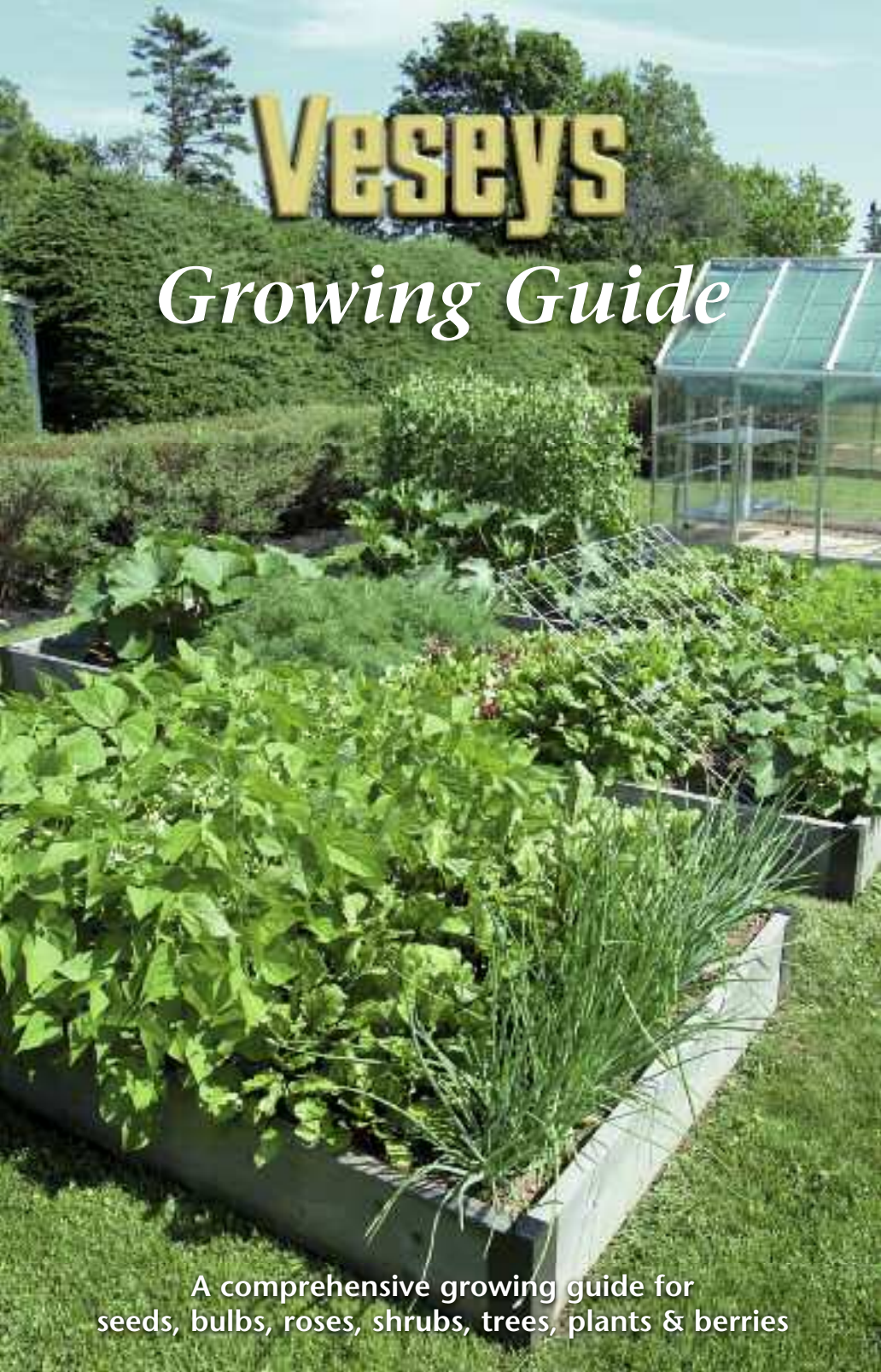


Veseys

Growing Guide



A comprehensive growing guide for
seeds, bulbs, roses, shrubs, trees, plants & berries

STARTING SEEDS



Starting Indoors

It is important to first determine when and which seeds need to be started indoors. Check packages or this planting guide for growing instructions. Once you have determined what plants you need to start inside, you can then think of the pots, containers, soil and amount of room you are going to need to get growing!

Soil

When starting seeds indoors, a soilless, pre-mixed growing medium is the most convenient to use. Soilless mixes are generally made up of peat, perlite (improves drainage) and vermiculite (aids in water retention) along with some nutrients. These mixes are, for the most part, free from disease, insects and weed seeds.

Sowing

Follow the instructions on the back of the package or in this planting guide. Some large seeds, such as watermelon or squash seeds can be seeded directly into the pot where they will grow until transplanting outdoors. Small seeds can be scattered thinly over soil surface. After germination, the tiny seedlings can be separated and transplanted into larger containers. Light levels during germination can be important with some flower seed varieties. For example petunias and impatiens seed should not be covered with soil and require light to sprout. Some seeds, such as pansies and geraniums, require total darkness. In that case, cover the flat or container with black plastic and check everyday. As soon as seedlings are visible remove plastic and place the flat in bright light. Most plants can be grown in fiber packs with 4-8 seedlings per pack, depending on the plant. Some vegetables, such as lettuce and the cabbage family, can be sown directly in 1" cells with one plant per cell. Growing in cell packs helps to eliminate root disturbance at the time of transplanting.

Soil temperature refers to the ideal temperature required to initiate germination. Most seeds germinate at a soil temperature of 18-22°C. Keeping the temperature within this range can be hard, especially for seeds like peppers, which take more than a week to germinate. Regular air

temperature is generally warmer than the soil temperature, and is not sufficient enough to warm the soil. For best results try using a propagation mat, heating cable or hotbed. A really warm room, such as a furnace room, may be suitable, depending on the seed.

Soil moisture is equally as important as temperature. The seed needs water to help soften the seed coat and stimulate root development. Once the root has penetrated into the soil, the young seedling emerges from the soil towards the light. If the soil is allowed to dry during this process, the germination will be delayed or, in most cases, ended. To keep the soil moist, mix the growing medium with water, enough so that if a handful is squeezed, a small dribble of water will run out. After mixing, sow your seeds accordingly and then cover the containers with clear plastic; this can be anything from freezer bags, plastic wrap, or the clear domes which come with some of the large holding trays. Using the plastic covering will help to keep the moisture and humidity in the soil. If you find the soil dries out due to the constant heat, use a water bottle which will provide a fine mist or watering can with a gentle nozzle, so as not to disturb or bury the seed deeper. After germination, be sure to remove the plastic and place plants under grow lights in a bright, south-facing window.

After Germination

Lighting is critical when starting plants indoors. Without sufficient light, the plants will become tall and leggy, which in turn will make them prone to bending and breaking. When growing plants indoors, make sure you have at least a bright south facing window along with an adjustable fluorescent light suspended from the ceiling, or use a table top or shelf style of lighting stand to hang over the seedlings. Young seedlings will require 16 hours of light and the plants must be 3-4" from the lights at all times for proper growth. Feeding plants, whether they are in the garden or growing as transplants indoors, is important. You will need to start fertilizing young seedlings with a mild or small dose of a balanced fertilizer. Some fertilizers include fish emulsion, compost tea and blended fertilizers such as 20-20-20 or 15-30-15. Whichever fertilizer you



use, be sure to dilute to half the strength for the first few feedings and then gradually work up to full strength. Feed plants weekly.

Watering: When watering new seedlings it is very important to follow some simple guidelines to avoid the spread of diseases that can attack and destroy newly emerging plants. The most common disease is known as "damping off" which can attack a seed before it germinates but is best recognized as rot at the base of the plant causing irreparable wilt. The following instructions will help you maintain a healthy crop by providing a disease resistant growing environment.

DO: Use sterile, well-draining soil and containers. Sterilize old containers in a very mild bleach solution. Use fresh, pH neutral soil. Use containers with proper drainage holes and water plants from the bottom. Provide good air circulation at all times. Sprinkle a thin layer of sand or perlite on surface to keep stems dry at the base by absorbing excess moisture.

AVOID: Acidic soil. Watering from the top. Transplanting or taking cuttings when soil is wet. Excess watering. Letting the soil dry out completely. High humidity. Over crowding of seedlings. Crowns that are below soil level.

Moving Outdoors

Most vegetables and flowers require at least 8 hours of light each day. This light should be the morning sun from sunrise till noon, as this is the time of day when plants put on the most growth. A full sun area with a good southern exposure is ideal. Select a site which is close to the garden shed or barn, a water source and one that is not too far from the house.

Preparing the Garden

Getting the garden soil prepared is one of the most important chores of gardening. This planting guide makes reference to adding organic matter, either in the form of compost or well rotted manure, to the garden prior to planting. Organic matter helps to loosen or fluff up the soil to allow for better water and air movements, attracts beneficial soil organisms such as worms and bacteria and supplies a slow release source of essential nutrients. It is recom-

mended to add 2-4" layer of organic matter and then incorporate by mixing to a 6-8" depth. For some home gardeners, large amounts of compost or even manure may not be readily available. Some alternatives which can be purchased at garden centers include peat moss, composted sheep or cattle manure, topsoil and compost.

The best use of space in the garden is to prepare raised beds which are usually 3-4 feet wide and can be any length. The width is important because of the bending and stretching you will have to do to work in the garden. Raised beds have other benefits as well. The soil warms up faster, has better drainage and has a deeper tilth for growing root crops like carrots and potatoes.

Fertilizers

Garden fertilizers come in all types, including organic and inorganic. Organic fertilizers come from a natural source like bone meal or green sand. These fertilizers release the nutrients slowly over a long period of time and often contain many micro-nutrients essential for plant growth. Inorganic fertilizers are manufactured, provide a quick boost to the plant and may or may not have any micro-nutrients in their makeup. However, both types of fertilizer can work in the garden soil as long as they are applied according to instructions so as to prevent a toxicity or deficiency in the soil. Compost has some nutritional value but is primarily used to add organic matter, improving the structure and quality of any soil.

Liquid fertilizers are used as a supplement food for plants during the growing season. Most plants benefit from regular feedings of a water soluble fertilizer such as Raingrow® organic fertilizer, compost tea or a granular type like Plant Prod 20-20-20. Follow instructions for the frequency of feeding. *Tip: Epsom salts are made up of a magnesium compound; plants use magnesium to help take up other essential nutrients such as nitrogen.*

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with shredded bark mulch no thicker than 2". Keep mulch away from stems and crowns to prevent rotting. A winter mulch can be applied to protect newly planted or tender perennials.

Backyard Composting

Composting will bring many rewards to both you and your garden. Kitchen scraps add up quickly and reduce the overall garbage waste going to landfills.

Begin this pile in the fall, start by gathering up some old twigs or branches or corn stalks for the base. Next, get a piece of perforated PVC pipe about 5-6 feet in length and drive it down into the bottom layer. Build the rest of the pile around the pipe; it serves to provide an air source to the middle of the pile. On top of the first layer of brush, add 6" of leaves or straw, topped with 2" of kitchen scraps or grass clipping or weeds. Then add a 2-3" layer of fresh manure, garden soil or previously made compost. Continue to layer starting with straw or leaves, until the pile is of a manageable height or until your materials run out. A good sized compost pile is about 3 feet by 3 feet and 3-5 feet tall. Be sure to water each layer as you build the pile and water afterwards, if the pile is drying out.

A heap made this way will take about 1 year to break down. If you would like the compost sooner you can mix the pile every so often. Preformed compost bins are also available for purchase. 🌱

Planting Time

Most gardeners wait until 'after the risk of all frost' to plant their gardens. Frost dates are very specific for each region. Know your area; low-lying gardens will tend to get the first frosts. Another indication of when to plant is once the soil warms up to 65°F (18°C), or when small weed seedlings start to emerge from the soil. Some varieties of seed can be planted as soon as the ground can be worked in the spring. Check seed packages for planting times.

Seeding and Transplanting

When direct seeding, overseed to ensure you will have sufficient germination. After germination, thin seedlings to the desired spacing.

For direct seeding, follow the instructions on the back of the package. A trick for direct seeding outside when the conditions are hot and dry, is to plant in the evening. Open the drill and water the soil, plant the seed and then cover the seed over. This usually works well for summer planting to ensure rapid and even germination. Perennials and other flowers seeded in the garden frequently fail to germinate properly because the surface of the soil cakes and prevents entry of water. To avoid this, sow the seeds in vermiculite-filled furrows. Don't let the seeds dry out or your seeds will die. Keep seedlings covered with a shade cloth or remay blanket while they are young and tender to prevent sun burn or breakage from wind, animals, etc.

Transplant tomatoes, peppers or any other transplant to its specified spacing.

As with any new plant introduced to the garden, watering is very important so they can establish a good root system. Be very vigilant about weeds so they don't take over or compete with your new seedlings. Mulching plants helps to conserve and hold moisture in the soil, retards weed growth and, depending on the crop, keeps the soil warm or cool. Various types of mulches include straw, leaves, grass clippings or a thick layer of compost. Black plastic mulches are used to draw heat into the soil for crops like tomatoes, peppers and melons, which love a long warm season. Flower beds are generally mulched

Common Seed Germination Problems & Solutions

Seeds are planted too deep - We list this problem first, because many seeds end up too deep in the soil, and never see the light of day. Before planting, check the seed packet or this Growing Guide. Make sure to plant the seeds no deeper than the depth indicated. For tiny or fine seeds (and pelleted seed), we usually recommend to sow them on top of the soil, and then water them carefully so that they settle into the soil.

Improper soil conditions - Heavy, compacted soil makes it difficult for young seedlings to emerge into the spring air. If you have clay or other heavy soil, use a light soil or seed starting mix to cover your seeds. A seed starting mix is finer than regular mixes and is recommended for starting seeds inside.

Temperature too cool - Temperature is an important trigger to seeds. Nature causes each type of seed to awaken at a certain temperature, below which they will not sprout. Most flower seed varieties like constant warmth to germinate. We often use an electric heating mat. Raising the soil temperature will increase seed germination rates and decrease germination times. Some varieties like cooler temperature. Windowsills provide widely fluctuating temperatures and are not good locations for starting seeds.

Improper moisture - Seed must be kept consistently moist after planting. We use clear plastic domes over our seed trays to prevent drying out. A little moisture is all that's needed. A lot of water, especially for prolonged periods, causes seeds to rot in the soil. In the garden you can increase drainage by elevating the soil, or using raised beds. This is especially useful in rainy, spring weather.

GROWING VEGETABLES

Artichokes (*Asparagus officinalis*)

Planting: Artichokes need to be started indoors 8 to 10 weeks before last frost. Plant in 3 ½ jiffy pots, as they do not like to have their roots disturbed. Provide warm and moist soil until germination. Plant 1 seed per pot about 1" deep. Once the true leaves have emerged provide regular fertilization once a week to promote fast growth. To grow artichokes as annuals it is very important that they are exposed to 10 days of cool (5-10 C) but not freezing temperatures. This tricks the plant into thinking it has gone through and winter and initiating flower buds. If it is not exposed to cool temperatures it will not form buds until very late in the fall or not at all. This is best accomplished by putting the seedlings outside for a few days in May when the conditions are appropriate. They should not be planted in their final location until all danger of frost has passed. Plants should be spaced 24-30 inches apart.

Growing: Plant in a full sun location. Artichokes love heat so a sheltered location that gets warm during the day would be ideal. pH of 6.0 to 7.0 is desired. Rich soil with lots of organic matter and regular fertilization are required for maximum yield.

Harvesting: Harvest artichoke flower buds just before the scales begin to open up.

Pests & Diseases: Artichokes are relatively pest free.

Asparagus Roots

Asparagus roots can be planted as soon as your soil can be worked. If you must keep them for a short period, wrap them immediately in slightly damp sphagnum moss. Choose an area of your garden that drains well. Start by digging in a generous amount of compost, then dig a trench 10" deep. Form mounds of soil at the bottom of the trench about 12" apart. Set each crown on top of a mound and drape the roots over the mound, like a wig over a head. This enables the roots to establish themselves faster, as they will get even moisture and nutrients. The crowns should be at least 2-3" below the soil surface. Fill in the trench and support with more soil as the stalks begin to grow. Asparagus needs to send energy to the roots during the first couple of years, so don't harvest any spears until the third year. Mulch heavily each year around the spears after they come up to prevent weeds and hold in moisture. Let the tops (ferns) grow and do not prune in the fall. Each spring, cut the old ferns that have died over the winter, pull off the mulch and add more fertilizer or compost. Mulch again when plants have emerged. Harvest thicker spears when 6-8" tall on third and subsequent years. Carefully cut with a knife at soil level.

Asparagus Seed (*Asparagus officinalis*)

Planting: Sow indoors 8 weeks before last frost, ¼" deep at 25°C. Germination will occur in 10-14 days. Sow outdoors, 3 weeks before last frost, ¼-½" 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 into the 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.

Pests & Diseases: Rust is a common disease in *Asparagus*. Use a sulfur spray at the first sign of infection. Growing strong healthy plants or resistant cultivars helps prevent the onset of this disease.

Companions: Basil, calendula, parsley, tomato.

Asparagus Peas (*Lotus tetragonolobus* L.)

Planting: Direct seed after risk of frost has passed. Plant ½ - 1" deep and about 3-4" apart in rows 30" apart.

Growing: Choose a sunny location with well-drained soil and a pH 6.0 -7.0. Asparagus peas are a light feeder, but would benefit from an application of compost or manure.

Harvest: Harvest the small green pods before they reach 1" in length. As they get larger the wings become very tough. Asparagus peas are best served steamed and lightly seasoned so as not to overpower their delicate flavour.

Bush/Dry Beans (*Phaseolus vulgaris*)

Planting: Direct seed after risk of frost when soil warms to 18-24°C. Sow 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 seed, plant thicker and thin to desired density. Use inoculant at the time of planting to help boost soil fertility.*

Growing: Both bean types require a full sun location, soil pH of 6.5-7.5, and well drained soil. Good air circulation around plants is essential, especially for late shelling or dry type beans, as they are very susceptible to fungal diseases which prevail later in the season. Beans are light feeders; compost or well rotted manures worked into the soil at the time of planting is sufficient.

Harvesting: Snap & Fillet Beans: Use maturity days as an indicator. Harvest once the beans are smooth, firm and crisp. Keep plants 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 pods are completely dry and brittle. Cut or pull pods from 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.

Pests & Diseases: Root maggots and cutworms can attack the seed and young seedlings. Foliar disease, both fungal and bacterial, can be slowed by allowing for good air circulation between plants and not over fertilizing. Copper sprays will work to some extent to prevent or prolong the onset of diseases.

Companions: Excellent companion for most vegetables except the onion family, basil, fennel, kohlrabi.

Sowing Rate: 200 seeds/50g will sow a 10' row.

*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.

Broad/Fava Beans (*Vicia faba*)

Planting: Broad and Fava beans can be planted as soon as the soil can be worked. They 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 seed, plant heavier and when sprouted, thin to desired density.

Growing: These 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 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 plant as it grows.

Harvest: Pick beans when pods appear plump.

Lima Beans (*Phaseolus limensis*)

Planting: Direct seed after all danger of frost when the soil reaches 18-24°C. 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 these beans prefer a dry soil and a long, warm growing season. For fertility and soil pH requirements, see regular bush beans.

Harvest: Begin picking once the pods are well filled and beans are still tender. Pick regularly for continual yield.

Pole Beans (*Phaseolus vulgaris*)

Planting: Plant 2" deep on slight hills around poles or teepees spaced at 16" apart. Grow 4-8 seeds on each hill. Space 3" apart if growing on a fence. Sow after all danger of frost has passed and the soil is warm (18°C).

Growing: Choose 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.

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

Companions: Carrot, corn, chard, pea, potato, eggplant. Avoid cabbage & onion families.

Beets (*Beta vulgaris*)

Planting: Sow seeds thinly ½-1" deep, in rows spaced 8-12" apart. Soil temperature should be 18-24°C for optimal germination. Thin seedlings 1" apart for greens and 3" apart for summer use of roots. Plant every two weeks, starting as early as soil can be worked until late June.

Growing: Choose a full sun location. Beets require a light, well-drained, cool soil with pH between 6.5 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 well-watered as drought will result in tough or woody roots.

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

Pests & Diseases: Generally beets are bug free with the possible exception of the Spinach Leaf Miner. Control leaf

spots (*Cercospora*) with a sulfur or copper fungicide at the recommended rates.

Companions: Bush bean, cabbage family, corn, leek, lettuce, onion, radish.

Sowing Rate: Approximately 350-600 seeds/package will plant 25-30' row. 2000 seeds/25g, 4-5kg/acre.

Broccoli (*Brassica oleracea* var. *italica*)

All members of the crucifer family contain indoles which are nitrogen compounds that appear to protect our cells' DNA from carcinogens; hence are anti-cancer vegetables.

Planting: Plant seeds ¼-½" deep. Transplant or thin small plants to 15-18" apart in rows 32-36" apart. 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. Broccoli can be direct seeded up until mid-late June for a continuous harvest. Soil temperature should be 21-26°C for optimal germination in 4-7 days.

Growing: Broccoli prefers full sun, but will tolerate part shade. Prepare a rich, loose soil that holds moisture well and has 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.

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

Pests & Diseases: Cabbage worms and loopers (white and yellow butterflies) can be controlled using BTK, Rotenone or Pyrethrum. Use row covers to block out all insects including root maggots, aphids and Diamondback moths. Maintaining 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 plants growing in an organically rich soil will be better able to fight disease.

Companions: Bush bean, beet, carrot, celery, chard, cucumber, dill, lettuce, onion family, potato, spinach, tomato.

Brussels Sprouts (*Brassica oleracea* var. *gemmifera*)

For Planting and other Cultural information: See Broccoli
Harvest: To encourage development of the upper sprouts, pinch out the growing tip of the plant in late summer. Harvest sprouts as needed from the bottom of the stalk when they are about 1-1½" in diameter. The sprouts will develop a sweeter flavour after a few light frosts.

