beetroot, chard, lettuce, melons, parsley, parsnip, peas, peppers, squashes, spinach, strawberry, corn, tomato
Bad Companions:	Potato

Probably the quickest and easiest crop to grow, ready to harvest in just 3 to 6 weeks. Make plantings of cool-season radishes every week or two for a continuous harvest until hot weather hits.

Sowing & Planting:
Radishes grow best in cool (10°C to 18°C), moist weather. Hot weather reduces quality and increases pungency. Late plantings may bolt before edible root forms.

About 3 to 6 weeks before average last frost, direct seed 1cm deep, 2-3cm apart, in rows 30cm apart. Thin to about 5cm spacing's. Crowded plants may not produce high-quality roots. Use the thinnings in salads. For a continuous harvest, make

additional plantings every 1 to 2 weeks until temperatures average in the early 20's. Resume planting when weather cools again in the autumn.

In mild climate regions radishes can be planted throughout the year. Plant most winter varieties so that they mature around the first winter frost date (frost improves flavour and texture of most winter varieties). Larger winter varieties need more space than spring varieties so thin to about 15cm spacing's depending on the variety.

Can be sown in the same row with carrots, parsley, parsnips and other slow germinating crops. The radishes help to break soil crust for the weaker and later-germinating crops.

Growing:
Keep the soil moist for uninterrupted growth and best quality. Adding nitrogen fertilizer or nitrogen rich manure close to planting may produce lush tops and small roots. Because they mature quickly, radishes make a good intercrop along with slower growing crops, such as other cabbage family crops, tomato or squash family crops. Or follow a radish harvest with summer succession crops such as beans, or autumn-harvested crops.

To help reduce disease, do not plant radishes or other cole crops in the same location more than once every three or four years.

Harvesting:
The time from planting to harvest is 20 to 30 days for spring radishes, 50 to 60 days for winter radishes. Simply pull up the whole plant when the radishes are the right size.

SPINACH

Start:	Seeds or seedlings
Germination:	6 - 10 days, 5°C to 24°C
Seed Life (viability):	2 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	3 cm apart
Transplant Seedlings:	10 - 15 cm apart
Ave. Days to Harvest:	50 to 60
Good Companions:	Beans, beetroot, cabbage, cauliflower, celery, kohlrabi, potato, radish, rhubarb, strawberry, tomato

Sowing & Planting:
This easy-to-grow, nutritious, cool-season crop is among the first greens ready to harvest. But plant it early because it's quick to turn bitter and bolt (go to seed) as the weather warms and the days lengthen.

Sow seed 1cm deep, 3cm apart in rows 30 to 45cm apart (or broadcast seed across a wider area). Thin to 10 - 15cm spacing's. Closer spacing's can stress the plants and cause them to go to bolt sooner. Early planting is critical as dry soil, heat and lengthening days also encourage bolting. Later plantings will benefit from some light shade.

Follow early plantings with warm-season crops such as tomatoes or beans. Make succession plantings every week or two until the average last frost date. Sow again in mid- to late summer (under shade) for an autumn harvest. Seeds do not germinate well in warm soil so increase seeding rate to compensate. Or pre-germinate seeds by placing them between sheets of moist paper towel in a plastic bag and refrigerating until they sprout. Spinach seedlings are difficult to transplant.

Growing:
Spinach is shallow-rooted and requires consistent moisture to prevent bolting. Water regularly to keep the soil moist. Mulch well after the plants are established to maintain moisture and to suppress weeds. Use floating row covers to prevent insect damage. Do not over fertilize with nitrogen. Only apply supplemental fertilizer if leaves are pale green. Add lime to make sure pH is at least 6.0. You should suspect that your soil is too acid if germination is poor and leaf tips and margins are yellow or brown.

Harvesting:
Spinach is ready for use as soon as it is an edible size and it must be harvested before there is extensive yellowing, breakage and other leaf deterioration or the development of seed-stalks. Spinach for market is usually cut below the crown with a knife, taking care to keep the plants clean and to prevent undue breakage or bruising of the leaves. If spinach is slightly wilted when packed, it will be less subject to breakage.