Cabbage (*Brassica oleracea* var. *capitata*)

For Planting and other Cultural information: See Broccoli
Harvest: 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.

Sowing Rate: Allow 125g/acre if growing transplants; 500g/acre if direct seeding.

Carrots (*Daucus carota* var. *sativa*)

Planting: Sow seed ¼-½" deep. Seed takes 14-21 days to germinate. Planting a few radish seeds helps to loosen the soil and mark the rows for these slow emerging seeds. Thin plants to at least 1" apart in rows spaced 18-24" apart. Sow as soon as ground can be worked. Even mois-

ture and soil temperature (18-24°C) are essential for good germination.

Growing: Carrots are best grown in full sun but will tolerate light shading. Choose deeply-worked, stone free soil with pH of 6.5. Chantenay types are suitable for shallow or heavy soils. Raised beds or rows are recommended. Carrots are light to moderate feeders. Avoid using fresh animal and green manures at the time of planting. Moisture is required for good root formation.

Pests & Diseases: Root maggots and Rust Flies can be deterred by using row covers. Leaf spot and blight diseases (*Cercospora* and *Alternaria*) can be controlled using a sulfur or copper fungicide. Aster Yellows is a disease spread by leaf hoppers. Control these insects by spraying in the evening with insecticidal soap or a pyrethrum product.

Companions: Bean, Brussels sprouts, cabbage, chive, leaf lettuce, leek, onion, pea, pepper, radish, tomato.

Sowing Rate: Approx. 23,000/25g will seed a 100-150' row, 1kg of seed/ acre.

Cauliflower (*Brassica oleracea* var. *botrytis*)

For Planting and other Cultural information: See Broccoli
Harvest: 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.

Sowing Rate: 10,000-12,000 transplants needed/acre.

Celery (*Apium graveolens* var. *dulce*)

Planting: Start indoors 10 weeks before last frost. Soak seed for 24 hours, scatter seeds on soil mix and lightly cover with ¼" of soil, as light is needed for germination along with a soil temperature of 21°C and constant moisture. Celery will take 7-14 days to germinate. When seedlings are about 1" tall, transplant to individual pots. Transplant after all risk of frost, spacing about 6-9" apart in rows 24-32" apart.

Growing: Full sun required. Celery is a heavy feeder and grows best in soil rich in organic matter with 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 flavour.

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

Pests & Diseases: Aster Yellows which is caused by leaf hoppers can cause new growth to be distorted. Spray plants during the evening with an insecticidal soap or pyrethrum product.

Companions: Everything except carrot, parsley, dill and parsnip.

Corn (*Zea mays* var. *rugosa*)

Planting: Corn is wind pollinated, so it must be planted in a block of several rows for even pollination. Sow seed 3-4" apart and about ½"-1" deep in rows 24-32" apart. Thin the 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 in cool soil will set back seedlings, especially if a frost is still possible. Best to plant when the soil has warmed to 21-24°C. Plant several different varieties of varying maturities to ensure a

longer season of harvest.

Growing: Full sun is required. Corn is a heavy feeder and requires fertile, well-drained soil with 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 plants are about knee high, will give corn an added boost in growth. Try bloodmeal, 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.

Harvest: Corn is ready when the ears are completely filled and a pierced kernel shows a milky white liquid. A good sign of readiness is when the silk turns brown and crisp.

Pests & Diseases: To control earworm, apply mineral oil to corn silk as soon as the silk appears. After harvest, remove corn stalks to prevent overwintering of corn borer.

Companions: Bush bean, beet, cabbage, cantaloupe, cucumber, parsley, pea, early potato, pumpkin, squash. Sowing Rate: 50g will seed 100'.



Cucumber (*Cucumis sativus*)

Planting: Sow indoors 3-4 weeks prior to last frost or direct seed after all risk of frost. For indoor planting use 2" square jiffy strip pots and plant 1-2 seeds per square; thin to ensure one plant per pot. Plant seeds ½-1" deep, transplant or space plants 6" apart in rows 4-6" apart. Plants are tender, so soil should be warm (18-24°C) for germination to begin. If growing on a trellis, space plants 18" apart.

Growing: Cucumbers require full sun and soil pH of 6.0-6.8. 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. Plants should not be allowed to wilt. Make sure they are well watered before transplanting. Spread a mulch around plants before they start to vine, to cut down on weeds and conserve moisture. The mulch will also help to keep the fruit clean.

Harvest: Pick slicing cucumbers when they reach 6-8" long; pickling types at 3-5". Keep mature cucumbers picked off the vines to encourage a longer yield. Harvest cucumbers for pickling early in the morning.

Pests & Diseases: Striped or spotted cucumber beetles can emerge from the soil in spring and nibble on the leaves and stems of emerging plants. The beetles spread a bacterial wilt which causes plants to wilt and die before bearing fruit.

Companions: Bush bean, cabbage family, corn, dill, eggplant, lettuce, radish, pea, tomato.

Eggplant (*Solanum melongena* var. *esculentum*)

Planting: Seeds must be started indoors 8-10 weeks prior to last frost. Sow seeds ¼" deep and provide a soil temperature of 24-27°C. Even moisture is essential while the seed is germinating. Germination is slow (up to 2 weeks). Gradually harden off seedlings, but do not allow temperature to go below 15°C. Transplant 18" apart in beds or rows 20-30" apart.

Growing: Heat loving plants 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 pH level of 5.5 to 6.8. Apply compost and well rotted manure along with bonemeal.

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

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

Companions: Bush bean, pea, pepper, potato.

Garlic (*Allium sativum*)

Planting: Spring garlic should be planted as soon as the ground can be worked, so that the bulbs can set out roots early. Each bulb consists of several cloves. Break individual cloves apart from the bulb and plant with the flat root end down, 3" apart, 2" deep with 12-18" row spacing. We also ship fall planting garlic (hard neck) during late summer and fall. The general planting guidelines are similar to that of the spring planted garlic. Plant while the soil is warm in the fall to ensure good root development.

Growing: Garlic prefers full sun and soil pH of 6.0-6.5. It is a light feeder and requires a well prepared, well drained soil. Prior to planting, incorporate some compost. After planting, mulch between the rows, as the shallow roots of this crop do not compete well with weeds. Mulching will also help to conserve moisture. During mid season growth, plants benefit from a nitrogen side dressing, like partially rotted manure, bloodmeal, or a drink of compost tea. For hard neck or fall garlic, be sure to cut off the scape or twisted flower stalk. This will send more energy into producing the bulb.

Harvest: Harvest in late summer or when 75% of the leaves have turned brown. Lift bulbs during dry weather. Cure for 10-14 days in a warm, dark, dry area. After curing, clean roots and cut off the dead foliage. To make garlic braids, the bulbs must be dug and braided while the foliage is still green. Will store for 6-8 months in a dry, cool place.

Companions: Most vegetables, except for beans and peas.

Gourds (*Cucurbita* spp./*Lagenaria siceraria*)

Planting: The small miniature types can be direct seeded after all risk of frost. It is advisable to start larger gourds indoors about 3 weeks before transplanting. Provide a warm soil temperature of 27°C and constant, even moisture. Individual peat pots are ideal since the plant roots will not have to be disturbed at the time of transplanting. Plant outside after all danger of frost in rows, hills or under a sturdy trellis. Rows should be spaced about 5½' apart with plants 45" apart. Fertilizing with a starter fertilizer at time of transplanting is recommended.

Growing: Gourds require full sun, a pH of 6.5-7.5 and good soil moisture, particularly during fruit set. As they are moderate to heavy feeders, they require plenty of compost and well rotted manure worked into the soil prior to planting.

Pests & Diseases: Gourds are not affected with any noteworthy insects or disease problems.

Harvesting: Small ornamental types should have a firm or hard skin. They are ready for harvesting when you are not able to easily puncture the skin with your thumb nail. Large gourds should be pale in colour with a hard skin as well. Cut off the fruit with shears, leaving a 4" stem attached. Handle the fruit with care to prevent bruising. Wash gourds in warm, soapy water and rinse in a strong solution of non-bleaching disinfectant. Dry with a soft cloth and store 4-6 weeks in a well-ventilated room. Hanging is best for maximum air circulation. Check weekly and discard immature or soft gourds. They are cured when thoroughly dry and hard shelled. Wax and polish.

Companions: Celery, corn, melon, onion, radish.

Ground Cherries (*Physalis pruinosa*)

Planting: Ground cherries are slow to get started so they should be started 8 weeks prior to transplanting. Press seeds lightly into soil surface, cover lightly and provide constant moisture and bottom heat. Slower than tomatoes to germinate requiring 10-14 days. Plants will grow to 24" tall and spread 18", so space 24-36" apart after all risk of frost has passed.

Growing: Ground cherries are fairly light feeders so a good application of compost or well-rotted manure at planting should be adequate. Growing though plastic or paper mulch is beneficial as it suppresses weeds and makes the fruit easier to find once it has dropped from the plant.

Harvest: Fruit are ripe when the husks turn brown and drop from the plant. Ground cherries will keep for a number of weeks once picked if left in the husks.

Pests and Diseases: Ground cherries do not have any major pests or diseases.

Kale (*Brassica oleracea* var. *acephala*)

Planting: Plant 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.

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

Harvesting: 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 plant is harvested at one cutting. For a fall crop, wait until the plants are touched by a frost to sweeten the taste.

Pests & Diseases: See Cabbage.

Companions: Bush bean, beet, celery, cucumber, lettuce, onion, potato.

Kohlrabi (*Brassica oleracea* var. *gongyloides*)

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

Growing: See Kale

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

Pests & Diseases: See Broccoli.

Companions: Bush bean, beet, celery, cucumbers, lettuce, onion, potato, tomato.

Leek (*Allium ampeloprasum*)

Planting: Start indoors 8-10 weeks prior to the last frost. Sow seed ¼" deep and provide a soil temperature of 24°C with even moisture. Thin and transplant young seedlings once they reach 2" tall into 2¼" Jiffy pots. Once soil can be worked in the spring, seedlings may be set in a trench about 5" deep, filling in enough soil to cover the roots. Space plants 6" apart in rows 24" apart. Gradually fill the trenches in during the season. Planting this way blanches the shaft. Can be seeded as soon as soil can be worked in spring. As the plants grow be sure to hoe the soil up around the plants during the season to blanch the shaft.

Growing: Leeks prefer full sun and soil pH of 6.0-6.5. They are moderate feeders and require very deep, rich soil. Add compost and well rotted manure prior to planting. Use mulch to conserve moisture and to keep the weeds down. Good soil moisture helps to keep the stems tender and juicy. Water during dry spells.

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

Pests & Diseases: Rarely troubled by pests.

Companions: Bush bean, beet, carrot, celery, garlic, onion, parsley, tomato.

Lettuce and Greens:

Arugula/Roquette (*Eruca vesicaria*)

Planting: Sow seed in early spring, covering lightly with ¼" of soil. Prefers a cool soil temperature for germination (4-13°C). Sow thinly, 1" apart in rows or bands 3" apart. Plant every 2-3 weeks to ensure a constant supply.

Growing: Use an area with full sun to partial shade and soil pH of 6.0-7.0. Arugula will grow well in any rich garden soil.

Harvesting: Begin cutting leaves at 2" tall. Flowers are edible as well.

Pests & Diseases: Flea beetles. Use row covers or interplant with taller companion vegetables to shelter or hide plants.

Companions: Bush bean, beet, carrot, celery, cucumber, lettuce, onion, potato, spinach.

Corn Salad/Mache (*Valerianella locusta*)

Planting: Sow in early spring as you would spinach. Germination is slow and requires a soil temperature of 10-21°C. Plant ¼" deep, 2" apart in rows 12-18". Thin to 2" apart. Reseed every 10-14 days for long season harvest.

Growing: See Arugula

Harvest: Cut or pick rosettes at 2½" high.

Pests & Diseases: Rarely troubled by insects or diseases.



Use row cover to prevent flea beetle damage.

Companions: Other salad greens, lettuce, chard, beets.

Radicchio (*Cichorium intybus*)

Planting: Direct seed as soon as the ground can be worked, or once the soil has warmed to 15-18°C. Provide frost protection when needed. Sow thinly ¼" deep, thin seedling to 8-10" apart in beds or rows 12-18" apart. Grow in the spring and fall for best crop. Stagger seeding every 2 weeks until mid summer to ensure long harvest.

Growing: Radicchio prefers full sun, soil pH of 5.5-6.8, and rich soil with plenty of compost or well rotted manure added prior to planting.

Harvesting: Cut as soon as the heads are firm.

Pests & Diseases: See lettuce.

Companions: Lettuce; avoid planting with endive.

Lettuce - Leaf and Head (*Lactuca sativa*)

Planting: Direct seed in early spring, as seed will germinate between 40-80°F. Sow thinly ¼" deep and 1" apart. Spacing: Leaf types - 6" apart with 12" rows; Iceberg - 12" apart with 18" row spacing; Romaine - 8-10" apart with 12-16" rows and Butterhead/Batavia - 10-12" apart with 12" row spacing. Start transplants indoors 4-6 weeks before last frost date for transplants. Make succession plantings every 1-2 weeks to ensure a constant harvest.

Growing: Choose an area with full sun to partial shade and soil pH of 6.2-6.8. Lettuce is a heavy feeder and prefers a rich, well cultivated soil with good drainage. Some success can be expected even in poor soils using the loose-leaf types. Add plenty of compost or well rotted manure prior to planting. Benefits from regular feedings with a nitrogen rich fertilizer. Mulching is useful to keep soil cool and reduce weeds.

Harvesting: Harvest lettuce early in the morning. Looseleaf types can be picked as soon as leaves are large enough to eat. Harvest head types when they are firm and well wrapped. If your lettuce becomes bitter during warm weather, wash and place in the fridge for a couple of days before eating.

Pests & Diseases: Distract insects by using row covers and companion planting. Rotenone and Tounce will control aphids, plant bugs and leaf hoppers. Slugs cherish lettuce; use slug bait to control slugs.

Companions: Most vegetables, carrot, garlic, onion and radish make the best companions.

Lettuce - Mesclun Mixes

Planting: Direct seed in early spring. Sow thickly in wide rows or in beds. Cover lightly (about ¼ inch deep). Plant

every one to two weeks to insure a constant harvest.

Growing: Same as head/leaf lettuce.

Harvesting: Harvest when plants are 3-4" tall. Simply cut off the leaves above the soil. Under proper conditions the lettuce will regrow and provide a second harvest.

Pests and Diseases: Protect mesclun mixes from flea beetles by using row covers. Slugs can cause problems with lettuce and can be controlled with slug bait.

Companions: Same as head/leaf lettuce.

Greens - Microgreens

Planting/Growing: Sow seeds in a shallow tray of potting mix and cover lightly. About 8 to 9 grams of seed should be enough for an 11" x 21" tray. Keep the soil moist but not wet. Seedlings should be grown in full light to keep them from stretching.

Harvest: Once seedlings have 1 -2 true leaves they are ready for harvest. This can range from 10-20 days depending on the growing conditions and the type of micro green. To harvest cut the seedlings off just above ground level with a sharp knife or scissors. The plants will not regrow, so discard the left over soil and start a new batch.

Pests: Damping off can be a problem with microgreens. Be sure and use fresh potting mix with each batch, do not over water and allow air to circulate around the seedlings.



Melons/Watermelon

Cucumis melo/Citrullus lanatus

Planting: For best results start seed indoors, 4 weeks prior to the last frost. Sow 2-3 seeds ½" deep in 2½" Jiffy strips. Provide a warm soil temperature (24-27°C) and even moisture. Leave the 2 best seedlings in each pot. Transplant outdoors after all risk of frost in rows 4-6' apart with 36" (melons) - 48" (watermelon) between jiffy pots. For direct seeding, wait until all risk of frost has passed and soil has warmed. Sow seed in rows and space properly or sow into mounded 1'x2' hills, leaving 2 plants per hill, with hills spaced at 4-6'. Melons require a bright, warm growing season of about 3 months duration. Row covers or black mulch are highly recommended for extending growing season, to ensure maturity and to increase yield. Seedless varieties must be grown with a seeded variety

for pollination to occur.

Growing: Full sun and sheltered location with 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.

Harvest: 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.

Pests: Monitor for Cucumber beetles; use Rotenone to control beetles. Leaf spots and mildew can be controlled using a sulfur or copper fungicide.

Companions: Corn.

Okra (*Hibiscus esculentus*)

Planting: Soak seeds in warm water for twenty-four hours before planting and keep the soil temperature at 75°F or above. Soil should be fertile and high in potash with a pH of 6.0-6.8. Sow ¼" deep in flats 7-8 weeks before transplanting. Germination may take up to two weeks.

Growing: Transplant 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.

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

Onions & Shallots (*Allium cepa*)

Planting: Plant 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. Sow and cover seed with ½" of soil; keep moist. Onion seeds started indoors 6-8 weeks ahead of transplanting will be earlier, larger and have a better shape than sets and direct seeded onions. Plant 3-4 seeds in a 1 inch cell. Thin to 2 seedlings per cell. Seedlings can be trimmed to 3-4" in height to promote stockier transplants. 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.

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

Harvest: 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.

Pests & Diseases: Storage rot may be the result of diseases encountered during the growing season. Onions should be cured before storing.

Companions: Beet, cabbage family, carrot, kohlrabi, lettuce, parsnip, pepper, spinach, strawberry, tomato, turnip.

Oriental Vegetables

For Pak Choi, And Kasumi, see Broccoli; For Chinese Radish, see Radish.

Parsnip (*Pastinaca sativa*)

Planting: Parsnip seed does not keep well from year to year; use only fresh seed, sowing as early as ground can be worked. Sow seed ½" deep in rows 18-24" apart. Thin to 3 inches apart. Adequate moisture and a cool soil temperature of 15-18°C is essential for good germination which may take up to 21 days.

Growing: Full sun and 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.

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

Pests: Parsnips are fairly pest-free and disease-free, however, they are susceptible to root maggot damage. Use row covers to protect young seedlings early in the season.

Companions: Bush bean, garlic, onion, pea, pepper, potato, radish.

Peas (*Pisum sativum*)

Planting: As peas 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). Sow seed 1 to 1½" deep, 1-2" apart in double rows spaced 3-6" apart with 24" between the next double row. All peas, including dwarf types, are natural climbers; more productive, and not as susceptible to rot, if given some support or planted along a fence or trellis. Seed is offered in both treated and untreated; if using untreated seed, avoid planting in cold, wet, poorly aerated soils, as you risk losing the seed to rot.

Growing: Full sun to partial shade with soil pH of 6.0-7.0. Light feeders 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 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.

Harvest: Harvest when pods are young and tender. Pick regularly to promote continued production.

Pests & Diseases: Prevent root rot and other plant diseases by regular crop rotation.

Companions: Carrot, celery, corn, cucumber, eggplant, early potato, radish, spinach, pepper, turnip.

Sowing Rate: Approx. 125g is required to seed a 30-35' row. Seed 100-150' per acre.

Peppers (*Capsicum annuum*)

Planting: Peppers require a long, warm growing season. Seed should be started indoors in March or 8 weeks prior to transplanting. To start seed indoors, sow 2-3 seeds ¼" deep, in 1x1" cells and provide constant moisture and a soil temperature of 26-29°C. After germination (1-2 weeks), thin seedlings to one per cell. Once seedlings develop 2-3 true leaves, transplant into larger containers (2x2" or 3x3"). At transplanting time, set transplants 18" apart in rows 30" apart.

Growing: Sheltered, full sun area with 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 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. Use black plastic or paper mulch to attract heat, hold water and prevent weeds.



Harvest: Begin harvest when peppers reach a useable size. Cut 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-Fruits blacken and decay at the blossom end due to a calcium deficiency. Poor fruit set is usually due to cold weather. Excessive nitrogen fertilizer during early growth may also delay fruit set.

Pests & Disease: Aphids - small pear-shaped soft bodied insects, green, red or black in colour. Aphids feed by sucking plant sap which causes curled, stunted leaves and shoots and reduces plant vigour. Spray plants with an insecticidal soap.

Companions: Carrot, onion, parsnip, pea, basil.

Potatoes (*Solanum tuberosum*)

Planting: Tolerant of cool soil and frost, potatoes can be planted in late spring. Remove tubers from storage and warm to a temperature of 50-60°F, to enhance sprout formation. Small tubers (golf ball size) may be planted whole. Larger tubers can be cut into pieces weighing about 2 ounces each having at least 1-3 eyes. Seed pieces can be planted immediately after cutting, but will generally sprout and show better resistance to decay if, after cutting, are left in a cool, moist room with good ventilation for 3 days. Sow seed pieces 3-4 inches deep. Leave 10-12" between plants in rows 2-3 feet apart. Closer plantings can result in better yields, but with smaller potatoes. Do not plant directly from cold storage.

Growing: Grow in full sun with soil pH of 5.5-6.5. Potatoes are heavy feeders and require deep fertile soil with good drainage. Mineral soils are best. Apply plentiful amounts of compost and well rotted manure. Fresh manure will promote development of scab organism. Lime should also be avoided at planting time. Maintain even moisture as interruptions in moisture will cause irregular growth spurts resulting in rough, knobby, malformed or cracked tubers. Hill plants when they are 1 foot tall, by hoeing up 6-8" of soil around the plant.

Harvest: Early potatoes can be dug when tubers reach a useable size. This is often 2-5 weeks after flowering. Storage crops should be left in the ground until light frosts or natural decline cause the tops to wither.

Pests & Diseases: Blight is a fungal disease which can

cause potatoes to rot in storage. The disease appears as dry brown lesions with fluffy white mould on the undersides of the leaves. Use a sulfur or copper fungicide to help prevent the onset of the disease. Control potato beetles with Rotenone or by hand picking.

Companions: Bush bean, cabbage family, corn, parsnip, peas.

Potatoes (Sweet) (*Ipomoea batatas*)

Planting: You will receive un-rooted cuttings that should be placed in water to root for up to a week. Water should be changed on a regular basis. Once the plants have started to produce roots they can be planted in 3-4" pots until the soil warms, however they should be planted outdoors as soon as possible. Do not allow them to become root bound or misshapen potatoes will form. As the soil has warmed and the risk of frost has passed, you can transplant outdoors, set the plants 12-18" apart and allow 3-4" between rows. Plant on a wide, raised ridge approx. 6-10" high. Sweet potatoes form trailing vines that quickly cover the soil, rooting at the nodes along the way. Black plastic mulch is recommended for short season areas to retain heat in the soil and speed early growth.

Growing: Sweet potatoes prefer a hot, dry location and require a long frost-free season for optimum growth. Plant in a sheltered location that gets full sun. Once established minimal care is needed. Water if there is a prolonged drought, however stop watering 3-4 weeks before harvest to protect the developing roots from malformation and splitting.

Harvest/Storage: Dig the main crop of sweet potatoes around the time of the first frost in the fall. Using a stout shovel or spading fork carefully dig around and below the roots. Be careful not to bruise, spear or otherwise damage the roots. Allow the roots to dry for 2-3 hours and then cure in a warm room (29°C) for 8-12 days. Store in a cool (13°C), dark location. In case of frost cut at soil line and harvest as soon as possible as frost damage will travel from the plants down the roots and affect storage quality.

Pests & Disease: Sweet potatoes have very few pests but may have some minor problems caused by Japanese beetles, sweet potato white flies, cutworm, or striped blister beetles. Mice may also be a problem.

Pumpkins (*Cucurbita spp.*)

Planting: Plant after all danger of frost has past and when the soil has warmed to 21°C. Can be started indoors 3-4 weeks ahead of last frost date. Sow 1 seed into jiffy pots, and transplant out after all risk of frost has passed. For early direct plantings, use floating row covers to raise soil temperature, increase early growth and protect tender plants from wind injury. Sow 1" deep, 6" apart in rows 48-72" apart. Thin plants to 24-36" apart. Plant vining types at the edge of the garden to prevent the plants from overtaking the entire site. Space bush type plants 24" apart in rows 36-48" apart.

Growing: Full sun and soil pH of 5.5-6.5. 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.

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

Pests & Diseases: Striped and spotted cucumber beetles can be controlled with Rotenone or Trounce. Powdery mildew can be prevented by using a sulfur or copper fungicide during humid, damp weather. Cold weather can influence fruit set and rainy periods often hamper pollinating insects.

Companions: Celery, corn, onion, radish.

Sowing Rate: 2-2.5kg required per acre.

Radish (*Raphanus sativus*)

Planting: Begin sowing as soon as the ground can be worked. Radish does best in the spring and fall when the soil is cool (4-18°C) and the days are short. Summer production of radish may not be as uniform. Sow ½" apart and ¼" deep in rows 12-18" apart. Thin to approx. 35 plants/ft. Make successive sowings every 5-7 days to keep a constant supply of fresh radish all season.

Growing: Requires full sun and pH of 6.0-7.0. Extremely light feeders; no special soil preparation is required. Sufficient water is essential as the faster the radish, the better the flavour. 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.

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

Pests & Diseases: 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.

Companions: Lettuce, bean, beet, carrot, parsnip, pea, spinach. Radish improves the flavour of lettuce.

Rutabaga/Turnip (*Brassica napus/rapa*)

"Rutabaga", also called "swede" or "winter turnip", is globe shaped with yellow flesh and maroon coloured 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 thinly ¼-½" deep. Space young plants to 4-6" apart in rows 24-30" apart. Sow seed as early as the soil can be worked for a mature crop for early market. For the main storage crop, plant in late June or early July, so that roots can develop in the cooler weather. Late plantings are less susceptible to root maggot damage. For an extra early crop, start indoors in April for transplanting in May.

Growing: Full sun and soil pH of 6.5. Moderate feeders; require a deep, loose cultivated soil with medium water retention. Apply generously, compost and well rotted manure prior to planting. Benefits 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).

Harvest: 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 flavour of rutabagas is enhanced by light frosts.

Pests & Diseases: 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 can be avoided early in the season by covering plants with row covers.

Companions: Onion family, pea.

Shoots

Planting/Growing: Sow seeds in a shallow tray of potting mix, press seed into surface, it is not necessary to cover. To speed germination you can soak the seed for a couple of hours before planting. 125g of pea seed or 25g of corn should be enough for an 11" x 21" tray. Keep the soil moist but not wet. Cover the tray with black plastic or another tray to block out light. This will encourage the sprouts to stretch, otherwise they will be too short to harvest.

Harvest: Once seedlings have reached the desired height they can either be harvested yellow, or left in the light for a day to develop green colouring. Do not leave in the light for too long before harvesting as the corn will become tough. To harvest cut the seedlings off just above ground level with a sharp knife or scissors. The plants will not regrow, so discard the left over soil and start a new batch.

Pests: Damping off can be a problem with shoots. Be sure and use fresh potting mix with each batch, do not over water and allow air to circulate around the seedlings.

Spinach (*Spinacia oleracea*)

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 again in late August or early September. Sow thinly, about ½" deep. Thin to 1-3" apart in rows 12" apart.

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

Harvest: Cut 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 showing signs of bolting, harvest the whole crop-it freezes well.

Pests & Diseases: Leaf Miner is the most common insect to attack Spinach. Use Rotenone or Trounce, to spray newly hatched eggs, timing is very critical. Use row covers to protect plants completely, or grow with taller companion plants to help shelter the spinach.

Companions: Beans, Brassicas, celery, lettuce, onion, pea.

Sprouts

Growing: Distribute evenly a very thin layer of seed. The seeds will swell and require a lot of space. Approximately one tablespoon of small seed and two tablespoons of larger seed is enough for the Biosta Seed Sprouter. For proper germination, seeds should remain wet, but not submerged in water. The Biosta 3-Tier Sprouting Kit is designed to retain a small amount of water, just the right amount. Rinse the seeds once or twice each day for best results. Sprouting in the dark will force the sprouts to elongate, but sprouting with some exposure to light will have an added benefit of allowing the tiny plants to produce chlorophyll and turn green for more nutritional value. Sprouts are ready to eat in 2-7 days. Always use clean water and clean practices. It is a good idea to disinfect your sprouter between crops by soaking in a solution of 1 Tbsp of bleach to 1 Pint of water. Please Note: The tiny seedlings develop very fine, fuzzy root hairs that can sometimes be mistaken for mould. If you think you are growing mould, look closely at one of the seedlings to determine if it is simply the fuzzy root hairs that you are seeing.

Using the Biosta 3-Tier Sprouter: Place seeds in the top 3 trays (the trays that have a red siphon). The bottom tray is

to collect the water. Once the seeds are in each tray, fill the top tray, not quite to the top, with tepid water. Cold water may impede germination. The water will drain through each tray and finally into the collection tray. Remember to dump out the bottom tray before you fill the top the next time. If the trays aren't draining, wiggle the red siphon and/or spin it around and the water should start flowing.



Summer/Winter Squash

(*Cucurbita pepo* - summer) (*Cucurbita maxima* - winter)

Planting: Plant after all danger of frost has past or when the soil has warmed to 21-27°C as seed will not germinate in cool soil. Can be started indoors 3-4 weeks ahead of last frost date. Sow 1 seed into jiffy pots, and transplant out after all risk of frost has passed. For early direct 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 vining squash similarly, using a spacing of 24-36" between plants with 48-60" row spacing.

Growing: Full sun and soil pH of 5.5-6.5. 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. Benefits from mild feedings with a fertilizer high in phosphorous to initiate fruit formation.

Harvest: 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 cannot 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.

Pests & Diseases: Striped and spotted cucumber beetles can be controlled with Rotenone or Trounce. Powdery mildew can be prevented by using a sulfur or copper fungicide during humid, damp weather. Poor fruit setting in cold weather can influence fruit set and rainy periods often hamper pollinating insects.

Companions: Celery, corn, onion, radish.

Strawberries (seed) *Fragaria vesca*

Planting: Best started indoors in early March. These seeds are very tiny and should be sown on the surface of the soil. Sprinkle seed very thinly over the surface of the soil and cover flats or trays with a clear plastic wrap, bag or dome to hold moisture and humidity within the soil. Provide bottom heat to maintain a soil temperature of 15-21°C, which will maintain a temperature at seed level of 15-18°C. Seeded trays should be kept from any direct bright light until seeds germinate. Trays can then be moved to a sunny location. If the temperature fluctuates widely, then germination will be very poor. Germination will take 3-4 weeks. After 4-6 weeks, transplant tiny seedlings into 2½" jiffy pots until they are ready to be placed permanently outdoors. Light feedings with a well balanced fertilizer can begin at this time.

Growing: Thrive in full to partial shade with soil pH of 5.5-7.0. Moderate feeders. Alpine strawberries are perennials and special care should be given to area in which they will be permanently planted. Prepare a rich well drained soil by adding plenty of compost and well rotted manure to the area. Use bonemeal and compost teas or other balanced fertilizers during the growing season.

Harvesting: Pick once the fruit has fully ripened to a crimson red. (These strawberries will be much smaller than commercial types).

Pests & Diseases: Red Spider Mite is easily recognizable by the first signs of fine speckling on the upper surface of the leaves, which eventually lose colour and become hardened. In severe attacks, webbing can be seen on the underside of the leaves. Mites love dry air and dust, so wash off foliage with a jet of water in dusty seasons. An excellent all-natural bio-degradable insecticide is Safer's Natural Insecticide. Mulch over winter for protection.

Companions: Melon.

Sunberry

Planting: Start seeds 6 to 8 weeks before last frost. Provide warm and moist conditions to get the seed to germinate. Lightly press into soil surface and cover. Seeds are slower and more erratic in their germination than tomatoes. Once seeds have 1 to 2 true leaves begin to fertilize with weak solution on a weekly basis. Plant out once all danger of frost has passed. Plants should be spaced 24 inches apart

Growing: Sunberrys are light feeders and do not require much fertilization. Plant in a full sun location.

Harvest: Once berries turn a deep purple/black color they are ready for harvest.

Pests: Sunberrys are susceptible to flea beetle damage on the leaves. They can be controlled with a rotenone dust. Once the plants are large the flea beetle damage does not affect yield.

Swiss Chard *(Beta vulgaris var cicla)*

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. For a fall crop, plant again in late August or early September. Sow thinly, about ½" deep. Thin plants to 1-3 inches apart, in rows 12-24 inches apart.

Growing: Full sun but will tolerate light shade, with 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.

Harvest: The tender, flavourful vitamin-rich leaves may be

cut as soon as they are big enough to eat. Harvested regularly, Swiss Chard will continue to produce fresh greens.

Pests & Diseases: Leaf Miner is the most common insect to attack Swiss Chard. Use Rotenone or Trowee to spray newly hatched eggs. Timing is very critical. Use row covers to protect plants completely.



Tomatoes *(Lycopersicon lycopersicum)*

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 seeds in 1x1" cells and thin to 1 plant after germination. Cover seed with ¼" soil and provide a constant soil temperature of 21-26°C. Once plants are up, a growing light is necessary or seedlings will become tall and spindly. After plants develop 1-2 sets of true leaves, transplant into 3" jiffy pots. Use a water soluble fertilizer every two weeks starting at half strength and increasing to full strength over 6 weeks. Seedlings benefit from waterings with Epsom salts, use 1 Tbsp of Epsom salts per gallon. Transplant after all danger of frost has passed. When transplanting, space 24-36" apart with rows at least 36-48" apart.

Growing: Full sun location, preferably with good air circulation. Soil pH of 6.0-6.5. Heavy feeders, prefer a warm, well drained soil of good fertility and cultivation. Add plenty of compost and well rotted manure prior to planting. 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 fruit size but decrease flavour.

Harvest: Pick fruit when fruit is firm and turning red. Overripe tomatoes rot quickly.

Pests & Diseases: Protect from cutworms by using protective collars around the plant stem or place cornmeal around plant base. Blossom end rot (a brownish-black, sunken dead area that forms on the bottom of the fruit) is a condition caused by a calcium deficiency due to uneven watering. Blight, another disease common to tomatoes is caused by warm, humid conditions particularly if plants have not been given some support to keep foliage off the ground. Use copper or sulfur sprays to help prevent blight. Good air circulation along with proper rotation will help to prevent onset of this harmful disease.

Companions: Asparagus, basil, bush bean, cabbage, carrot, celery, chive, cucumber, lettuce, onion, pepper. 🍀

GROWING HERBS

(Most herbs will do best with a Ph of 6.0-7.0.)

Basil *(Ocimum basilicum)*

Annual. Basil must have warm conditions, and prefers moist, rich, well-drained soil with pH of 6. Seedlings are slow-growing and delicate. Sow seed, ¼" deep, in summer or indoors in late spring. When the seedlings appear, thin the plants to 1 foot apart. Susceptible to frost and cold. Water at mid-day not in the evening; avoid overwatering seedlings to prevent mildew. Harvest leaves every week, pinching terminal buds first to stimulate branching and encourage bushiness. Harvest should be in early autumn before the leaves turn limp and yellow. Cut stalks for drying before the plant comes into flower. Do not hang in bunches, as the leaves will dry too slowly and could mold.

Bee Balm *(Monarda didyma)*

Perennial. Zones 4-10. Also known as Bergamot. Prefers a sunny location or in part-day shade in a fertile soil that holds moisture well. Sow seed in warm soil, ¼" deep and 12" apart. Germination in about 2 weeks. Bee Balm spreads rapidly after established. Cut down to 1" above the ground when the lower leaves begin to yellow.

Caraway *(Carum carvi)*

Annual or Biennial. Sow seeds ½" deep in warm soil. Prefers a sunny, sheltered site in light dry soil. Thin seedlings when 3" high to 6" apart. Dislikes transplanting because of its long taproot. Do not let soil dry out. Avoid over-pruning the first year, as this will weaken the plant. Gather leaves when young and use fresh. Pick seed heads in late summer or when seeds are brown. Seeds enhance baked goods, pork and all cabbage dishes. Chopped leaves add flavour to soups and salads.

Cat Grass *(Hordeum vulgare 'variegata')*

Annual. Sprinkle seed on top of regular potting soil and firm down with fingers then water. Very easy to grow. Plant in a pot or box and place on a window sill or somewhere cool and bright where your cat can dine at leisure. Prefers full sun and can be grown at any time of the year. Keep soil moist. Mildly scented.

Catnip *(Nepeta cataria)*

Perennial. Zones 3-9. Plant seeds ½" deep in warm, dry, well drained sandy soil. Thin to 12" apart. Catnip spreads rapidly so provide it with adequate space. The plants should be cut back each year to avoid a straggly appearance. Protect small plants from cats until well established. Take cuttings in spring only. Self-sows freely. Harvest young leaves and flowering tops when fully open, before they turn brown.

Chamomile

Chamaemelum nobile (Roman) (Perennial)

Matricaria recutita (German) (Annual)

Zones 5-9. Seeds should be planted first in small containers, ½" deep. When the plants are big enough to handle, transplant to 6" apart. Prefers light, dry soil. Keep plants moist until established. Flowers should be harvested on a clear morning before the heat of the sun. Using scissors, pick the opened heads carefully. Spread on paper in a cool, dry, airy place. After the heads have become papery, store them in an airtight jar.

Chives *(Allium schoenoprasum)*

Perennial. Zones 3-9. Sow seed ½" deep in pots or flats of soil mix. Germination is very slow. Constant moisture, darkness and warm temperatures are required. When seedlings are 4 weeks old, transplant in the garden in full sun. Chives should be divided every 3 years. Leaves can be snipped when plants are 6" tall. You should not cut closer than 2" from the ground, since the plants need some leaves to keep growing.

Cilantro/Coriander *(Coriandrum sativum)*

Annual. Sow seeds directly in the garden ½" deep and 5 - 8" apart after all danger of frost has passed. Does not transplant well. Weeding or mulching coriander is important early in the season. Don't overfertilize; too much nitrogen in the soil produces a less flavourful plant. Harvest coriander as soon as the leaves and flowers turn brown and before the seeds begin to scatter. Cut the whole plant and hang to dry. Seeds should be dried and then stored in a sealed jar. When harvesting fresh leaves cut only the small immature leaves for best flavour. Dried leaves store poorly, but can be frozen.

Dill *(Anethum graveolens)*

Annual. Plant early in the spring after the danger of frost. Seeds are best sown where they will stay, as dill does not transplant well. Plant ¼" deep about 10" apart in a prepared bed. A protected location is best to ensure that the tall stalks are not destroyed by the wind. Enjoys full sun, fairly rich, well-drained, moist soil. Snip the leaves as needed during the summer and harvest the top half of the plant when the seedheads are beige. Dry in bunches or a bag. Store dried foliage and seeds in an air-tight container. Fresh leaves can be refrigerated for 1 week. Dillweed is easiest to handle when frozen on its stem. When needed, snip some off and return the rest to the freezer.

Fennel *(Foeniculum vulgare dulce)*

Perennial. Zones 5-10. In late spring or early summer, sow seeds directly into the garden about ½" deep about 6 to 12" apart. Prefers well drained soil and full sun. Heavy clay soils will hinder seed growth. The beds should be kept moist for 2 weeks or until the first leaves appear. Take care then not to overwater.

Lavender *(Lavandula angustifolia)*

Perennial. Zones 5-8. ('Fragrant Butterflies' hardy to zone 7) This perennial is slow to germinate, so sow indoors in seed trays, using bottom heat (18°C). Keep soil moist until the seedlings are well established. Cuttings can be taken from the tips of shoots. Place in sandy soil and keep moist. Enjoys full sun and warmth. Transplant once the root system is well established. Very attractive planted in groups. Pick the flower stalks before the last flower on the spike has opened. Harvest on a dry day before the sun is too hot. Hang in bundles upside down in a shady, airy place. Store whole spikes or remove the flowers from the stems. Store in airtight containers.

Lemon Balm *(Melissa officinalis)*

Perennial. Zones 5-9. Easily grown from seed; germination is best when seed is uncovered. Ensure that the planting medium does not dry out while the seeds are germinating. Enjoys well-drained soil in full sunlight. Leaf growth may be slow the

GROWING FLOWERS FROM SEED

first year, and more vigorous thereafter. Harvest before the plant flowers, for optimum fragrance. Cut the entire plant about 2" above ground. Dry quickly to prevent the leaves from turning black. Lemon balm should be dried within 2 days at temperatures between 90 and 100°F. Place on a wire rack to dry. Store in an airtight container.

Marjoram, Sweet (*Origanum majorana*)

Tender Perennial. Zones 9-11. Sow seeds indoors ¼" deep. Plant outside when plants are 3" tall. Prefers full sun and well-drained, rich soil. The plant can be grown in containers. In late summer harvest plants at the peak of their bloom or just before they are in full flower. Cut the stems with flower heads attached and dry in a cool airy place, with cheesecloth underneath, or paper bag attached, to catch the leaves that fall. When the leaves and flowers are dry, remove from stems and store in airtight containers.

Mint (*Mentha spicata*)

Perennial. Zones 4-9. Sow seeds in warm, rich, moist well-draining soil, ¼" deep. Thrives in partly shady locations with plenty of moisture and spreads voraciously. Allow 1-1½ feet between plants. Don't dress the soil with too much organic matter or fresh manure, as this will cause rust problems. Mint is a tough plant and can be harvested as soon as it comes up in the spring. Young, tender leaves and stems are more flavourful than older ones. Best used fresh, as mint loses potency quickly.

Oregano (*Origanum vulgare*)

Perennial. Zones 5-10. Sow seeds ½" deep indoors in early spring. Keep at a temperature of 70°F. Plant outside when seedlings are 3" tall, in clumps; do not overwater. Prefers full sun and well drained soil. Harvest just before the plants are in full flower. Cut stems with flower heads attached and hang upside down in an airy, cool place.

Parsley (*Petroselinum crispum*/P.c. *neopolitanum*)

Biennial. Zones 6-9. Parsley is a biennial, and will overwinter, but it is mostly grown as an annual. Can be slow in germination, doing best in warm, moist soil (60-85°F), with pH of 5.0 to 7.0. Soaking seed in lukewarm water for several hours before sowing is beneficial; some advocate use of boiling water, or freezing seed for a short time. Sow indoors, from late winter to early spring and outdoors in early spring, before last frost. Ensure constant moisture until after germination (may take 3 weeks or more). Thin or space plants at 6 inches apart. Harvest as needed, beginning with large, outer leaves.

Rosemary (*Rosmarinus officinalis*)

Tender Perennial. Zones 8-10. Germination is slow. Sow seeds ½" deep in flats indoors and plant in garden 2 feet apart after the seedlings are 3" tall. Prefers a sunny location. Cut anytime as needed, being careful not to remove more than 20% of the growth at a time. For drying, cut branches before the plant flowers. Shape plants as desired when harvesting branches. Hang bundles upside down in an airy place. Strip the leaves from the stem when dry.

Sage (*Salvia officinalis*)

Perennial. Zones 5-9. Sow directly in the garden ½" deep, in late spring. Thin to 2 feet apart when seedlings are 4" tall. Prefers well-drained soil in full sun. Keep the soil moist when the seedlings are young. Once established, prune the plants severely in the spring to keep them from setting seed, and

replace them every 3 years or so, as they will become less productive and somewhat woody. Harvest sage before the plant flowers. Gather sprigs, tie in a loose bundle and hang upside down in a cool, airy place. Do not dry in direct sunlight. When the sprigs are dry and brittle, remove the leaves from the stems. Store either crumbled or whole in airtight containers.

Savory, Summer (*Satureja hortensis*)

Annual. Sow seeds directly into the ground ½" deep or just scatter on top of the soil. Prefers full sun and average soil. Thin to 10" apart in rows 16-18" apart. Successive sowings may be made in the spring until mid-summer. Summer savory germinates quickly, and often self-seeds. Does not transplant well. Cut as soon as the plants get about 6" tall and before flowering. Hang in bundles upside down in an airy place. When dry, remove leaves from the stems. Store in airtight containers.