SQUASH (SUMMER)

Start:	Seed or seedling
Germination:	5 - 10 days, 15°C to 40°C
Seed Life (viability):	6 years
Soil:	Well drained, high fertility
Sunlight:	Full sun
Sow Seeds:	10cm apart in rows 120 - 150cm apart
Transplant/Thin to:	30 - 50cm apart
Ave. Days to Harvest:	50 - 60
Good Companions:	Beans, lettuce, marjoram, nasturtium, peas, petunia, radish, sunflower, corn, yarrow
Bad Companions:	Potato, sage

Most varieties of summer squash grow on compact, bushy vines in contrast to the sprawling vines of most winter squash and pumpkins. Summer squashes also differ from the winter squashes, not by the season that they are grown in (they are both grown during the warm summer season by the way) but rather by the stage that they are harvested and by the type of skin that they have.

Winter squashes are left on the plant to mature and to develop their thick, hard skins (like pumpkins and butternuts). The Summer squashes on the other hand, are harvested when they are still immature and when their skin is still soft and tender (patty pans and courgettes / zucchini are summer squashes).

Sowing & Planting:
Summer Squashes prefer well-drained, fertile, loose soil, high in organic matter with pH between 5.8 and 6.8. Plentiful and consistent moisture is needed from the time plants emerge until fruits begin to fill out. Summer Squashes like warm soil and are very sensitive to frost so don't be in a rush to plant too early in spring. Wait until all danger of frost has passed and the soil has warmed to about 20 C, or about 2 weeks after the last frost date.

Direct seed 2-2.5cm deep into hills or rows. Sow 4 to 5 seeds per hill and space hills 90cm to 1.2m apart. When the plants are 5 to 7cm tall, thin to 2 to 3 plants per hill by snipping off unwanted plants without disturbing the roots of the remaining ones. In rows, sow seeds 10cm apart in rows 120cm to 150cm apart and thin to one plant every 30 to 50cm.

For early crops, start inside in 10cm pots, 3 to 4 weeks before transplanting outside. Sow 3 or 4 seeds per pot and thin to one or two plants by snipping off the weaker plants to avoid damaging the roots of those that remain. Harden off seedlings for 3-5 days before transplanting. For an extra early first harvest, use black plastic mulch to warm the soil before direct seeding or transplanting.

Growing:
Use row covers to protect plants early in the season and to prevent any insect problems. Remove the covers before flowering, to allow pollination by insects, or as soon as hot weather arrives.

Tip: Squash plants have both male and female flowers. The male flowers often blossom first, sometimes as much as two to three weeks before any female flowers start to appear. You will recognise the female flowers once they finally blossom, as they form on the ends of the immature fruits and, once pollinated, then fall off as the fruit develops. The first fruits can sometimes be wrinkled, turn black or rot due to poor pollination.

Mulching the plants will help retain moisture in the soil and suppress weeds. Mounding soil around the base of the plants can discourage squash borers from laying eggs. Scan for pests every time you go out into the garden. The cucumber beetle and the squash bug are the two most common ones to look for. The cucumber beetle usually appears late in the growing season and may damage the mature fruit. Squash bugs begin to infest the vines as soon as the blossoms appear. They are usually in large groups and can damage the plant and the mature fruit. Mildew can also be a problem on squash plants. A copper soap spray or a homemade solution of 1 part milk to 10 parts water will help to keep mildew at bay.

At the end of the season, remove all of the vines to reduce the chances of any mildew spreading.

Harvesting:
Courgettes, summer crookneck and patty pan are the most common varieties of squash grown in the summer garden. These members of the squash family are prolific producers. They normally begin to produce about 50 days after germination and it is important to know when to harvest to ensure that you have a steady supply, throughout the season.

Summer squash varieties are usually harvested when the fruits are still immature. Whilst winter varieties mature on the vine and develop a tough skin to facilitate better winter storage, summer squash that are allowed to grow until large and gourd-like are really not good to eat. Check your squashes as soon as you notice the plant blooming.

Summer Squashes grow very fast and are sometimes ready to pick only a few days after the flowers start to bloom. Check your garden every day after that, because once the plant starts to producing, it continues steadily throughout the growing season. The more you pick, the more it will produce. For this reason, you may want to consider having only a few plants of each variety, unless you intend to feed the whole neighbourhood. If you miss a day or two of harvesting, and end up with larger squash, grate them and make bread with it or scoop it out and fill it with your favourite stuffing to bake.