Savory, Winter (*Satureja montana*)

Perennial. Zones 5-8. In spring, sow seeds ½" deep in dry, well-drained soil. Prefers full sun and average soil. Winter savory is slower to sprout than summer savory and requires less water. Too much moisture in the soil can cause winterkill. This savory should be replaced with new plants every 2-3 years. Can be pruned to form an aromatic hedge. Cut prior to flowering for culinary or medicinal use. Hang in bundles upside down in an airy place.

Stevia (*Stevia rebaudiana*)

Tender Perennial. Zone 8-11. Surface sow seed 8 weeks before last frost date or anytime if you plan to grow inside. Germinate using gentle bottom heat. Provide good drainage and do not overwater. Plant outside after all risk of frost is past, 8" apart into a full sun location. If you wish to overwinter the plants inside, remove from your garden before the temperature drops below 10°C. Excellent in containers. Use the leaves, fresh or dried, directly in hot drinks. You can use ground powder or liquid in baking or desserts. Grows 24" high.

Thyme, (German Winter)

(*Thymus vulgaris*)

Perennial. Zones 4-9. Also known as English Thyme. A hardy, widely grown perennial. Sow seeds in light, dry, well-drained soil. Do not cover seed. Keep plants moist when young. Thin to about 6". Once established, thyme does not require much watering or fertilizing. Harvest the leaves before the fragrant blossoms open in midsummer. Leaves are used fresh or dried to season meats, soups & sauces. Can also be used to make a nice flavoured vinegar. Height 10 - 12".

Thyme, Creeping (*Thymus serpyllum*)

Perennial-Zones 4-8. Mat-forming, low spreading, aromatic perennial with very tiny leaves and flowers. 2-5" high ground cover, in lightly traversed areas. Any well-drained soil will do. Wild thyme can be invasive. Sowing Rate for seeding a thyme lawn or patch: at least 1 gram per 200 square feet, but more is better. Mix tiny seed with fine sand before spreading to facilitate even coverage. Rake in well and keep watered and control weeds until established. It is more dependable to start inside and plant out small plants in spring at a rate of 4 plants per square ft. ☘

Achillea (*Achillea millefolium*)

Perennial. Start indoors 4-6 weeks before planting out. Sow thinly and cover lightly with fine soil and keep moist. When large enough, transplant 5cm (2") apart to further trays or pots of compost. Harden off at the end of May to avoid frosts and transplant 45cm (18") apart into the garden in June. Enjoys full sun and can tolerate dry soils.



Alternanthera (*Alternanthera dentata*)

Annual. Start inside 11-12 weeks before last frost. Cover the seed lightly with coarse vermiculite not soil, light is required for germination. Cover with a clear dome to maintain very high humidity. Keep at a temperature of 22-24°C (72 to 76°F). Seeds should germinate in three to seven days. Plant out after last frost 60 cm (24") apart or in planters into a full sun location. Mulching around the plants seems to help them become established by keeping the soil cool and evenly moist. Feed regularly with an all-purpose fertilizer.

Alyssum (*Lobularia maritima*)

Annual. May be started inside 6-8 weeks before last frost date. Small plants transplant better than large ones. Cover seed very lightly and provide light during germination. Will germinate in soils with a wide temperature range, 13-24°C. Should germinate in 10-14 days. May also be sown directly in the garden when soil has warmed. Space 6" apart in a sunny spot, 1 week after last spring frost date. Keep soil moist, and cut large plants back occasionally to improve appearance and flowering.

Amaranthus

(*A. tricolor*/A. *hypochondriacus*/A. *caudatus*)

Annual. May be started inside 6-8 weeks before last frost for earlier show. Just barely cover seed and keep soil at a temperature of 21-24°C. Should germinate in 10-15 days. May be direct seeded in the garden when nights are above

6-10°C. Space 12-18" apart depending on variety. Prefers full sun and can tolerate dry soil.

Anchusa 'Dropmore'

(*Anchusa azurea*)

Perennial. Start seed 12-14 weeks before last frost. Sprinkle seed over the soil and lightly cover with vermiculite. Germinates in 1-4 weeks. Transplant outside after last frost. Can be direct sown in fall or early spring. Likes a well-drained soil, tolerates heavy clay and will tolerate acidic soil. Starts blooming second year and can be cut back to 4-6" after flowering to encourage a second bloom. Prefers full sun to light shade, moist soil and is deer resistant. Grows 3-4' high and 2' wide. Zone 5-9.

Angel Hair Grass (*Stipa tenuissima*)

Perennial. Hardy to zone 5. Sow inside 6-10 weeks before planting outside. Cover seed with ½" of potting mix and germinate at 20°C. Very easy to germinate in 2-3 weeks. Plant young plants outside after last frost date 12" apart. Water well until plants are established. Grows 2' high. Prefers full sun and well-drained soil. Excellent in containers: just plant into the garden before winter. Cut back to ground level in early spring. Divide in spring every 3-4 years if desired.

Angelonia Serena Mix

(*Angelonia angustifolia*)

Annual. Start inside 12-14 weeks before last frost. Sow seeds on surface and provide light and good drainage. Germination takes 4 to 5 days. Use a sterile growing medium, keep it evenly moist and do not allow drying out between waterings. Do not pinch the plants! Pinching will only delay flowering and makes the plant habit unattractive. Prefers full sun.

Aster (*Callistephus chinensis*)

Annual. Start 6-8 weeks before last frost date. Barely cover seed, provide warmth (21°C) and they should germinate in 6-14 days. Very sensitive to Damping off, keep soil on the dry side and try to water from below. May be direct seeded after last frost. Space 9-15" apart depending on variety. Prefers full sun.

Aster (*Aster alpinus* 'Pinkie')

Perennial. Zones 4-8. Start inside 6-8 weeks before planting out. Cover seed lightly and provide warmth (24°C). May also be direct seeded in early spring or late autumn. Germination usually takes 2-3 weeks. Transplant after last frost into a sun or light shade location, 12" apart. Prefers well-drained, but moist soil. Water regularly. Divide every 3 years in spring.

Aster (*Aster novae-angliae* 'September Ruby')

Perennial. Hardy to zone 4. Sow seed inside 8-10 weeks before planting out. Lightly cover seed and germinate at 20°C. Seed should sprout within 2-3 weeks. Grow seedlings in a bright but cool (13-15°C) location. Pinch back seedlings when they are 6" tall to encourage bushy growth. Transplant into a full sun location, 12-15" apart. Prefers average, well-drained soil. Divide every 3 years in spring. Height 4'. Prefers sun to part sun.



Bachelor's Buttons (*Centaurea cyanus*)

Annual. May be started early inside, but they grow and bloom very fast from direct seeding outside. Sow seed about 2 weeks before last frost. Just cover and they usually germinate in 7 days. Successive sowings will provide blooms all season. Space 12" apart in full sun.

Bacopa (*Setura cordata*)

Annual. Seed is multi-pellet seed so should be sown on the surface of lightly firmed, moist seed compost in pots or trays. Do not cover, instead, it requires regular misting to help breakdown the pellet and to aid germination. Place sown containers in a propagator or warm place. Keep temperature between 20-23C (68-75F). Do not exclude light, once sown, as this helps germination. Germinates in 5-12 days. Transplant outdoors after all risk of frost has passed at 6-9" apart. Prefers full sun to part shade.

Balloon Flower (*Platycodon grandiflorus*)

Perennial. Zones 4-9. Start seed indoors 6-8 weeks before planting outside, in peat pots. Sow seed on the surface, provide light and warmth and they should sprout in 15-30 days. Handle seedlings gently. Transplant outside in late spring into full sun or light shade. Prefers rich, moist well-drained soil. Water and deadhead frequently to prolong the bloom period. Plants are slow to recover after divided so it is best to start plants from seed.

Banana *Musa ensete* (*Ethiopian Banana*)

Annual/Tropical Start indoors. Germination can be erratic and generally takes 3-6 months at 24-30°C. Soak seed for at least 24 hrs (up to 4 days) in warm water before sowing. Cracking or 'taking a nick' out of the seed coat can be helpful but is difficult to do. Sow just below soil surface; keep in a moist, dark place. Bottom heat is helpful. Inspect regularly. As soon as a seed starts to germinate, carefully dig it out and plant into a 5" pot. Plant outside after last frost or grow in a sunny room. Indoors they can get 2-3 feet the first year and 4-5 feet the second year. In our outdoor display gardens at Veseys they have grown to over 7 feet tall in a single season! Prefers full sun to light shade where summers are hot. Keep well watered and fertilize regularly. Protect from frost. Not hardy.

Begonia (*Begonia x semperflorens*)

Annual. Start seed 12-16 weeks before planting out. Sow seed on the surface of lightly firmed, moist seed sowing mix. Cover with clear plastic lid to keep humid and provide bottom heat until seeds germinate. Germination can be erratic and take anywhere from 15-60 days. After sowing, do not exclude light as this helps germination. Keep the surface of the sowing mix moist but not waterlogged. Transplant after last frost date in rich, light, well-drained soil in full sun to full shade. Once established allow plants to become somewhat dry between waterings and fertilize once a month. Grows 8-10" tall and 6-8" wide.

Bellis (*Bellis perennis*)

Perennial. Zones 4-8. Start inside 8-10 weeks before planting outside. Sow seed on surface, provide light and 70°F. Germination in 2-3 weeks. Will flower the first year if started inside in early spring. Sow directly outside from mid-summer to early autumn for flowering the following year. Plant outside after last frost in full sun to part shade, 6-12" apart. Do not allow to dry out. Mulch lightly after ground is frozen in fall. Divide after flowering every 3 years.

Brachycome (*Brachycome iberidifolia*)

Annual. Sow indoors 6-8 weeks before last frost or directly outside after last frost. Germinates in 10-20 days. Just cover seed and keep warm (21°C). Transplant 6-9" apart after last frost in full sun or light shade. Deadhead regularly and do not allow to dry out.

Broom Corn (*Sorghum vulgare*)

Annual. Best direct seeded after all risk of frost. Sow seed ½ to 1" deep and about 2-4" apart. Thin seedlings to 6-8" apart. Planting in blocks of short rows is best. Requires warmth, moisture and full sun for best results. Mulching is beneficial. Harvest for crafts when the entire, colorful tassel has emerged.

Butterfly Bush (Seed) (*Buddleia davidii*)

Perennial shrub. Zones 5-9. Start inside 8 weeks before last frost date. Sow seed on surface, provide light and bottom heat. Seed should germinate in 3 weeks. Plant outside after last frost date into a full sun location. If planting into a permanent location, space at least 3-4 feet apart. May be cut back close to the ground in fall or early spring. Blooms on new growth. Unpruned plants will bloom earlier in the summer than pruned plants. Moist fertile soil will produce the largest flower panicles. Enjoys lime applications.

Butterfly Flower (*Asclepias incarnata*)

Perennial. Zones 3-8. Start inside 8-10 weeks before planting out, in peat pots. Cover seed lightly, provide light and cool conditions (10-24°C). May also be direct seeded outside in early spring or early autumn. Transplant when plants are still small in early spring. Space 24" in a permanent spot. These plants hate to be moved or divided. Full sun to light shade and soil. Pinch back plants when 6" tall to encourage branching.

Calendula (*Calendula officinalis*)

Annual. May be started inside 4-6 weeks early, but is usually direct seeded about a week before last frost or once the soil has warmed up to 21°C. Sow 1/4" deep and 2-4" apart, thin seedlings to 8" apart. Grow in full sun or very light shade. Remove spent flowers for a continuous bloom.

Campanula (*C. carpatica*)

Perennial. Zones 3-8. Start inside 8-10 weeks before planting out. Sow on surface, provide light, warmth (21°C) and moisture. Should germinate in 2-3 weeks. Transplant outside in early spring, into full sun or part shade, 12" apart. Shade is preferable if your summers are very hot. Enjoys limed soil, constant moisture, and deadheading. Divide every 3-4 years in spring.

Canterbury Bells (*Campanula medium*)

Biennial. Zones 5-8. Will reseed if you let a few flowers go to seed. Start indoors 6-8 weeks prior to transplanting in the spring. Sow seed on the surface of the soil. Provide a soil temperature of 15-21°C and keep soil moist. Direct seed in June for blooms the following year. Thin plants 12-24" apart. Prefers full sun or part shade where summers are hot. Water and deadhead regularly.

Celosia (*Celosia argentea*)

Annual. Start 6-8 weeks before last frost. Lightly cover seed and keep warm (24°C). Can be prone to damping off, keep soil on the dry side and water from below. Has poor frost tolerance so transplant outside about 2 weeks after last frost. Enjoys full sun and tolerates hot, dry areas.



Chinese Lanterns (*Physalis alkekengi*)

Perennial. Zones 3-9. Start inside 6-8 weeks before planting out. Do not cover seed, provide light and warmth. Seed may take up to 30 days to germinate. May also be direct seeded outside in spring. Transplant into the garden after last frost into a full sun or part shade location, 12-24" apart. Grows well in average, well-drained soil. Water regularly and cut stems to the ground in fall. May be divided every 3 years in early spring.

Clarkia (*Clarkia unguiculata*, *Clarkia pulchella*)

Annual. Stronger plants result when direct seeded around the last frost date. Do not cover seed. Thin plants 6-8" apart. Does well in part shade. Pinch out growing tip of seedlings to encourage branching. Do not overwater.

Clematis (*C. tangutica*)

Perennial. Hardy to Zone 3. Usually germinates in 30 days, but germination may be erratic. Sow seed ¼" deep and germinate at 22°C with bottom heat. At the 4 to 6 leaf stage, or when large enough to safely handle, transplant into individual 4" pots. Harden off and transplant after last frost, spacing 2' apart. This variety is a group 3 Clematis and blooms on new (the current season's) growth so it should be pruned to encourage bushiness and more flowers. Does well in full sun to part shade. Usually blooms the first year from seed. Grows quickly to heights of 7-10".

Cleome (*Cleome spinosa*)

Annual. Start indoors 4-6 weeks before last frost. Sow on the surface of the soil, place trays or pots in clear plastic and refrigerate for 5 days. After chilling, provide a warm soil (24°C) and light. Transplant after all danger of frost is past, 8-10" apart.

Coleus (*Coleus blumei*)

Annual. Sow indoors 6-8 weeks before transplanting. Sow seed on the surface of the soil, do not cover as light is required for germination. Provide a soil temperature of 21-24°C. Transplant after all danger of frost is past, 6-8" apart. Coleus can grow under any light condition, shade to full-sun as long as they get plenty of moisture. Pinch and remove flowers to encourage branching and full growth.

Columbine (*Aquilegia sp.*)

Perennial. Zones 3-9. Start inside 8-10 weeks before planting out, as germination can be slow. Sow seed on the surface and prechill in the refrigerator for 5 days. Bring containers out and provide light and a soil warmth of 24°C. Seedlings are very delicate. Water gently and keep out of hot, midday sun. Transplant outside after last frost, 6-18" apart. Provide part shade if summers are hot. Will tolerate full sun if summers are cool and they have constant moisture. Deadhead regularly. Often self-seeds.

Coreopsis (*Coreopsis grandiflora*)

Perennial. Zones 3-9. Start inside 6-8 weeks before last frost. Sow on surface, provide light and cool to warm temperatures (13-24°C). May also be direct seeded into the garden after last frost. Keep moist. Transplant into the garden after last frost into a full sun to light shade location, 12" apart. Provide well-drained soil, do not overfertilize, and deadhead regularly. Tolerates poor, dry soils.

Cosmos (*Cosmos bipinnatus*, *Cosmos sulphureus*)

Annual. May be started inside 4 weeks before last frost or direct seeded after last frost. Plant 1/4" deep in warm soil (24-26°C). Transplant after risk of frost has passed and once the soil has warmed. Space 8-12" apart in a full sun location. Grows well in poor soil. Dead-head regularly.

Dahlia (*Dahlia variabilis*)

Annual. Start inside 4-6 weeks before last frost. Very easy to germinate, barely cover seed and provide a soil temperature of 18-21°C. Plant 10-12" apart after last frost in full sun or light shade. Keep well-fertilized and deadhead regularly.

Datura (*Datura metel*) (Angel's Trumpet)

Annual. Start inside 10-12 weeks before last frost. Cover seed lightly, provide warmth (15-21°C), seed should germinate within 3-4 weeks. Transplant into 4-6" pots if you want large transplants. Transplant 1 week after last frost into a full sun location. Prefers rich, moist soil, but will tolerate poor soil. Makes an excellent pot plant that will stay at 12" if kept in a small pot. If given lots of room or planted in the garden, Angel's Trumpet will form a large shrub, 3-5' high.

Delphinium (*Delphinium cultorum*)

Perennial. Zones 3-7. Start inside 8-10 weeks before planting out. Lightly cover seeds, provide darkness and cool temperatures (50-55°F). Should germinate in 2-3 weeks. May also be direct seeded outside in early spring or early autumn. Transplant outside in early spring, into a full sun to light shade location, 24" apart. Delphiniums prefer rich soil, so work in compost or manure. Fertilize regularly. Deadheading regularly will keep plants strong and healthy. Keep evenly moist. Divide every 3 years. Usually needs staking.

Delphinium (Chinese) (*Delphinium grandiflorum*)

Perennial. Zones 3-7. Start inside 8-10 weeks before planting out. Lightly cover seeds, provide darkness and cool temperatures (50-55°F). Should germinate in 2-3 weeks. May also be direct seeded outside in early spring or early autumn. Transplant outside in early spring, into a full sun to light shade location, 12" apart. Delphiniums prefer rich soil, so work in compost or manure. Add bone meal each spring and fertilize regularly. Deadheading regularly will keep Chinese delphiniums blooming all summer. Unlike the Elatum or Pacific Hybrids, these dwarf Delphiniums can withstand hot, dry conditions. Plants may be short lived so replace every 2-3 years. Watch out for slug!

Dianthus (*Dianthus deltoides*)

Perennial. Zones 3-8. Start inside 8-10 weeks before planting outside. Cover seed lightly and provide a soil temperature of 21°C. Should germinate in 1-2 weeks. May also be direct seeded outside in early spring or autumn. Transplant outside in early spring into a full sun location, 12" apart. Do not cut back plants in fall or spring, just trim flower stalks after flowering. Divide in early spring every 3 years.

Dianthus (*Dianthus chinensis*)

Annual. Start inside 8-10 weeks before last frost. Lightly cover seed and keep warm (21°C). Transplant outside in early spring 6" apart in a sunny spot. 'Pinks' are very frost tolerant and enjoy cool conditions. Dead-head regularly and do not over water.

Dichondra (*Dichondra argentea*)

Annual. Start indoors 12 weeks before last frost date. Cover the seed lightly with coarse vermiculite. Light is not required for germination; a temperature of 22-24C (72-76F) and high humidity is needed. Cover with a clear dome. Germination should take place in approximately seven to fourteen days. When seedling has emerged, remove dome and provide light. Reduce moisture, but do not allow the seedling to wilt. Higher light levels result in

foliage that is more silver in color and has shorter internodes. Plant out 10-12" apart after last frost date. Feed weekly with an all-purpose fertilizer.

Dimorphoteca (*Dimorphothecca sinuata*)

Annual. Start seed inside 6 weeks before last frost in your area. Cover seed very lightly as light is beneficial to germination. and keep the soil moist but not too wet. Germination usually takes 10-15 days at 15-18°C (60-65°F). Plant outside after all risk of frost has passed, 12" apart in a warm sunny spot in light, well-drained soil. Can also be direct sown in late spring.

Dusty Miller

(*Cineraria maritima*, *Tanacetum argenteum*)

Annual. Start inside 8-10 weeks before last frost. Sow seed and do not cover as light is required for germination, along with a soil temperature of 21-24°C. Plant into the garden around the last frost date, 8" apart in part shade to full sun. Very low maintenance plant. You can prune plants if they get too large. Dusty Miller looks good months after the first fall frosts, even though the plants are no longer alive.



Echinacea (*Echinacea purpurea*)

Perennial. Zone 3-9. Start inside 8-10 weeks before planting out. Cover lightly, provide darkness and warmth (21-24°C). Germination may be erratic. May also be direct seeded in early spring or early autumn. Transplant outside in early spring into a full sun location, 24" apart. Echinacea is tolerant of dry soil. Divide every 3 years in early spring. Cut flowering stems to the ground in the fall.

Eragrostis (*Wind Dancer Ornamental Grass*)

Annual. Start indoors 6-8 weeks before planting out. Cover seeds with soil or vermiculite and keep warm at 22-27°C (72-80°F). Light is not required for germination. Keep humidity high until seedlings appear, covering with a humidome or plastic cover is beneficial. When seedlings appear, supply light. Grow as a specimen plant or in mixed perennial borders in full sun and well-drained soil.

Eschscholzia californica

See 'Poppy, California'

Eucalyptus (*Eucalyptus* sp.)

Annual. Start inside 8-10 weeks before last frost. Do not cover seed. Provide warm soil temperatures, 26-29°C. Germination should occur within 2 weeks. Transplant into the garden after all risk of frost is past, 12-18" apart. Eucalyptus prefers full sun and light, well-drained soil. Water and fertilize regularly. Plants may be lifted in the fall and brought inside to grow as houseplants. When doing this, try to get as large of a root ball as possible. You may preserve eucalyptus by air-drying or with glycerine.

Eustoma (*Lisianthus grandiflorum*)

Annual. Sow seed inside 12-14 weeks before first spring frost date. Germinate at 20-25°C and do not cover seed, just press into soil. Seed should germinate in about 3 weeks. Transplant when seedlings have 3 sets of leaves - one per 4" pot. Plant into the garden 2 weeks after last frost date, spacing 12" apart. Grows best in full sun, with good drainage and adequate moisture. Fertilize occasionally with any balanced fertilizer. Protect from strong winds. A very long lasting and popular cut flower.