Remove the squashes by cutting them from the vine with a sharp knife. They have very thin skins and bruise easily, so handle them gently. Wearing gloves is advisable, as the stalks may scratch or irritate your hands.

Store your Summer Squashes in the refrigerator, unwashed. Moisture encourages decay of fresh vegetables, so place them in a plastic bag in the vegetable crisper. If you have a large amount, place them in a plastic bag and handle them as little as possible to prevent bruising the delicate skin. They'll stay fresh for 3 to 5 days, under the proper storage conditions.

Tip: Consider harvesting the squash flowers, which are completely edible and are used in a variety of recipes, as well as eaten raw in salads. Although both male and female flowers are edible, it makes sense to only pick the males and leave the females to produce the fruit (leaving enough male flowers to ensure pollination of course). Gather them when the petals are open, leaving about an inch of stem intact. Use them within a day because they deteriorate rapidly once picked. They may last a few days longer if you rinse them and store them in ice water in the refrigerator.

SQUASH (WINTER)

Start:	Seed or seedling
Germination:	5 - 10 days, 15°C to 40°C
Seed Life (viability):	6 years
Soil:	Well drained, high fertility
Sunlight:	Full sun
Sow Seeds:	15 - 30cm apart
Transplant/Thin to:	45 - 90cm apart
Ave. Days to Harvest:	90 - 100
Good Companions:	Beans, lettuce, marjoram, nasturtium, peas, petunia, radish, sunflower, corn, yarrow
Bad Companions:	Potato, sage

Winter squashes differ from the summer squashes, not by the season that they are grown in (they are both grown during the warm summer season by the way) but rather by the stage that they are harvested and by the type of skin that they have.

Winter squashes are left on the plant to mature and to develop their thick, hard skins (like pumpkins and butternuts). The Summer squashes on the other hand, are harvested when they are still immature and when their skin is still soft and tender (patty pans and courgettes / zucchini are summer squashes).

In addition to the familiar butternut, pumpkin and acorn squashes, winter squash varieties come in a staggering diversity of fruit size, shape and colour.

Sowing & Planting:
Winter squashes like warm soil and are very sensitive to frost so don't be in a rush to plant too early in spring. Wait until danger of frost has passed and soil has warmed to about 21°C, or about 2 weeks after the last frost date. Unless you are trying to grow a long-season variety in an area that gets early frosts there's really no need to start winter squash inside. Instead, direct seed 1 to 3cm deep into hills (which warm and drain earlier in the season) or rows. Sow 4 to 5 seeds per hill. Space hills about 120 to 240cm apart, depending on the size of the fruit, the larger the expected size of the squash, the larger the vine and the farther apart you should space the hills).

When the plants are 5 to 8cm tall, thin to 2 to 3 plants per hill by snipping off unwanted plants without disturbing the roots of the remaining ones. In rows, sow seeds 15 to 30cm apart in rows 120 to 240cm apart. Snip off plants to thin to one plant every 45 to 90cm.

If you need to start plants early, plant inside in 5 to 10cm pots or cells 3 to 4 weeks before transplanting outside. Sow 3 or 4 seeds per pot and thin to one or two plants by snipping off the weaker plants to avoid damaging the roots of those that remain. Harden off by cutting back on water and reducing temperature before transplanting. Plant transplants out in the garden, at the same final spacing's as above, after all danger of frost has passed.

Growing:
Use row covers to protect plants early in the season and to prevent any insect problems. Remove the covers before flowering, to allow pollination by insects, or as soon as hot weather arrives.

Tip: Squash plants have both male and female flowers. The male flowers often blossom first, sometimes as much as two to three weeks before any female flowers start to appear. You will recognise the female flowers once they finally blossom as they form on the ends of the immature fruits and, once pollinated, then fall off as the fruit develops. The first fruits can sometimes be wrinkled, turn black or rot due to poor pollination.

Mulching the plants will help retain moisture in the soil and suppress weeds. Mounding soil around the base of the plants can discourage squash borers from laying eggs. Scan for pests every time you go out into the garden. Squash bugs begin to infest the vines as soon as the blossoms appear. They are usually in large groups and can damage the plant and the mature fruit.

Check with your local garden centre or nursery for the proper course of treatment for these pests because the sooner you get rid of them, the healthier your squash plants will be. Mildew can also be a problem on squash plants. A copper soap spray or a homemade solution of 1 part milk to 10 parts water will help to keep mildew at bay.

At the end of the season, remove all of the vines to reduce the chances of any mildew spreading.

Harvesting:
When the stems turn a light green-yellow colour the squash should be fully ripe. The rind will be thick and tough. Cut, do not pull, the ripe fruit from the plant. 5 to 8cm of stem must remain for proper storing. This may also help increase the sugar content.

SWISS CHARD

Start:	Seeds or seedlings
Germination:	5 - 7 days, 5°C to 35°C
Seed Life (viability):	4 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	5 - 15 cm apart
Transplant Seedlings:	15 - 30 cm apart
Ave. Days to Harvest:	57 to 64
Good Companions:	Beans, beetroot, cabbage, cauliflower, celery, kohlrabi, potato, radish, rhubarb, strawberry, tomato

Sowing & Planting:
Grown for its tasty and nutritious leaves and leafstalks (petioles), chard is a good substitute for spinach in most recipes. Prefers cool weather, but lasts through summer without going to seed (bolting). Colourful leaves and petioles make it great for edible landscaping and ornamental plantings.

Start planting about 2 to 3 weeks before last expected frost. Sow seeds 1 to 2cm deep, 5 to 15cm apart, in rows 45 to 60cm apart. Like beets, a chard "seed ball" produces more than one plant, and so will require thinning. Thin to 15 to 30cm spacing's. If you plan to harvest whole plants then make succession plantings throughout the late summer.

Growing:
Mulch the plants well to retain moisture and suppress weeds. As the plants age, older leaves can get a bit tough. Cut the plants back to about 10 to 15cm tall to encourage a flush of new, tender growth.

Harvesting:
You can begin harvesting when leaves reach usable size. Remove a leaf or two from each plant, or cut plants an inch or two above the soil for cut-and-come-again harvest. Avoid damaging the growing point in the centre of the plant at harvest.

Chard will be ready for harvest in 55 to 60 days from sowing. Pick outside leaves as early as 10cm long but before leaves grow to 25cm long. Older leaves will have an earthy flavour. Harvest chard on a cut-and-come-again schedule; remove a few outside leaves at time. If you harvest the whole plant, cut it back to about 8cm above the soil and it will grow back. Chard that over winters can be harvested again the second year.

TOMATOES

Start:	Seeds or seedlings
Germination:	6 to 14 days, 20°C to 35°C
Seed Life (viability):	4-7 years
Soil:	Well drained
Sunlight:	Full sun
Sow Seeds:	45 - 90 cm apart
Transplant/Thin to:	45 - 90 cm apart
Ave. Days to Harvest:	60 to 85
Good Companions:	Asparagus, Basil, Beans, Borage, Carrots, Celery, Chicory, Endive, Garlic, Leeks, Lettuce, Mint, Parsley, Peppers, Radish, Spinach, Sweetcorn, Yarrow
Bad Companions:	Beetroot, Broccoli, Brussels Sprouts, Cauliflower, Dill, Fennel, Onion, Parsnip, Peas, Potatoes, Rosemary

Sowing & Planting:
Sow tomato seeds 1/2cm deep in seed trays about 6 - 8 weeks before the last frost is expected. As soon as the seedlings emerge, they need full sunlight to grow sturdy. Lack of sunlight causes the seedlings to grow "leggy".

Tip: To help your seedlings grow sturdy, place a small fan on low nearby. Or, lightly brush the tops of the plants with your hands a couple times each day.

Transplant when seedling is 20cm - 25cm tall and dark green with a stocky stem and a well-developed, healthy root system. Harden off your seedlings (place them outdoors for longer periods each day to help them adjust to the outdoors) before transplanting them. Once the night time temperatures are consistently above 10°C, place the seedlings outside for the entire day and night.

Tomatoes need lots of sun so you would need to select an area that receives full sun. Prepare the soil by adding compost since tomatoes prefer soil that is rich in organic matter.