Flax (*Linum perenne*)

Perennial. Start indoors 8-12 weeks before last frost. Sow on surface of moist, well-drained potting soil, cover with a fine layer of vermiculite and propagate at 15-20°C. Keep the surface of the soil moist but not waterlogged; germination will take approx. 14-21 days. When large enough to handle, transplant seedlings into pots. Can be direct sown in spring or fall. Sow seed 1/8" deep and 8-12" apart in well-cultivated soil. Water regularly, especially during dry periods. First year flowering perennial! Grows 10-12" tall x 8" wide. Full sun. Zone 5.

Flax (*Linum rubrum*)

Annual. In spring after the soil has warmed, direct seed into any well-drained soil. Cover seed very lightly with soil and keep moist until germination. Thin plants to 6" apart. Once established, can tolerate immense heat and extremely dry conditions. Blooms endlessly until frost and looks best if planted in large sweeps. Prefers full sun. 12-16" high.

Flowering Cabbage and Kale

(*Brassica oleracea*)

Annual. May be started inside 4-6 weeks before transplanting in early spring. Cover seed 1/4" deep and provide an average soil temperature of 21°C. May also be direct seeded in late spring or early summer. Plants will tolerate frosts if hardened off first. Space 12-18" apart in full sun. Plants prefer cool conditions. Colour intensifies under cool conditions and short day length.

Forget-Me-Not (*Myosotis alpestris*)

Perennial. Zone 3-9. Start inside 8-10 weeks before planting out. Lightly cover seed and provide an average soil warmth, 21°C. May also be direct seeded in early spring. Transplant in early spring into a full sun to part shade location, 6-8" apart. Must have moist soil and prefers cool location. If summers are hot, provide some shade. Self-seeds freely if you do not remove spent flowers.



Gaillardia (*Gaillardia aristata*)

Perennial. Zones 3-9. Start inside 6-8 weeks before planting out. Sow seed on surface, provide light and warmth, 21°C. Should germinate in 1-2 weeks. May also be direct seeded outside in early spring. Transplant outside in late spring when soil is warm, 12" apart. Prefers full sun and will tolerate poor, dry soil. Is short lived in heavy soil. Do not over fertilize. Deadhead regularly and divide every 2-3 years in spring. Cut flowers last almost 2 weeks and they dry well if hung upside down.

Gazania (*Gazania splendens*)

Annual. Start indoors 6-8 weeks before last frost. Cover seed lightly and provide a soil temperature of 18-24°C. Space 6-8" apart in a very sunny location. Deadhead regularly and do not overwater.

Geranium (*Pelargonium x hortorum*)

Annual. Start inside at least 12 weeks before last spring frost. Cover seed lightly and then provide constant warmth (70-75°F) and moisture. Bottom heat is essential. (Except for "Black Velvet Rose", which should be germinated cool, without bottom heat, at 60 F.) Cover to provide total darkness until germination occurs, in 5-15 days. Thereafter provide lots of light. Plant outside after last frost, 8-12" apart. Prefers full sun, but will tolerate light shade. Deadhead and remove yellowed leaves. Do not overfertilize.

Gerbera Daisy (*Gerbera jamesonii*)

Annual. Start inside 12 weeks before planting out. Press seed into surface of potting mix, do not cover. Always use fresh seed, provide bottom heat of 21-24°C and light. Should germinate in 15-30 days. Can be difficult and erratic. Transplant outside 1 week after last frost, into full sun or part shade location, 12" apart. Provide shade if summers are very hot. Prefers a rich, moist, fertile, slightly acidic soil. Water and deadhead regularly. May be grown inside as a houseplant.

Geum (*Geum chiloense flore-plena*)

Perennial. Hardy in zones 3-8. Start seed inside 8-10 weeks before planting out. Lightly cover seed and germinate at 20°C. Should germinate in 3 weeks. Plant into the garden in spring 12-18" apart. Prefers full sun. Deadhead regularly to keep plants blooming. Divide every 3-4 years in spring or fall to maintain vigour. Height 24".

Godetia (*Clarkia amoena*) (*Clarkia botatae*)

Annual. May be started 4-6 weeks early but stronger plants result from direct sowing after last frost. Sow seed in early summer once the soil has warmed up to 18-21°C. Lightly cover seed. Thin plants 8-10". Enjoys full sun or light shade and cool nights. Extremely tolerant of poor soil. Do not overfertilize.



Heliotrope (*Heliotropium arborescens*)

Annual. Start inside 10-12 weeks before final frost. Just prior to planting, keep warm (21°C). Germination is erratic. May take anywhere from 2-42 days. Plant outside in a full sun location, at least 2-3 weeks after last frost, 12" apart. Provide good air circulation.

Heuchera (*Heuchera micrantha*)

Perennial. Start seed 10-12 weeks before last frost. Sow seeds on surface of well-drained growing medium and cover very lightly with vermiculite. Cover seed tray with a clear plastic dome to retain heat until germination occurs, usually in 7-14 days. Transplant when the second set of leaves has developed. Can be direct sown in the fall. Prefers full sun to full shade. Blooms first year. Grows 6-8" high and 10-12" wide Zone 5-9.

Hibiscus (*Hibiscus acetosella*)

Annual. Will overwinter in zones 8 and up or in a greenhouse or sunroom. Very easy to germinate. Start indoors 8-10 weeks before last spring frost. Germinate at 20°C (68°F), covering lightly. Transplant seedlings into larger containers as soon as they are large enough to handle. Early pinching of shoots will encourage bushiness. Plant after last frost, 20" apart. May produce large funnel shaped burgundy flowers. Prefers full sun or light shade.

Hibiscus (*Hibiscus moscheutos*)

Perennial. Start seed 14-16 weeks before planting out. Cover seed with vermiculite and keep the soil evenly moist. Transplant seedlings into larger containers as soon as they are large enough to handle and space them so

light can get to the base of the plant. Pinching is not recommended. Prefers full sun and can be planted in soil near ponds or water gardens. Plants will also tolerate dry conditions once established. When planted in a row perennial Hibiscus makes a hedge 2 to 3 ft. tall, it can also be used in larger patio containers. For best results, water and fertilize regularly with an all-purpose fertilizer. Zones 5-9.

Hollyhock (*Alcea rosea*)

Perennial. Zones 3-8. Start inside in peat pots, 6-8 weeks before planting out. Do not cover seed, provide light and average temperatures (65-21°C). Easy to germinate in 10-14 days. May also be direct seeded after last frost or in early fall for blooms the next year. Transplant after last frost into full sun or light shade, 18-24" apart. Pinch out the growing tip immediately after transplanting to produce stocky, stronger plants. Prefers rich, moist soil. Provide excellent air circulation, may need to be staked. Cut back after first bloom to encourage reblooming. Do not move established plants. May be short lived, but hollyhocks self-seed dependably.

Impatiens (*I. walleriana*, *I. auricomia*)

Annual. Start indoors 8-10 weeks before transplanting. Do not cover seed, just press lightly into soil. Appreciates bottom heat (24°C), good air circulation and moist, but not soggy soil. Requires light and warm temperatures. Do not overwater as seedlings are susceptible to damping off. Plant outside about 2 weeks after last frost date. Space 4-6" apart. Adapts to shady or sunny areas, but must be watered faithfully in full sun. 'Jungle Gold' prefers heavy shade and soil that is kept on the dry side.

Impatiens (New Guinea) (*Impatiens hybrids*)

Annual. Seed must be started early indoors 10-12 weeks prior to planting. To plant seeds, lightly cover with soil as seeds are small, provide a warm soil temperature of 24°C. Germination takes place in 10-20 days. Transplant after all risk of frost, spacing 8-10" apart. Grow in large clumps for the best effect. Plants can be brought, and grown, indoors for the winter, provided they are not hit by fall frosts.

Japonica Ornamental Corn (*Zea mays*)

Annual. Grows like regular corn, except these plants have striking variegated foliage. Best direct seeded into the soil in late spring or early summer, once the soil warms to 21°C. Plant seed 1/2" deep, thin young seedling to 8-10" apart. A larger spacing will allow the plants to produce small cobs which are also ornamental, 4-5" cobs with dark ruby red kernels. Requires a long growing season for cob production. Plants will begin to develop colour in the foliage after they reach 10-12". Provide a full sun area with a rich and well drained soil. Will demand extra fertilizer compared to other annuals.

Larkspur (*Consolida ambigua*)

Annual. May be started inside 6-8 weeks in peat pots before transplanting, but direct sowing in early spring or late autumn is preferable. Does not transplant well. Cover seed lightly and keep dark and cool (13-15°C). Space 10-12" apart in a full sun location. May need to be staked.

Lavatera (*Lavatera trimestris*)

Annual. May be started in peat pots 4-6 weeks before transplanting. Does not transplant well, so is often direct

seeded in early spring or late fall. Soak seed 24hrs then chip seed coat with knife or sandpaper. Cover seed with 1/4-1/2" of soil. Space plants 12" apart in full sun. Water, fertilize and deadhead regularly.

Licorice Plant (*Helichrysum petiolare minus*)

Annual. Start inside 12 weeks before last spring frost date. Sow pellets on surface, provide light and bottom heat. Seed should germinate in 7-14 days. Use in hanging baskets or containers in full sun. Foliage may appear green in early spring or late fall when day length is short or under shady conditions. Quite drought and heat tolerant. Grows 8" high and 18" long.

Linaria (*Linaria maroccana*)

Annual. Start inside 4-6 weeks early or direct seed 2-3 weeks before last frost. Plants grow and bloom very fast. Lightly cover seed and provide a soil warmth of 15°C. Space 4-6" apart in full sun. Water during dry spells. Shear plants if bloom slows down to encourage a profuse second bloom. May self-seed.

Livingstone Daisy (*Dorotheanthus bellidiformis*)

Annual. Start 10-12 weeks before planting out. Sow on surface of soil, cover with a fine sprinkling of vermiculite and propagate at 20-25°C (68-77°F). Do not exclude light, as this helps germination. A clear dome or a heating mat can be used to achieve the proper temperature. Germination should take place in 7-21 days. Transplant seedlings when large enough to handle. Grow on in cooler conditions for 10 to 15 days before planting out after all risk of frost has past. Flowers June-September. Extremely drought and heat tolerant. Plant 12" apart. Grows 4-6" high. Prefers full sun.

Lobelia (*Lobelia erinus*)

Annual. Start inside 8-10 weeks before last frost. Sprinkle the tiny seeds on soil surface and press lightly. Do not cover. Provide light and keep warm (21-24°C). Water only from below and watch for signs of damping off. Transplant 1 week after last frost. Space 4-6" apart in part shade to full sun. Must not dry out. Place plants at least 4" in from container edges. Shear overgrown plants to encourage bushier growth.

Lupins (*Lupinus polyphyllus*)

Perennial. Zones 4-9. Start inside in peat pots 6-8 weeks before last frost. Chip seeds or soak in warm water for 24 hours before sowing 1/8" deep. Provide cool temperatures (13-18°C) and seed should germinate in 1-2 weeks. May also be direct seeded in very early spring or late fall. Seed rate for direct seeding of Lupins: 1 lb/1000 sq.ft. or 5 g/sq.meter. Frost will help break the hard seed coat. Transplant outside after last frost into full sun or light shade 12-18 apart. Plant in groups for best show. Water and deadhead regularly. Feed with a low-nitrogen, high-phosphorus fertilizer. Lupins are short-lived (3-4 years), but they self-seed reliably although the new plants often revert to blue.

Marigold (*Tagetes erecta* (African),

Tagetes patula (French), *Tagetes tenuifolia* (Gems)

Annual. Very easy to grow. Start inside 6-8 weeks before last frost. Start African types earlier than French types. Cover seed with 1/2" of soil and provide an average soil warmth (75°F). May also be direct seeded 2 weeks before

last frost. Transplant after last frost into a sunny location. Will grow well in poor soil. Space African types 12-18" apart, and French types 6-8" apart. Deadhead regularly.



Mimulus (*Mimulus x hybridus*)

Annual. Start inside 4-6 weeks before planting out. Do not cover seed, provide light and bottom heat (21-24°C). Germination in 7-21 days. Transplant into the garden 2 weeks after the final spring frost. Mimulus is not frost tolerant. Plant in part sun or full shade, 6" apart. Soil should be moist and rich. Will grow well in wet, low-lying areas in the garden. Never allow to dry out. Deadhead regularly.

Mirabilis (*Mirabilis jalapa*)

Annual. Start indoors 4-6 weeks before last frost. Do not cover seed, just press into soil and provide a constant soil warmth of 21°C. You may also direct seed 1 week after last frost. Transplant after last frost, 8-12" apart. Enjoys hot, sunny conditions and tolerates poor soil.

Morning Glory, Dwarf (*Convolvulus tricolor*)

Annual. Start 5-7 weeks before planting out. Soak the seed for approximately 2 hours and/ or chip the seed before planting at 1/2" deep in seed starting mix in individual peat pots, as they do not like to be transplanted. Keep soil damp but not wet during germination and propagate at 21-27°C (70-80°F). A clear dome can be used or a heating mat to achieve these the proper temperature. Plant peat pots out after last frost and space 10-12" apart. Alternatively, sow seed directly outdoors after all danger of frost has passed and weather has warmed. Will tolerate average to poor soil. Grows 8-12" high. Full to part sun.

Morning Glory (*Ipomoea tricolor*)

Annual. May be started inside in peat pots, 3-4 weeks before last frost. Usually direct seeded 2 weeks after last frost. Chip seeds, soak for 24 hours and cover with 1/4-1/2" of soil. Requires a soil warmth of 21-26°C. Space 12-18" apart or closer since these plants do not mind being crowded. Plant in a sunny location and do not fertilize.

Nasturtium (*Tropaeolum majus*)

Annual. May be started inside 2-3 weeks before transplanting, but is usually direct seeded a week after last frost or once the soil warms up to 18°C. Plant seed 1/2" deep and keep moist. Space plants 8-12" apart in full sun or light shade. Tolerates poor soil. Do not fertilize.



Nicotiana (*Nicotiana glauca*, *Nicotiana glauca*)

Annual. Start inside 6-8 weeks before planting out. Sow seed on surface or cover very lightly. Provide light and a constant temperature of 70°F. Transplant after last frost into a full sun or part-shade location. Space 'Domino' series 8-12" apart. Space 'Only the Lonely' 18" apart. Water during dry spells and dead-head regularly.

Ornamental Wheat (*Triticum* sp.)

Annual. Plant in early spring as soon as the ground can be worked. Sow seed 1" deep and space or thin to 1-2" apart. Prefers rich, well-drained soil, full sun and plenty of moisture. Harvest when seed is hard and stalks should need very little additional drying. A day or two in a dark, dry area should be enough. May be harvested when younger, but will need additional drying time.

Osteospermum (*Osteospermum ecklonis*)

Annual. Also known as African daisy. Should be started inside 6-8 weeks before last frost. Lightly cover seeds, provide light and germinate at 65-70°. Seed should sprout within 10-15 days. Transplant outside after last frost date, although *Osteospermum* is somewhat cold tolerant. Plant 10" apart in a full sun location. Well-drained soil is required. If you have heavy clay soil, plants will perform well in pots of soilless mix. Generally pest free and drought tolerant. Grows 12-18" high.

Pansies and Violas

(*Viola tricolor*, *Viola x wittrockiana*, *Viola cornuta*)

Perennials/Annuals. Zones 4-8. Usually sold and grown as annuals, but often overwinter dependably. Johnny Jump Up's and Violas (*V. tricolor*) are usually hardier than the larger flowered Pansies. Start inside 8 weeks before planting out. Lightly cover seed, provide total darkness and normal room temperatures. Should germinate in 10-20 days. May also be direct seeded into the garden in early spring or early autumn. Transplant outside in early spring into a part shade location. Only plant in full sun in areas with cool summers. Very frost tolerant and prefers cool, moist conditions. Provide rich, moist well-drained soil. A mulch is often helpful. Deadhead regularly to ensure that plants bloom all season. Self-seeds.

Pennisetum (*P. glaucum*) (Purple Majesty Millet)

Annual. Start 6-8 weeks before last frost. Cover seed lightly, provide bottom heat (21°C), seed will germinate quick-

ly under these conditions. May be direct seeded into the garden 2 weeks before last frost. (Purple Majesty must be started indoors). Transplant into the garden after last frost into a full sun location, 16-24" apart. Prefers moist, fertile, well-drained soil.

Pepper, Ornamental (*Capsicum annuum*)

See 'Peppers' in the Growing Vegetables section.

Petunia (*Petunia x hybrida*)

Annual. Start inside 8 weeks before last frost. Sprinkle the tiny seed onto soil surface and gently press them in; do not cover. Provide light and constant warmth (21-24°C). Use a bottom heat source for best results. Transplant after last frost into a full sun location. Will tolerate light shade but blooming will be reduced. Petunia Spacing: Fantasy Mix 6-8"; Colorama, Prism, Celebrity and Double Cascade 8-10". Must be deadheaded regularly. Do not overwater or overfertilize. Use a low-nitrogen/high-phosphorus fertilizer sparingly.

Petunia (Waves & Tidal Waves)

Germinate as above. Wave petunias need full sun (at least 6 hours daily) exposure and well-drained, fertile soil. Provide plenty of water and regular fertilizer for peak performance. Space plants 12 to 18 inches apart in beds, or place 1 to 3 plants in each 10" container. With the Tidal Wave petunias, 12-inch spacing forces the plants to grow 2 feet tall, while wider spacing allows the plants to grow shorter and spread. Feed plants every 2 weeks with a complete plant food, such as 10-20-10 or an organic alternative, to maintain constant flowering. Pinch back errant, long stems to encourage bushier growth.

Phacelia (*Phacelia campanularia*)

Annual. Direct seed when soil is cool and a light frost is still possible. Thin seed, once it germinates, to 8-12" apart. For earliest bloom, start plants indoors 6 to 8 weeks prior to planting out. Cover seeds very lightly with vermiculite and keep soil moist. Flowers spring through summer. Drought tolerant. Grows 6-10" tall and 10-12" wide.

Phlox (*Phlox drummondii*)

Annual. Start inside 6-8 weeks before planting out. Cover seed lightly but provide total darkness and a cool soil temperature (15-18°C). May also be direct seeded 2 weeks before last frost. Transplant around the last frost 6" apart. Grows well in full sun or light shade. Pinch back young plants to encourage bushiness. Do not allow to dry out and deadhead regularly.

Poppy (*Papaver rhoeas*, *Papaver commutatum*)

Annual. Start inside 4-6 weeks before last frost in peat pots. Cover seed lightly and provide darkness. Poppies dislike transplanting, best direct seeded once the soil warms up to 21°C. To plant, cover seed with 1/8" soil. Transplant or thin plants to 10-12" apart in a full sun location. Do not over water or fertilize. Deadhead regularly. Poppies make good cut flowers if you snip the cut ends with a candle flame to stop the flow of sap. Self seeds freely.

Poppy (*Papaver nudicale*) (*Papaver orientale*)

Perennial. Zones 3-7. May be started inside 6-8 weeks before last frost in peat pots. Do not cover seed and provide cool conditions (13°C). Preferable to direct sow in

early spring or late autumn, since poppies dislike transplanting. Transplant after last frost to a full sun location, 12-24" apart, depending on variety. Prefers well-drained soil. Water regularly, but do not fertilize. Deadhead after blooming to prevent self-seeding, if desired. Iceland poppies do not need to be divided. Divide Oriental poppies only after they lose vigour from overcrowding. Move them in late summer after flowering has finished and the leaves have turned yellow.

Poppy, California (*Eschscholzia californica*)

Annual. Direct sow on open ground in spring and lightly cover after the fear of frost has past. Seed takes 7 to 21 days to germinate. California Poppies like to grow in average soil, can tolerate dry periods and do not like constant dampness. In favourable situations plants may self-seed and overwinter, germinating the following spring. Prefers full sun. To encourage a second flourish of bloom cut back 3-6" when plants look spent. Grows 10-14" high and 8-10" wide.

Portulaca (*Portulaca grandiflora*)

Annual. Excellent rock garden or container plant that withstands hot, dry conditions. Start 6-8 weeks before transplanting. Surface sow seeds and provide light and warmth (24-26°C). May be direct seeded after last frost. Transplant after last frost into a full sun location. Tolerates poor soil. Do not overwater or fertilize.

Potentilla (*Potentilla thurberi maorubens*)

Perennial. Zones 5-8. Pre-chill the seed to 5°C for three weeks before sowing. Start seeds indoors eight to ten weeks before last frost. Cover the seed lightly with vermiculite and propagate at 15°C to 20°C. Seeds should germinate in 3 to 4 weeks. Grow the seedlings on at 10 to 15°C. Plant out after fear of frost is past, into a full sun location, 18" apart. Prefers well-drained, average soil. Can be divided every 3-4 years, in spring or fall.

Ricinus (Castor Bean) (*Ricinus communis*)

Annual. Start inside 6-8 weeks before planting out in large peat pots. Soak seeds for 24 hours and cover with 1" of soil and provide a warm soil of 21°C. Can also be planted directly outdoors after the soil warms up and after all risk of frost. Transplant after last frost into a full sun location, 2-3 feet apart. The richer the soil, the larger this plant will grow.

Rose (Seed) *Rosa chinensis minima*

Perennial. Zones 5-9. May overwinter in Zones 3 and 4 with protection. Start inside 8-12 weeks before planting out. Germinate at 15°C for 15-60 days. Lightly cover seed and provide light. Germination may be erratic. This rose flowers when very young. Plant out after last frost or when plants are hardened off. Prefers full sun and well-drained soil, rich in organic matter, Ph 6-6.9. Plant in a full sun location 18" apart. You can also grow as a container plant, but the container must be protected over the winter. Deadhead regularly and prune in spring or fall. Fertilize once a month with a balanced fertilizer. Generally pest free, but may be susceptible to mildew and spider mites if stressed. Mulch after the ground freezes. Can only be grown inside if you can provide at least 4-6 hours of direct sunlight per day all year. This means providing fluorescent lights in winter. Normal room temperatures are fine. You can bring container plants inside to enjoy blooms and put them back outside.