Transplant seedlings about 45cm - 90cm apart (depending on whether it is a bush type or a vine type). If you plant the tomato plant deeply, you will encourage the growth of the roots. It is okay to cover the lower branches of your seedling as long as you allow the top four branches to remain above the surface of the ground. To minimize transplant shock, avoid disturbing the roots.

Growing:
Determinate (bush) and Semi-Determinate (semi-bush) varieties will need to be staked. Place a stake or tomato cage next to each plant. As the tomato plant grows, secure it loosely with soft twine. Check the ties periodically as the plant grows and adjust them accordingly. If the tie becomes too restrictive, loosen it. Even better would be to use flexible ties or simply cut up strips of old pantyhose and use that instead.

In-Determinate (vine) varieties will need to be grown on a trellis and can sometimes grow to over 3 meters if left unchecked. Whilst it is not necessary to prune determinate (bush) types, it can be beneficial to do so with indeterminate (vining) types. Once the plant has reached a reasonable height (remember, you still need to harvest the fruit at the top), pinch out the growing tips to increase lateral growth. You also don't want the plant becoming too 'bushy' as this will restrict the airflow making the plant more susceptible to diseases. Prune by pinching out all the suckers that grow in the "crotch" of where the main branches meet the stem.

Keep your tomato plant well watered. Deep watering is preferable, over more frequent, light watering. You want moisture to go deep to all the roots of the plant. Water directly to the roots and keep water off the leaves if at all possible. Tomatoes that grow in wet, humid conditions are far more susceptible to plant diseases. Uniform watering is also the key to nice fruit. Even watering can prevent leaf-end roll, blossom end-rot and "cat-facing" - those misshapen crags and cracks on the stem end of the fruit.

Cold and hot spells will affect fruit development and growth. Fruit set will not occur below 12 degrees or above 32°C.

Harvesting:
For optimal flavour, tomatoes should be allowed to ripen fully on the vine but harvested before they begin to soften. Tomatoes store well in a cool, dry location. Do not put them in the refrigerator. While they last longer in the refrigerator, they will lose their flavour and texture. Keep them out of direct sunlight.

Just before the first frost, pick any remaining tomatoes while they are still green or orange. Wash them thoroughly. Rinse in a light solution of water and bleach (mix at 1 tablespoon of bleach to 4 litres of water). This kills off the bacteria that rot the fruit. Allow them to dry and then put them in a cool, dry, dark place. To ripen these tomatoes indoors, bring a couple at a time to a warm, sunny window.

TURNIP

Start:	Seed or seedling
Germination:	4 - 7 days, 4°C to 30°C
Seed Life (viability):	4 years
Soil:	Well drained
Sunlight:	Full sun, part shade
Sow Seeds:	3cm apart
Transplant/Thin to:	10 - 15cm apart
Ave. Days to Harvest:	50 - 60
Good Companions:	Peas

Fast-growing spring turnip crops are best harvested while the weather is still cool. The flavour of autumn crops is improved by light frost. Don't forget the greens which are delightful raw or cooked.

Sowing & Planting:
Prefers well-drained, fertile soil high in organic matter and with a pH 6.0 to 7.5. Can tolerate slightly alkaline soil. Needs plentiful, consistent moisture. Loosen soil deeply or grow in raised beds to encourage good root development. Will tolerate less-than-ideal conditions but poor soil will slow growth and hurt quality and flavour.

From early spring to late summer, sow seeds 5mm to 1cm deep, 3cm apart in rows 30 to 45cm apart. Thin plants to 10 to 15cm spacing's. Plant every 2 weeks for continuous harvest. Quality and flavour are best if harvested when whether is cool.

Growing:
Use floating row cover to protect crop from early pests. To help reduce disease, do not plant turnips or other cole crops in the same location more than once every three or four years.

Harvesting:
Harvest turnips from one to two months after sowing seeds. Harvest turnip leaves for greens before the roots are ready. Cut the outer leaves, refrigerate unwashed and use as soon as you can. Leave some greens on top to keep root alive. Loosen the soil around turnip roots when they reach 5 to 8cm wide. Pull roots from the soil and twist off the tops, leaving about 1cm of stem. Store turnips in a cool damp place, unwashed, for up to three months.