Rudbeckia (*Rudbeckia hirta*)

Perennial. Long-lived and dependable. Zones 4-8. Start seed 10-12 weeks before last frost date. Press seed onto surface of potting mix; do not cover with soil. Germinate at an optimum temperature of 18-21°C. It is beneficial, although not necessary, to pre-chill seed for 2-3 weeks prior to seeding. When a manageable size, plant into a sunny garden 18" apart. Clumps may be divided after 3-4 years in spring. Blooms July to October.



Rudbeckia (*R. fulgida* 'Goldsturm')

Perennial, long lived and dependable. Zones 4-8. Start seed 10-12 weeks before last frost date. Press seed onto surface of mix and germinate at 21°C. Give seed a cold treatment (2-4°C) for 1-2 weeks. Just put moist tray in a sealed plastic bag and place in your refrigerator. Germinate at 21°C and provide lots of light. Plant into a sunny garden 18" apart. Clumps may be divided after 3-4 years in spring. Blooms July to October.

Salpiglossis (*Salpiglossis sinuata*)

Annual. Start inside in peat pots, 6-8 weeks before last frost. Do not cover seed, but provide darkness with black plastic or cardboard. Keep warm (21-24°C). Transplant outside after last frost, 8-12" apart. Grows well in full sun or light shade. Do not overwater or over fertilize. Pinch back plants when young to encourage bushiness.

Salvia (*S. splendens*, *S. farinacea*)

Annual. Start inside 8-10 weeks before last frost. Do not cover seed, provide light and warmth (21-24°C). Watch out for damping off. Transplant after last frost in to a full sun location, 6-12" apart. (Plant *S. patens* 24" apart). Pinch out growing tip when plants are 6" tall. Water, fertilize and dead-head regularly. The flowers of *S. hormonium* and *S. farinacea* dry beautifully.

Salvia (*Salvia lyrata*)

Perennial. Hardy in zones 5-8. Start seed inside 6-8 weeks before planting outside. Germinate at 20 C, provide light and do not cover seed. Just press seed into soil surface.

Will usually germinate in 1-3 weeks. Do not overwater and use a fungicide if you notice problems with 'damping off'. Transplant after last frost or earlier if you wish to harden the plant off. Grows 8-10" high. Space 12" apart in a part shade to full sun (in cooler climates with mulched, moist soil) well-drained location. May be divided every 3-4 years in spring.



Saponaria (*Saponaria ocymoides*)

Perennial. Zones 3-8. Start inside 8 weeks before planting out. Do not cover seed, provide light and warmth (21°C). Should germinate in 2-3 weeks. May also be direct seeded into the garden in early spring or early autumn. Transplant in early spring into a full sun or light shade location, 12" apart. May become invasive in rich, moist soil, but is easier to control in dry, rocky soil. Cut back after blooming to encourage reblooming. May be divided in early spring after 3-4 years. Do not overfeed.

Scabiosa (*Scabiosa caucasica*)

Perennial. Zones 3-9. Start inside 8-10 weeks before planting out. Cover seed lightly and provide warmth (21-24°C). Should germinate in 10-15 days. May also be direct seeded in early spring. Transplant hardened plants into the garden in early spring. Space 12-18" apart in a full sun location. Prefers a moist, well-drained soil rich in organic matter. The addition of lime is beneficial. Deadhead regularly. Divide every 3-4 years in early spring. Provides a very long-lasting cut flower.

Shasta Daisy (*Leucanthemum x superbum*)

Perennial. Zones 5-9. Start inside 6-8 weeks before planting out. Do not cover seed, provide light and average temperatures (21°C). May also be direct seeded into the garden in early spring or late autumn. Transplant after last frost into a full sun location, 12" apart. Prefers, rich, deep, well-drained soil. Water and deadhead regularly. Divide in early spring every 2-3 years.

Snapdragon (*Antirrhinum majus*)

Annual. Start inside 8-10 weeks before transplanting. Do not cover seed, requires light and a cool soil temperature

of 13°C. Transplant 1-2 weeks before last frost. Very frost tolerant when hardened off. Grows well in full sun to light shade. Space 6-12" depending on variety. Pinch out growing tip to encourage branching and more blooms. Feed, water and deadhead or cut flowers for bouquets regularly.

Statice (*Limonium sinuata*)

Annual. Annual Statice is one of the most popular everlasting flowers. Start inside 6-8 weeks before last frost. Cover seed lightly and provide warmth 18-24°C. May also be direct seeded after last frost. Transplant outside after last frost into a full sun location. Prefers light, well drained soil. Statice does well in hot locations, but must be well-watered. Harvest in mid-morning after the dew has dried. Hang bunches upside down in a dark, dry place.

Stocks (*Matthiola incana*)

Annual. Start indoors 6-8 weeks before transplanting. Do not cover seed, provide light and keep cool (13-18°C). Watch out for damping off. May also be direct seeded after last frost. Transplant after last frost into a full sun location, 10-12" apart. If your summers are very hot provide mid-day shade. Prefers a moist and fertile soil. Water and fertilize regularly. Provide good air circulation.

Strawflowers (*Helichrysum*) (*Helichrysum monstrosum*)

Annual. Easily started inside 6-8 weeks before last frost. Sow seed in flats and do not cover as light and a warm soil temperature (21-24°C) are required for germination. May also be direct seeded 2 weeks after last spring frost. Transplant after last frost into a full sun location, 6" apart. Prefers light, sandy soil. Tolerates dry conditions. Pull up entire plant and dry, when flowering is at its peak.

Sunflowers (*Helianthus annuus*)

Annuals. Direct seed outdoors after all danger of frost is past. (Dwarf varieties can be seeded inside in peat pots 3 weeks before planting out.) Sow 1" deep in light, well-drained soil. Keep moist until seed germinates in 10-14 days. Space in a full sun location 6-24" apart depending on variety. Giant varieties should be planted 20-24" apart, while cut flower varieties should be spaced 6-10" apart to get smaller heads and slender stems for bouquets. Water regularly but do not over fertilize. Cut flowers last 10-14 days. Drying sunflower heads: If drying outside they should be protected with plastic mesh or brown paper bags. Just cover the heads to keep the birds away. To harvest, cut the seed heads leaving 12" of stem attached. Hang in an airy place safe from birds and rodents. Heads should be dry in 2-3 weeks. Remove seeds by rubbing two heads together. You may store the seeds on the heads until you need them.

Swedish Ivy (*Plectranthus argenteus*)

Annual. Start inside 8-10 weeks before planting out. Germinate at 20-24°C and provide lots of light and humidity. Do not cover seed with soil. Seed should germinate in 1-2 weeks. Plant into the garden after last frost date. Grows 24" high and wide. Excellent for a neat, low hedge. One of our favourites for containers. Prefers full sun or part shade although plants are more silver in full sun.

Sweet Peas (*Lathyrus odoratus*, *Lathyrus latifolius*)

Annual. May be started inside 3-4 weeks earlier, but is usually direct seeded in early spring as soon as the ground

can be worked. Soak seed in water for 24-48 hours before planting in fertile, well-drained soil. Sow seed 1-2" deep. Sweet peas prefer cool conditions. If your summers are hot, you should keep the roots cool by trenching them. Dig a trench, about 10" deep and place your seeds in the bottom. Cover with 1" of soil to start and continue to fill in the trench as your peas grow. Space 6" apart in a full sun location. Sweet peas are heavy feeders, so fertilize regularly. Provide support for vining types. Change their location each year, to avoid disease problems. You may use Garden Inoculant to give them a boost. Deadhead or pick blossoms often for bouquets.

Sweet William (*Dianthus barbatus*)

Biennial. Zones 3-9. Start inside 6-8 weeks before planting out. Cover with 1/2" of potting mix and keep at room temperature (18-21°C). Should germinate within 10 days. May also be direct seeded into the garden anytime from April to July for blooms the following year. Transplant after last spring frost into a full sun to part-shade location, 9-12" apart. Prefers deep, rich, well-drained soil. Water regularly and feed once or twice a season. Shear back after blooming and mulch for the winter. Will self-seed.

Thunbergia (*Thunbergia alata*)

Annual. Start inside 6-8 weeks before last frost, sowing 2-3 seeds in peat pots, thinning to one seedling after germination. Lightly cover seed and keep warm (21-24°C). Will germinate in 10-21 days. May also be direct seeded after last frost in areas with long summers. Transplant 2 weeks after last frost into a full sun to part shade location. Space 6-8" apart. Fertilize regularly and do not allow to dry out.

Torenia (*Wishbone Flower*) (*Torenia fournieri*)

Annual. Start at least 6-8 weeks before last frost date. Sow seed on surface; provide light and warmth (70-75°C). Seed should germinate in 2 weeks. Plant transplants outside 2 weeks after last frost, space 6-8" apart in part shade. Can tolerate full sun in cool areas. Plants like moist, but well-drained rich soil. Mulch to ensure that plants do not dry out. Pinch back shoots when plants are 3" to encourage bushiness. Deadhead regularly. Torenia can be potted up in the fall and brought inside as a fall houseplant. A great alternative to Impatiens in shady windowboxes, borders and beds. See also container plants on page 42.

Verbena (*Verbena x hybrida*) (*V. speciosa*)

Annual. Start inside 8-10 weeks before last frost. Lightly cover seed, provide darkness and warmth (18-24°C). Germination may take 3-4 weeks. Do not keep too moist as Verbena is susceptible to damping off. Transplant after last frost in a full sun location, 8-10" apart. Will die from mildew if planted in the shade or denied good air circulation. Water and deadhead regularly. See also container plants on page 42.

Vinca (*Catharanthus roseus*)

Annual. Start 10-14 weeks before planting out. Sow 1/8" deep in peaty soil and in total darkness. Provide bottom heat and cover until seeds germinate in 8-10 days. Once sprouted maintain average soil moisture. Transplant after frost in sun to part shade. Highly disease resistant, heat tolerant and keeps it's big blooms all summer long! Space 8-10" apart.

Wheat, Ornamental

Annual. Plant in early spring as soon as the ground can be

worked. Sow seed 1" deep and space or thin to 1-2" apart. Prefers rich, well-drained soil, full sun and plenty of moisture. Harvest when seed is hard and stalks should need very little additional drying. A day or two in a dark dry area should be enough. May be harvested when younger, but will need additional drying time. Grows 3-4' tall.

Wildflowers

It is best to plant wildflowers that are native to your region for best success. Wildflowers can deliver low-maintenance advantages in time, but only if they are established correctly. Do not expect instant beauty with no work or maintenance. Wildflower seed is best sown about one week before vegetable gardens are planted in your area. Prepare your soil by hand or by roto-tilling. If you feel that tilling is not sufficient to remove unwanted grass and weeds from your planned meadow area, you may need to use herbicide or other weed control methods. Weed control is essential during the first season. Irrigation may also be necessary if there is not sufficient rainfall. Full sun to light shade is best for most wildflower mixes. Broadcast the seed evenly and gently rake it in. Often mixing seed with fine sand helps with even coverage. It is recommended to mow the meadow each fall and to re-sow a small amount of additional seed each spring. Detailed instructions are available upon request. Please call our customer service at 1-800-363-7333.



Zinnia (*Zinnia angustifolia*, *Zinnia elegans*)

Annual. Zinnias are usually direct seeded after last frost. Or start inside 6 weeks before last frost. Lightly cover and provide warmth (21-26°C). Germinates in 5-10 days. Transplant after last frost into a full sun location, 6-12" apart. Pinch out the growing tip to encourage branching. Water, fertilize, and deadhead regularly. Susceptible to mildew. ☹

ROSES & SHRUBS



Prune all stems down to about 6-8" (15-20cm). The cuts should be made at an outward facing bud.

Important! Upon Arrival

Bare-root roses & shrubs can be planted as soon as you can dig in your garden in early spring. You do not have to wait until frosts are over. These shrubs are hardy and can withstand cold temperatures. If you are unable to plant immediately, open the box to expose the stems but do not remove the wrapping around the roots, as this preserves moisture. Store the shrubs upright in a cool, humid, dimly lit location. Before planting, remove all packaging material, then soak the entire plant, stems and roots in a pail of water for several hours, but no more than 12 hours. At no time, should the roots ever be exposed to sun or wind, or be allowed to dry out. Trim off any broken roots or branches before planting. See "Pre-Plant Pruning" on page 29-30.

Potted shrubs & vines: Water immediately and thoroughly upon arrival. Allow excess water to drain and store in a cool, dimly lit location. If you cannot plant within a day or two, these plants should be potted up into bigger containers, kept in a bright location and watered regularly. When planting out, gently remove the plant from the pot.

Leafed out, growing, non-dormant plants are sometimes shipped from our greenhouses in pots. These plants should be hardened off before planted outside if it is very cold in your area. Either gradually acclimate the plant to outside conditions, or plant outside and cover with straw or an old blanket if a hard frost threatens.

Planting Roses & Shrubs

Choosing the Site

Roses require full sun, at least eight hours a day, preferably afternoon sun. (Please check individual shrub requirements starting on Page 36 of this guide) Choose an open site where breezes will blow through. This will aid in drying the foliage, preventing many fungal and viral diseases. Ideally roses should be planted away from other trees and shrubs competing for water and nutrients. Take note of the mature size of your rose or shrub, and allow room for this. Snow provides excellent insulation for even the tenderest plant, so consider a spot where snow may gather naturally. The site should be well drained. If water tends to puddle in the area it is best to choose a different site or amend the soil by adding organic matter.

The Soil

Roses, and most shrubs, like a rich, loamy soil and sufficient drainage. Loamy soil is basically a good combination of sand, clay, organic matter, and silt. To help keep soil rich a yearly application of a top dressing of well-rotted manure or kitchen compost is advised. Most roses and shrubs are adaptable to soil pH while some shrubs require different pH levels. Please check individual listings.



Soak the rose in muddy water for several hours before planting.

Pre-Plant Pruning of Bare-Root Roses

A hard pruning of bare root roses helps to concentrate the roses energy on growing new shoots. First, remove any dead wood then prune remaining stems down to about 6-8" (15-20cm) and remove stems that may be rubbing against each other. Cut just above the bud, on a slight diagonal. Now, look closely at the center of each stem, called the pith. It should be quite white or green. If it appears dark or yellow, continue pruning down to outward facing buds until white pith is reached. Prune root tips back to white tissue to encourage branching.

Pre-Plant Pruning of Bare-root Shrubs

Before planting your shrubs, any broken or damaged branches can be removed. If two stems are rubbing together, remove the weaker one. Prune root tips back to

white tissue to encourage branching. Soak in muddy water for several hours before planting.

Planting

Dig a hole that is about 6" (15cm) wider than the roots themselves. Sometimes roots will be growing only in one direction, so dig an oval-shaped hole to suit. Mix in some organic matter and/ or slow release fertilizer with the soil from the hole. A handful of bone meal will aid in root development. Make sure that the stem of the shrub is at the soil level and not too deep or too exposed. Tip: Lay a stick across the hole so you will know exactly where the surface level will be. Roses should be planted with their crown just below the surface of the soil. Overexposure of the "bud Union" may cause leaf drop and in harsher climates winter kill.

Fill the hole about 2/3 full. Pack down soil with your feet and water. After water has soaked in, fill hole and repeat packing and watering. This will ensure that there are no air pockets around the roots. Many shrubs are low maintenance but not until they become established so it is vital to ensure that roses and shrubs are kept watered regularly, especially during drought, for the first year while roots develop. Fertilizing on a regular basis is not necessary but can aid in root and foliage growth.

Sweating Roses after Planting

Important! Bare root roses are dormant when shipped so they must be protected from drying out until the roots become established. The greatest danger of drying, and thus dying, occurs during warm sunny weather so it is best to plant in early spring when weather is cool. One practice is to **completely cover the exposed canes with a mound of loose organic mulch, wood shavings, compost, peat moss, or sphagnum moss after planting.** This is called 'sweating' your roses and is especially important if it is already very warm in your area when you receive your roses.

This covering will protect the canes from drying out while the roots are becoming established. In two to three weeks, sometimes longer, shoots will begin to emerge through the mounding material. It is then safe to gradually remove the mounding material by carefully pulling it away or by washing it away with a hose. Water your newly planted rose bushes often to insure that they get a good start.

Many bare-root shrubs, such as Burning Bush, Lilac, Weigela, etc. can benefit from 'sweating', especially if your days are warm and sunny at planting time. It certainly would do no harm. You may have to remove the mound of material sooner, since shrubs often leaf out quickly.

General Care of Roses & Shrubs

Watering

Reduce the need for water by mulching and making a 'catch-basin' or 'doughnut' of soil around the crown of the shrub. Once roses are established, you will probably only water during very dry spells. Roses and shrubs that are dry heading into the winter will not fair out very well so give them a good soaking about 2-4 weeks before the ground will freeze. It is better to give infrequent, deep watering than frequent, light watering. Avoid getting water on the leaves, dry leaves prevent the spread of viral and fungal disease. Water early in the morning to allow the leaves to dry off before evening.



Be generous with watering and pack soil into hole to avoid air pockets around the roots.

Weeding

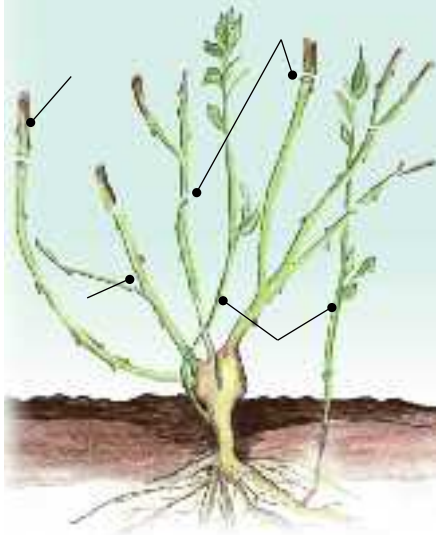
We recommend that you keep the soil bare or mulched around your roses and shrubs. Turf grasses and weeds are heavy competitors for water, nutrients and even sunlight so it is best to remove the grass around the shrub and mulch 2-4". These mulched borders (shrub/tree circles) also protect your new shrubs from grass-trimmer damage and will make it harder to accidentally mow them. These grass free areas are especially important during the first 2-3 years, when the plant is becoming established. Organic mulches (shredded bark, bark nuggets, compost etc.) make weeding easier, retain moisture and look attractive.

Fertilizing

Ideally, most of the 'food' needed by roses and shrubs should come from the soil. A yearly top dressing of well-rotted manure or garden compost will keep the soil high in nutrients. Use a slow release fertilizer designed for roses, or simply use an all-purpose, balanced water soluble as directed by the label. You can also fertilize more often with manure tea or fish emulsion. If conditions are dry when you want to fertilize, give a good watering and fertilize the next day. Do not fertilize after the end of July as the plants need this time without food to prepare for winter.

Pruning Roses

Every time you make a cut it will affect the growth and overall health of your rose. All cuts, regardless of their reason, should be made in the same manner. Cuts should always be made at an angle, just above an outward facing bud. This directs the growth of the rose away from the center of the bush, preventing crossed and crowded branches, which can cause disease. All roses benefit from being pruned once a year. First of all, you should remove dead or dying, damaged branches, and the weaker of two stems that are rubbing against one another. This essential pruning can be done throughout the year, as damage



All roses benefit from being pruned once a year. Make your cut at an angle just above an outward facing bud.

occurs. One-time flowering roses should be pruned only immediately following the blooming period. All other roses can be pruned either in the early spring, or in the fall. Pruning in spring takes place when the leaves start to unfurl, before they are fully opened. Pruning in fall takes place after the leaves fall off. The advantage to pruning in the fall is that you will have a shorter bush to mulch, and there will be no swaying branches to be caught in the wind. Once your rosebush is three or four years old, it is a good idea to remove 1/4 to 1/3 of the oldest, thickest canes. Prune them off at ground level in the spring to stimulate the growth of new canes, which will produce more flowers. Prune tender roses down to 1ft (30cm) in the fall, or just remove the dead branches in the spring.

Suckers

Suckers are unwanted growth coming from the rootstock of a grafted plant and attention should be taken to remove them as they appear. Any shoots coming from below the bud union will be characteristic of the rootstock, which, if left may eventually take over, as the rootstock. Watch for suckers on roses and top grafted tree roses as well. Remove any growth from below the bud union.

Deadheading

Deadheading is the removal of spent blooms. To deadhead properly, make the diagonal cut down to the first outward facing full leaf (a full leaf will have five leaflets). Deadheading is by no means necessary, but it will result in more blooms. With Floribunda roses, you will be cutting off the whole cluster of blooms at once. Do not deadhead roses after August because the production of seed helps to prepare it for dormancy. Of course, many varieties, especially Rugosas are known for producing abundant hips. If you want hips, don't deadhead.

Pruning Shrubs

The above guidelines usually apply to pruning shrubs as

well. Please also refer to the individual information for each shrub, starting on page 36. Flowering shrubs can have faded flowers removed anytime after blooming.

Fall Care

Ideally, all fallen leaves should be cleaned up. Destroy any diseased leaves to prevent over-wintering of fungal and viral diseases. Water heavily a few weeks before the ground freezes unless it has been a very wet fall. This could be anywhere from October to December depending on when winter arrives at your location.

Winter Care

All grafted and tender roses should, ideally, have the bud union buried. After a few good frosts, mound garden soil (taken from elsewhere in the garden) up over the bud union, at least 4" (10cm) to 9" (23cm) in very cold zones. Many of our roses are very hardy, but if they are in a very exposed site, or if your garden is in a very cold zone, you should provide winter protection. It is a good idea to protect your Brownell, Hybrid Teas, Floribundas, tender Climbing Roses, Miniature Roses, English Roses, and Polyantha Roses this way anywhere in Canada. In colder zones you may want to try this with the hardier roses as well, especially the first winter.

Common reasons why roses fail to survive after planting

Stems Dehydrating: Hot weather at planting time can dry out stems before they get a chance to break buds. See 'Sweating your Rose' on page 30.

Bud Union Covered when Spring is Cool: If day-time temperatures are still consistently below 10-15°C (50-59°F), leave bud union exposed. See 'Planting' on page 30.

Loose Planting: Tug on a stem after you plant. If the rose shifts, tread carefully around the bush to eliminate air pockets. Water in well.

Storage: Improper, prolonged, storage before planting.

Waterlogged Soil: Good soil drainage is essential. See 'Soil Drainage' on page 48.

Severe drought: Usually only a severe problem during the first season. Water regularly.

Use of fresh manure or chemical fertilizer at planting time: Use only aged manure, peat moss, compost, worm castings, or bone meal at planting time. Do not add additional fertilizer to newly planted roses until new stems are 6" or flower buds appear. See 'Fertilizing' on page 30 and 'The Soil' on page 29.

Dry Roots at Planting Time: Soak roots for several hours before planting. Never let them dry out!

Too Much Lime in the Soil: Follow directions for applying lime. See 'The Soil' on page 29.

Planting Under Trees: Combined effects of root dryness and dense shade.

Failing to Prune before Planting: See 'Pre-plant Pruning' on page 29.

Weed competition: Maintain a bare, or preferably mulched, area around roses for at least the first 2-3 years. See 'Weeding' page 30.

Mechanical damage: grass cutters, lawn mowers, bikes, dogs, etc. can cause severe damage to new plants. Clearly mark them or protect them if necessary.



When removing spent blooms, make a diagonal cut down to the first outward-facing full leaf.

Flowering shrubs, trees or vines, which are marginally hardy in your area, should be protected the same way you would protect a tender rose.

Climbing Roses

These roses have very long growing canes with many side branches. Plant the roses 6' (2m) apart. Plant hardy climbing roses in the same manner as other roses. The canes can be trained to grow upright on poles, fences, stone walls or trellises. You should tie canes to the support with a soft, flexible material that will not damage the canes. For the first 2-3 seasons, prune only to remove deadwood. In future years you should prune repeat bloomers like 'William Baffin' and 'Henry Kelsey' in early spring when they are dormant. Hardy climbers such as these need not be removed from the trellis in the fall. Mound soil over the crown for winter protection if you are in a very cold zone. Important: More tender climbers such as 'Don Juan' and 'Golden Showers' may be removed from the trellis (a thorny business!), laid flat and covered with soil for the winter. Alternatively they can be wrapped in burlap and stuffed with straw.

Rose Hedges

Many Rugosas or Explorer roses make excellent informal hedges. Some of our favourites are 'FJ Grootendorst', 'John Davis', 'Adelaide Hoodless', 'Champlain', and 'Therese Bugnet'. Rose hedges should be pruned in early spring when dormant. Remove stray branches at any time. Be sure to keep the base of hedges wider than the top to allow light to reach the bottom stems. Generally, space plants one half to two thirds the mature plant width apart, depending on how fast you want the hedge to fill in.

Shrub Hedges

Any shrub or small tree can be used to make a hedge, but of course some are better than others. Spireas make excellent fast growing hedges, as does forsythia, lilacs,

privet, siberian peashrub, weigelas, and burning bush. Make your selection based on how tall you want the hedge to be, how fast you want it to grow and of course what kind of look you want. Generally space plants one half to two thirds the mature plant width apart, depending on how fast you want the hedge to fill in.

Growing Roses in Containers

Many roses bloom all season and are perfect for growing in containers. You can even grow the miniature roses in window boxes or hanging baskets. Add cascading lobelia or ivy to the pots as usual for a breathtaking display. Remember to check moisture levels every day. Large pots will not dry out as fast. Use good quality potting soil, not garden soil. Fertilize every week with a balanced water-soluble fertilizer at 1/4 the recommended strength. Please keep in mind however, that roses in containers are not winter hardy. At the end of the season you must protect potted roses for the winter. You can transplant roses into the garden about a month before soil freeze-up. You may be able to bring miniature roses indoors if you can supply lots of light. Alternatively, provide winter protection by both burying pots in the garden and covering the tops with leaves or straw, or store pots in an unheated garage or basement. Make sure they are watered well before storage and that the temperature remains close to 0°C (32°F) without freezing.

Pest & Disease Control for Roses

Common Rose Diseases

Though there are many diseases that can affect roses, there are three in particular that cause the most problems to home gardeners. They are known as 'The Big Three' and include Powdery Mildew, Black Spot, and Rust.

Powdery Mildew

Powdery mildew is a fungus and is recognizable by the presence of a white or grayish powdery coating on the surfaces of leaves and young shoots. Remove and destroy leaves that are at all affected to prevent the spread of powdery mildew. If problem is severe, use 'Safer's Garden Sulfur Dust', or a domestic fungicide. Avoid using chemical sprays on Rugosa Roses. Other ways to prevent powdery mildew is to avoid making the foliage wet by watering the shrubs from the bottom and also provide good airflow with regular pruning.

Rust

Rose Rust is recognizable by a powdery orange residue on the undersides of leaves. The leaf surface must be continuously wet for four hours for infection to take place. Remove and destroy infected parts immediately, and if severe, treat with 'Safer's Garden Sulfur Dust'.

Black Spot

A fungus called 'Diplocarpon rosae', causes Black Spot. Black Spot is detected by the presence of round, velvety dark-coloured lesions often surrounded by a fuzzy halo. These spots are usually 3/4"-1/2" (2-12mm) in diameter and differ from other spots by their 'fuzzy' edges. Several of these round lesions can fuse to form an infection of any shape. Leaves will eventually turn yellow and drop. A few days after the spots appear, little black pimples show up in the spots; this signals that the spores are about to be discharged and that you had better act fast. Carefully remove and destroy these leaves. Baking Soda solutions will work



Powdery Mildew (top) is a fungus which affects leaves; Black Spot (bottom) shows up as round, dark-coloured lesions..

in most cases by changing the pH on the surface of the leaves, inhibiting fungal growth. To make your own, mix 1oz (25gm) of Baking Soda with 2 pints (1L) of water and spray onto leaves. 'Safer's Garden Sulfur Dust' and 'Safer's Defender' fungicides will also do the trick.

Common Rose Insect Pests

Remember that insects prefer to attack weak and susceptible plants, so anything you can do to promote the health of your roses will help in the battle against insects. Bear in mind that your garden is an ecosystem of its own, so don't be concerned about insects unless they are actually doing real damage. You may want to place sticky traps near your roses just to monitor who is in your garden.

Aphids

The yellowing, curling or puckering of leaves usually signifies aphid damage. Damage will occur first on new growth, so you'll know where to look for them. Aphids are

small, soft-bodied insects (usually green) that suck plant juices from flowerheads and new leaves. You do not have to eliminate every single aphid, just control their numbers. Safer's insecticidal soap works well and is safe and easy to use. Ladybugs and lacewings feed on aphids so encourage their presence to help control the aphid population. Aphids have a great aversion to chives, so you may want to try interplanting some in your rose bed.

Sawfly

Adults are small wasp-like creatures but in their larval stage are called 'roseslug' and look more like caterpillars. They feed upon the leaves of roses and bad infestations can leave branches skeletonized. They are usually a pale green and have a curved body that looks like a "S". If there are only a few rose bushes infested, spray off slugs with a strong jet of water or pull the leaves off and kill any larvae found on the upper or lower surfaces of the leaves. If the damage is widespread chemical control should be considered. Any contact or systemic insecticide labeled for use on roses will kill the roseslugs. The key thing is to spray thoroughly to make sure that the spray covers the upper and lower leaf surfaces. Also, spray the soil under the rose bushes as the larvae pupate in the soil prior to overwintering.

Thrips

Thrips are certainly an annoyance to rose growers as they affect the bloom itself. You can diagnose thrip damage by flowers that turn brown and only partially open. Tiny, slender, dark brown insects with feathery wings can be seen emerging from inside the flowers. Unfortunately, Safer's soap will not work for these pests. There are other insecticides on the market that are listed to kill thrips, but it is difficult to reach deep inside a closed blossom. Often, it is just as effective to cut off and destroy the affected flowers. Plants under water stress are particularly susceptible to thrips, so remember to water in extremely dry weather. 🍷



Prune Butterfly Bushes to promote shorter and bushier plants.

Planting & Care of Flowering Shrubs & Vines

Austrian Pine

Picea nigra. Pines transplant relatively easily and should be watered regularly during the first season to help them become established. They perform best when planted in fertile, moist and well drained but will readily adapt to most soil types. This species tolerates salt spray, wind, heat and drought. Can be pruned as a hedge and for shape. Once planted tug the tree. If it seems loose, add more soil and tamp down firmly. Grows up to 100' tall. Full sun. Zone 3-9.

Blue Muffin Viburnum ...see Viburnum.

Beautyberry

Callicarpa dichotoma. Easily grown in average, medium-wet, well-drained soil in full sun to part shade. Prune in early spring if needed. Flowers bloom on new wood. Plant in a protected location in Zone 4 where above-ground stems may not be reliably winter hardy. In zone 5 and over, may be grown in the manner of herbaceous perennials by pruning stems back to 6" in late winter each year. Best fruit production occurs when more than one shrub is planted. Grows 3- 4' tall and wide. Small pink flowers in summer followed by clusters of lilac-violet fruits in autumn. Zone 5.

Burning Bush (Dwarf)

Euonymus alatus 'Compactus'. The Dwarf Burning Bush can eventually grow to 10' (3m) high if unpruned, but is easily kept at 4' (1.2m). Leaves turn scarlet red in fall. Grow in full sun for best foliage colour. Prune in early spring to keep shrubs bushy. Cut back by at least 1/2 and remove any damaged branches. Mulch and water during dry spells. Can be sheared and shaped into a formal hedge. Hardy to zone 3, if snow cover is provided.

Butterfly Bush

Buddleia davidii. Blooms from mid-summer to frost. Space 4-5' (1.2-1.5m) apart in full sun. Grows 6-8' (1.8-2.4m) tall.

Good flower production will continue if spent blooms are removed. May be cut back close to the ground in fall or early spring. Blooms on new growth. Unpruned plants will bloom earlier in the summer than pruned plants. Pruned plants will stay shorter and bushier than unpruned plants. Moist, fertile limed soil, will produce the largest flower panicles. Zone 5 - 9.

Caryopteris

This shrub can be treated as somewhat of a herbaceous perennial due to its tendency to die back in cooler climate zones. It grows in average to rich soil and needs good drainage. A useful plant, especially for drier conditions. The flowers and foliage have a pleasant scent, and may be cut for use in arrangements. Grows in full sun, 30-36" high. Trim in late fall or early spring because it blooms on new growth. Zone 6 (5b with protection).

Colorado Blue Spruce

Pinus pungens 'Glauca'. It is very adaptable but prefers moist, well drained, acidic soil. Once it has adapted to its location, spruce will endure poor, clay, rocky, dry soils that range from acidic to alkaline. Pruning or shaping is not recommended. It is a slow grower, has a long life span and is somewhat tolerant of salt spray. Best used as a focal point, landscape specimen, windbreak or privacy screen. Full sun to part shade. Grows up to 50' tall. Zone 3-9.

Dogwood

Cornus alba. Dogwood is easy to grow, will do well in a wide range of soils and will tolerate damp cold sites. Though they don't mind shade, those grown for winter colour should be planted in a sunny location. One of the most durable shrubs for pruning, it can be used as a hedge and drastically cut back without doing damage. Use the cut branches in flower arrangements and as holiday décor. Grows 8-10' high. Prefers full sun to part shade. Zones 3-9.

Elderberry

Sambucus nigra. Flowers cover the plant in late mid-summer. Edible dark purple berries attract songbirds in late summer and fall. Grow in sun for the best colour, but does quite well in filtered shade. Prefers fertile, moist soil, but is very drought tolerant once established. Grows 8' high and wide, but can be easily kept smaller. Prune hard in late to early spring before the leaves appear. Zone 3-8.

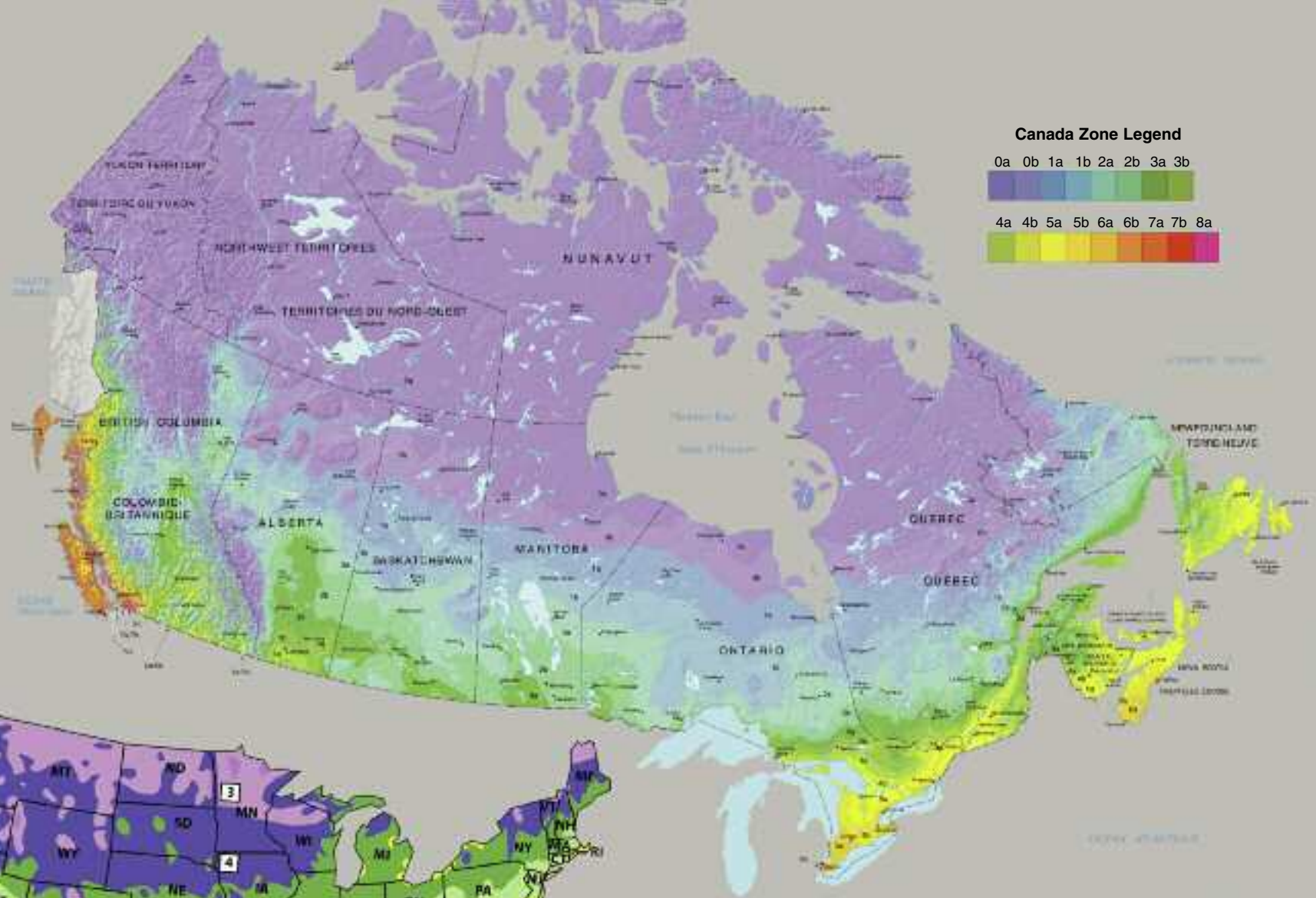
Forsythia

Forsythia x 'Northern Gold'. Grows 7' (2.1m) tall and wide. Covered in bright yellow flowers in very early spring. Prefers full sun or very light shade. Prune after flowering by at least 1/3 and remove a few of the oldest, thickest stems each year. Hardy to zone 3 with protection. Flower buds will not survive above the snow line in zone 3-4, so cover with snow if possible.

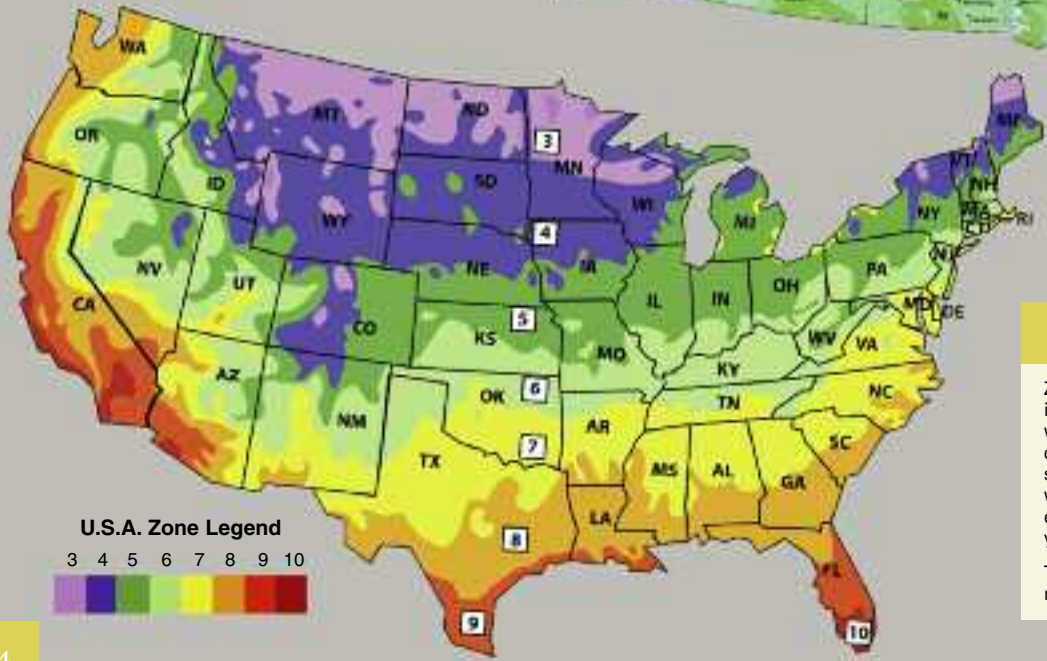
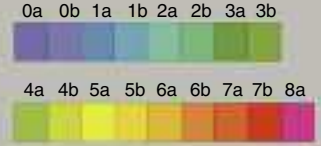
Hibiscus

Hibiscus syriacus. Prefers a good, moist soil that is not too dry, or too wet. Plant in a full sun and mulch for the first few years until well established. Will tolerate some shade. Water every few days when first planted to help it set roots. Bloom time is mid-summer to frost. Prune each spring to help maintain its form. Grows 7-10' tall and 5-8' wide. Zones 5-9.

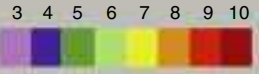
High Bush Cranberry ...see Viburnum.



Canada Zone Legend



U.S.A. Zone Legend



HARDINESS ZONES

Zone maps outline the different zones in which various types of trees, shrubs and herbaceous plants will most likely survive. It is based on the average climatic conditions of each area. It is an excellent starting point if you are wondering if a certain plant will over-winter successfully. Use the maps for reference, but please check with other gardeners in your area.

The new Canadian hardiness map is divided into nine major zones: the harshest is 0 and the mildest

is 8. Relatively few plants are suited to zone 0. The U.S. Zone map (contiguous states) has zones 3-10. Local 'micro-zones' are too small to be captured on these maps. Year-to-year variations in weather and gardening techniques can also have a significant impact on plant survival in any particular location.

For detailed information regarding your hardiness zone, please refer to our website at www.veseys.com. Click the 'Learn' tab and then click 'Hardiness Zones' under the 'Reference' section.

Honeysuckle, Climbing

White: *Lonicera japonica* 'Halliana'

Orange: *Lonicera x brownii* 'Dropmore Scarlet'

Pink/Yellow: *Lonicera x heckettii* 'Goldflame'

Grow in full sun to partial shade. Honeysuckles will perform best in moist soils, however all honeysuckles are somewhat drought tolerant. Prefers well-drained, slightly alkaline soils. Attaches by twining stems, to whatever is nearby. Provide a support and when too large, prune back to main stems. Remove climber from its supports to see if the main stems are very thick and old. If so, cut them back to the vigorous young shoots near the bases of the stems. If the main stems are only a few years old, retain them and remove all lateral growth. Then tie the pruned vine back into position on its supports. Can grow up to 18' (5.5m) high and 5' (1.5m) wide. Zone 5-8.

Honeysuckle, Tatarian

Lonicera tatarica. Grow in full sun to part shade. Prefers moist, well-drained soils, but will tolerate dry, alkaline soil. If growing as a hedge, space plants 3-4' apart. Prune after flowering each year. Cut back oldest stems to the ground and clear out any deadwood. Cut or shear back one quarter or more of entire bush to keep neat and promote denser bush if desired. Grows 12' tall and 8' wide. Produces white or pink flowers in late spring; dark green



Hydrangeas need an abundance of water, partial to full sun, and very rich soil.

Hydrangea

Hydrangea paniculata 'Grandiflora', 'PeeGee' and 'Limelight', *H. quercifolia* 'Alice'. Usually 5-6' (1.5-1.8m) tall and as wide but may grow 10-12' (3-3.7m) in a protected site. Huge pinkish-white, cone shaped flowers in late summer, that turn rusty-rose in fall. Requires full sun or light shade and rich, moist well-drained soil. Prune in early spring. Remove any deadwood and a few of the oldest, thickest branches. Cut flowers for drying after they are fully opened and start to rustle slightly when you touch

them. Hydrangea flowers can be preserved almost indefinitely and stay soft to the touch if you use a glycerin based preservative. Zone varies depending on variety - see bulb catalogue or our website for zones.

Hydrangea, Climbing

Hydrangea anomala petiolaris. Non-aggressive vine with large flowers in early summer. Its leaves often turn bright yellow in autumn. This vine adheres by root-like tendrils making it an excellent vine for growing on brick walls or up tall, high limbed trees or any sturdy support. Prefers full sun to partial shade and moist well-drained soil, but is very adaptable. Can grow 60-80' high but easily maintained on smaller structures. Takes a few seasons to get established but grows vigorously thereafter. Zones 4-9.

Ivy, English

Hedera helix 'Thorndale' and *Hedera helix* 'Marginata'. English Ivy is a woody, evergreen climber with perennial stems. Rootlets along stems cling to any rough surface. When used as a ground cover the evergreen leaves form a dense carpet. Runners climb through masonry surfaces. It grows well in both alkaline and acidic soils but prefers rich, moist, organic, well-drained soil. Adaptable to different levels of light, from full sun to deep shade. It is a good idea in cold climates to protect vines from winter sun and wind. Prune at any time to control size and increase bushiness. Space at least 1-3' apart. Hardy to zone 5.

Kiwi, Arctic Beauty

Actinidia kolomikta. Commonly called Kiwi Vine, this low maintenance plant can reach heights of 15' to 40' with a 6' to 10' spread. Plant in full sun to part shade in average, medium wet, well-drained soil. Properly pruned vines will remain more compact, and will bear somewhat larger fruit. The vines can, however be grown quite satisfactorily without care. In most cases the vines produce only male or only female flowers. Only female plants will produce fruit, but male vines are usually needed for pollination. A few selections produce both female and male flowers, and will self-pollinate. If growing only for ornamental foliage, consider planting only male plants. Under favourable conditions, the vines can yield heavy crops of fruit. Zone 4-8. See also kiwi growing instructions on page 47.

Lilac, Japanese Tree

Syringa reticulata 'Ivory Silk'. Produces flowers in late June-early July. Prefers full sun and well-drained, slightly acidic soil. Is quite salt tolerant and pest free. Prune after flowering, if necessary. Grows 20' high and 15' wide. Zone 3-7.

Lilac, Shrub

Syringa vulgaris. These French hybrids grow 12' high and at least 8' wide (3.7x2.4m). Spacing of lilacs for a hedge depends on desired hedge height. For a 3 to 4 foot tall hedge, space plants 18 to 24" apart. A 6 to 8 foot tall hedge requires spacing of 2 to 3 feet apart. For a very tall, informal hedge, spacing could be as far apart as 6 feet. Plant lilacs at least five feet from buildings, since their root systems can damage foundations over time. Clusters of fragrant flowers appear in mid spring. Lilacs need at least 6 hours of direct sunlight per day. Prune immediately after flowering, as next years flowers are formed during the summer. Water during dry spells for the healthiest plants. It may take 3-6 years for a lilac to become established after planting. They are worth the investment and can live over 300 years! Hardy to zone 2b.



Magnolias love morning sun and a sheltered location.

Magnolia

Magnolia stellata and *Magnolia x 'Anne'*. Grow magnolias in partial shade; morning sun with afternoon shade is best. Select a very sheltered location, between buildings or among large evergreens where snow collects. Magnolias set their flower buds for next year in late summer, and these buds are more tender than other parts of the shrub. Star magnolia will bloom profusely only if it is protected during cold, dry winter weather. A warm spell in March may signal buds to break dormancy; frost afterwards will kill buds. Prune immediately after flowering for shape and size. Magnolias often drop all their leaves at once on a calm day, leave in place and lightly cover with mulch to keep soil fertility high. Flowers in early spring before leafing out. Slow growing. Can grow up to 20' (6m) high, but expect a smaller size in cold climates. Zone 4-9.

Maiden Hair Tree

Ginkgo biloba. Fan-shaped leaves turn a lovely bright yellow in autumn. Prefers full sun and sandy, moist soil, but will adapt to almost any situation. A very durable pest-free tree that is tolerant of salt, heat and pollution. 20-50' high and 10-13' wide. Ginkgo gets better with age, so be patient. It is common for Ginkgos to reach 1000 years of age. The oldest Ginkgo in China is 3500 years old! Provide adequate water and fertilizer. Prune only in spring, if necessary. Zones 4-8.

Maple, Red

Acer rubrum. Excellent specimen or shade tree. One of the first trees to change colour in autumn, dark green leaves usually become brilliant red. Grows 12-15" per year. Plant in full sun and rich well-drained, slightly acidic soil. Prune only to retain natural shape. Usually grows 40' high by 30' wide. Zones 3-9.

Metasequoia

Metasequoia glyptostroboides. Also known as Dawn Redwood and Dinosaur Tree, this fast growing, deciduous, conifer is easy to grow and can reach a height of 70' in the first 15-20 years with a mature height of 75-100' and a width of 30-40'. Its needles turn a red-bronze before dropping in the fall. Grows best in moist, slightly acidic soil in full sun. Transplants easily. In spring, in areas with hot summers, this tree may produce 5-6 mm long pollen cones on long spikes. Will grow but will not produce branches in heavily

shaded areas. Metasequoia can thrive in standing water, and if left branched to the ground in full sun, will develop the large, contorted boles that have made it famous. Limbing at an early age prohibits this formation later on. Zones 4-10.

Mockorange

Philadelphus x virginialis 'Minnesota Snowflake'. Plant in full sun or partial shade in any well-drained garden soil. Mockorange needs annual pruning to keep it tidy. Prune after flowering as it blooms on last year's wood. Remove all deadwood and weak growth. Then cut back oldest stems to where young shoots are growing. Very old branches can be cut right down to ground level. Aim to have no branches that are more than five years old. Mockorange blooms spectacularly for several weeks in late spring to early summer. Grows about 6' (1.8m) high and wide. Zone 4-9.

Mountain Ash, European

Sorbus aucuparia. Compound foliage is dark green, turning reddish in fall with orange-red berries which is very attractive to birds. The odour of its white spring flowers is objectionable to some and should be considered when placing this tree near a walkway. Best used as a specimen plant. Upright when young and spreading at maturity, the Mountain Ash is a vigorous and rapidly growing tree and can reach heights of 25' to 40' and widths of 16' to 25'. Plant in a cool moist location. Does better in full sun but will toleratesome shade. Prefers well-drained, slightly acidic soils with a pH of 3.7 to 7.3. Prune tree as needed to remove damaged wood. Zone 3-7.

Passion Flower, Hardy

Passiflora incarnata. Plant in full sun to part shade, in a protected location, and mulch heavily, especially in colder climates. Top growth can be killed back by frost, but 'pops' back to life in the Spring. Passion flowers, also called Maypops, are easy to grow and will adapt themselves to most well-drained soils but will benefit by the addition of compost to the planting hole. During the growing season, the soil should be kept evenly moist, to ensure good flowering and growth. Apply a balanced (10-5-20) fertilizer in the early spring, and then again six to eight weeks later. Begins to bloom in July and continues until frost. The vigorous vines can easily grow up to 15' in a season, with a 2' to 3' spread. The fruit produced by this plant is an oval berry, a little larger than a chicken egg. Passion fruit is edible, but seedy. Fruit can be used to make jelly and several species of butterfly and hummingbirds love the flowers. Zones 6-9.

Peashrub, Siberian

Caragana Arborescens. Very hardy and fast growing. Grows 15-20' high with a spread of 12-18' but easily pruned to any size. Makes an excellent fast growing, thick hedge, spaced 2-4 feet part. Prefers well-drained soil and full sun. Tolerates, salt, drought, poor soils, cold and wind. Zones 2 to 7.

Privet

Ligustrum amurense. Used almost exclusively to form hedges because of their dense foliage and rapid growth. Can reach heights of 8' to 12' with a spread of 6' to 8'. They bear white flowers in late spring-early summer followed by non-edible berries. Plant in any good, slightly wet, garden soil in partial shade to full sun. Privet hedges, which can grow up to 3 feet per year, tolerate a wide pH

range and don't seem troubled by the pollution that plagues most plants in urban settings. Plant 1' to 2' apart. Prune privet hedges after they have flowered; thereafter, prune them an additional 3 or 4 times during the course of the summer. Privet hedges will fill in better (i.e. the plants will become bushier) if they are pruned frequently. Toxic and deer resistant. Zone 4-9.

Redbud, Eastern

Cercis canadensis. Flowers appear in the spring before leaves appear. Long seed pods and yellow foliage in autumn. Plant in full sun to part shade. Does well in many soil types, except permanently wet soils, but prefers moist, well-drained, deep soils. Keep vigorous with regular watering and fertilizing. The seed pods attract wildlife. 20-25' high and wide. Zones 4-9.

Rose of Sharon ... see Hibiscus.

Russian Olive

Elaeagnus angustifolia. Russian olive is an excellent wind-break and wildlife tree for high wind areas. It is extremely tolerant of most environmental factors. Can be made into a hedge by planting 10' apart in a row. Russian Olive is low in water requirements and displays a high tolerance for salt and alkali. Grows well in hot dry sites. Plant in full or part sun in any good well drained soil. Avoid clay or waterlogged soils and do not fertilize. Height and spread 20' to 30'. Zone 3-8.

Scotch Heather

Calluna vulgaris. A little to no maintenance, low growing evergreen shrub that is tough and oh so charming. It prefers rich, moist and well-drained soil. Do not allow to dry out completely as this will damage the shrub. Produces blooms from mid-summer to late fall. Prefers full sun. Grows 15-24" tall. Zone 4-8.

Silver Lace Vine

Polygonum aubertii. A rampant, twining vine that is very adaptable, and can tolerate dry soil. Aromatic greenish-white blossoms open in late summer to fall. Requires little care except pruning in spring. Can be cut back severely if it is overgrowing the space. Can be trained on a trellis. Sometimes called 'mile-a-minute plant', Silver Lace Vine grows quickly, sometimes up to 25' (7.6m) in a single year! Tolerant of drought and seaside conditions. Space 3-4' (.9-1.2m) apart. Grow in full sun to partial shade. Zone 4-8.

Snowball Bush

Viburnum opulus 'Roseum'. Also known as European Snowball. Grow in full sun to partial shade. Prefers a moist location and adapts to most soils. Prune in early summer, after its flowering has finished. The large spherical flowers open apple green and then turn white. Cut flowers for bouquets when they are still slightly green and they will last for two weeks. Thin out older stems to rejuvenate the shrub and keep it looking tidy. Grows 8-10' (2.4-3m) tall and wide. Hardy to zone 3.

Spirea

Spiraea japonica & *Spiraea x bumalda*. Grows 2-4' (.6-1.2m) tall and wide. Blooms throughout summer and often into fall. Prefers sun to light shade. For the best foliage colour, plant in full sun. Prune in late winter or early spring. Cut back by at least one third each year. Remove finished flowers in summer. When planting *Spiraea bumalda* 'Frobelli' as a hedge, space 3'-4' apart. Cut back by at least 1/3 in

spring or fall. Severe pruning can rejuvenate older, leggy shrubs. Zone 3 with protection.



Spirea, Bridalwreath

Spiraea x vanhouttei. Compact, bushy, deciduous shrub with slender, arching shoots. Bowl-shaped white flowers are borne in dense clusters, up to 2" (5cm) across, in early summer. Prune immediately after blooming is finished by selectively removing old wood right to the ground. Easy to grow in average, well-drained soil and flourishes in full sun or partial shade. This shrub grows rapidly and makes an excellent hedge or screen. Grows to 6' (1.8m) high, 5' (1.5m) wide. Zone 4-8.

Tamarisk

Tamarix ramosissima. Grow in average, dry to medium, well-drained soil in full sun. Best in sandy loams. Valued plant for sea shore areas because of tolerance for salt. Prune as needed in late winter to early spring. This is a rapid-grower that blooms on new wood. In late winter, it can be pruned back hard, to within several inches of the ground, in order to keep plant compact and to promote better form and growth. Grows 6-15' tall and as wide. Produces dense plumes of pink flowers over a long early to mid-summer period. Good windbreak or informal hedge. Can also work on dry slopes for erosion control. Zones 3-8.

Trumpet Vine, Yellow

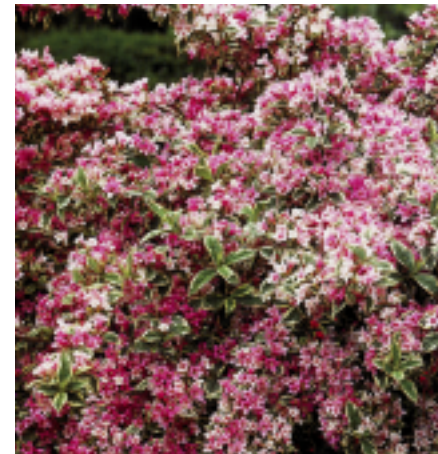
Campsis radicans 'Flava' is a hardy, rapidly growing, clinging vine that, in the summer months, produces yellow trumpet shaped flowers that attract hummingbirds. Plant 3-4' apart in full sun to light shade in loamy, sandy or clay, medium to well-drained, soil, with a pH 6.8 - 7.7. Flowering and growth is best in full sun. Will tolerate some drought and occasional wetness and salt. Training is easy, but regular pinching and pruning is necessary to become established. Deadhead spent blooms. Cut back to the ground each spring before new growth emerges. Use caution when pruning because some people react to the foliage with skin inflammation. (All or parts of this plant are poisonous). Zone 5 - 9.

Viburnum

Viburnum opulus, *Viburnum dentatum*. 'Christom'. Easily grown in average, medium moisture, well-drained soil. Makes a great low hedge or foundation plant. Good container growing plant. Like most Viburnum, fruiting is enhanced by planting two cultivars in close proximity but is not necessary. Blue Muffin grows 5-7' tall & 4-5' wide and is hardy to zone 4. High Bush Cranberry grows 10-15' tall and is hardy to zone 3. Full sun to part shade.

Virginia Creeper

Parthenocissus quinquefolia. Grow in any fertile, well-drained soil in shade or sun. Virginia Creeper has root like tendrils with discs that attach themselves to any non-smooth surface, even brick. Can be allowed to climb rough barked trees, but avoid allowing to grow into tree-tops, where smothering can occur. Very vigorous grower. Can be considered invasive if planted in the wrong place. Prune in spring or summer back to main stems to thin out, or prune hard down to 12" (30cm) to keep under control. Grows to almost any length, several stories high. (All or parts of this plant are poisonous). Zone 4-9.



Weigela

Weigela florida. Produces trumpet shaped flowers in late spring to early summer. Grow in full sun and protect from winter wind in cold areas. Prune annually after flowering slows down. Cut back by one third and remove a few of the oldest, thickest stems. Grows up to 5' (1.5m) high and wide. Hardy to zone 4, but usually does fine in zone 3 in a sheltered site or with snow cover.

Willow, Arctic Blue

Salix purpurea nana. Excellent hedging plants or for contrast in a shrub bed. Grows 3-4' high and wide. Space 2' apart as a hedge. Plant in full sun in any loose, organic soil. Does well in moist soils. Not invasive. Prune yearly to keep bushy and dense. Zones 3-6.

Willow, Dappled

Salix integra 'Hakura Nishiki'. Also called Japanese Willow. Among the fastest growing and most adaptable of all trees or shrubs, and can thrive in almost any condition. Grow in moist, low-lying sites, or to reduce soil erosion on slopes and banks. They do require full sun. This willow is a showstopper all year long. Its new growth in spring is

pink, wood is wine-red. The foliage is variegated creamy white and green. Prune out some of the oldest wood annually in late winter or early spring to ensure new shoots. Grows up to 6' (1.8m) high and wide. Zone 5-9.



Train the leaders of Wisteria in the direction you want it to spread.

Wisteria

Wisteria sinensis. This Chinese version is different from the Japanese in that it twines counterclockwise. Wisterias require full sun, although the roots will enjoy some shade. Choose a site that is somewhat sheltered as summer breezes are hard on the delicate blooms. Almost any free draining soil will do. This vigorous climber flowers in late spring. Usually Wisteria is forced to grow horizontally. This changes the hormonal balance of the stem from a growth stem to a flowering stem. If left unchecked, it will grow way too high and only produce blooms too high to enjoy. Train the long leaders in the direction you want to spread. To encourage flowering spurs, pinch back unwanted shoots to about three buds from their base. Cut back very long stems to five buds. (All or parts of this plant are poisonous). Zone 5-9. 🌱

STARTER PLANTS



Important! Upon Arrival

Please open blister packs and notify us immediately if there is a problem with your plugs. These young plants are rooted cuttings that are started in trays of individual cells and must be potted as soon as possible upon arrival. Make sure the root balls are good and wet prior to planting and handle them with care.

General Planting Information

Transplant the plugs individually into a 3-4" pots or directly into a hanging basket, large container or window box. We recommend 3-4 plugs per 8-10" hanging basket, or 6-9 plugs per 12" basket. Plant plugs at least 2-3" away from the container rim to prevent the roots from getting too hot or dry. Handle the plug by the root ball, never by the stem. Place the plant in the center of the pot at the same depth at which it is already growing. Gently firm the soil around the new plant and water.

Provide lots of sunlight or artificial light. If you must place pots on your windowsills, be sure to protect them from the extreme temperature swings that occur from day to night. Do not let the containers dry out completely at any time and feed regularly with any balanced water-soluble fertilizer. You may also use a slow release fertilizer especially for containers, such as SmartCote Hanging Basket Food. Follow the package directions for amount of fertilizer and frequency of use.

Once the fear of frost is past it is safe to put your planters outside. Some shade loving plants may burn if overexposed so place containers in the appropriate location based on light requirements. It is also good practice to check for pests such as whiteflies, aphids, thrips, and spider mites on a regular basis.

Flower Growing Information

Bacopa (*Sutera cordata*)

Trailing habit. Grows 3' high and 12-20" long. Prefers full sun to part shade. Will produce fewer flowers under reduced sunlight. Do not overwater when young, but keep well watered when mature. Do not allow to wilt. Pinch at 3 weeks after potting and again at 6 weeks.

Begonia Victoria Falls

A vigorous flowering begonia with mounding and trailing habit that is perfect for hanging baskets. Plant the plug at soil level in a well-drained potting medium. Fertilize once

a week with a balanced fertilizer. Prefers a protected area out of the wind. Grows 12-18" high. Prefers full sun and will also thrive in semi-shade.

Bidens

Bidens is a perfect container plant and can also be used as a groundcover. Plant in rich, well drained but moist soil. Pinch back tips to increase branching. Will tolerate some drought and shade. Fertilize to encourage more blooms. Prefers full sun. Grows 8-16" tall and 12-16" wide.

Calibrachoa (*Calibrachoa hybrids*)

Mounding & trailing habit. Grow in full sun. Leaves may turn yellow if soil is kept too wet, if not fed regularly, or if soil pH is too high. Allow soil to dry a bit between heavy waterings. Pinch at 3 weeks and 6 weeks after potting up. Not fond of strong release fertilizer. May be susceptible to aphids.

Coleus

Known for its colourful and dazzling foliage and its ability to tolerate shade, Coleus can also endure full sun as long as the soil is kept moist. Plant in average or fertile soil. Pinch back and remove flowers to encourage branching and full growth potential. May be grown inside as a houseplant. Depending on the variety it can grow anywhere from 20-30" high and 14-18" wide.

Dallas Trixie Combo Kit

See individual planting instructions for Sweet Potato, Lantana and Verbena.

Fuchsia (*Fuchsia hybrida*)

Upright trailing habit to 18". Prefers part shade to filtered sun. Provide lots of moisture, fertilize weekly and protect from excessive winds. Occasionally pinch growing tips to encourage branching. Remove the cherry like seed-pods.

Geranium

Plant in soil that is light, loose and well drained. Water once a week if needed. Prefers full sun to part shade. Deadhead regularly and remove yellowed leaves. Geraniums like to be well fed so fertilize every two weeks to encourage vigour. Can be kept as a houseplant. Grows 12-16" high and 12-14" wide.

Geranium, Ivy Geranium

Plant in soil that is light, loose and well drained. Water once a week if needed. Deadhead regularly and remove yellowed leaves. Geraniums like to be well fed so fertilize once a week to encourage vigour. Can be kept as a houseplant. Grows 12-16" high and 14-16" wide. Ivy types grow 6" high and trail 18". Prefers full sun to part shade.

Gerbera

Plant in containers or in the garden in full sun or part shade in rich, moist, fertile, well-drained soil. For optimal blooming fertilize every two weeks. Keep soil evenly moist and deadhead regularly. Can be kept as a houseplant. Grows 8-12" tall with as many as five blooms at once.

Heliotrope

Plant in full sun to part sun in well-drained, average to fertile soil. Water moderately. Does not recover well from drying out and too much water can decrease the scent. Trim off spent flowers to encourage more blooms. Can grow up to 2 feet tall and is suitable for both containers and gardens.

Lantana

Very easy to grow, Lantana is extremely tolerant of wind, drought and salt making it an excellent choice for coastal gardens. Prefers average soil and hot sun. It grows well in sunny window boxes, hanging baskets, or patio planters. Grows 6-10" high and 18-24" wide.

Licorice Vine (*Helichrysum 'Golden Leaf'*)

Plant in well-drained, average to fertile soil and water regularly. It is easy to grow and be used in baskets, mixed planters and window boxes. Vigorous trailing habit. Will benefit from regular fertilizing. Prefers full sun to part shade. Trails 36-48".

Lobelia

Prefers full sun to part shade and is a classic choice for hanging baskets, mixed containers and beds. It is very heat tolerant, however, ensure that the soil remains moist to wet, as it does not recover well from drying out. Fertilizing once every few weeks will help plant vigour. Can be sheared when overgrown to encourage bushier growth. Grows 6' high.

Ornamental Millet (*Pennisetum glaucum*)

The perfect centerpiece for planters and excellent for massing in the landscape. Prefers warmer temperatures and full sun. Grows best in light soil that is sandy and loamy but will adapt to a wide range of soils provided there is adequate drainage. Once established can endure some drought. Plant 10-12" apart. Grows 3-4' high and 18-24" wide.

Petunia (*Petunia x hybrida*)

Follow potting instructions on previous page and cultural information for Wave Petunias from seed on page 24.

Scaevola (*Scaevola aemula*)

2' long well-branched trailing stems. Prefers full sun to light shade. Very drought, salt, heat and wind tolerant. Do not over-water and fertilize at half strength. Stray branches can be pinched back as desired.

Sweet Potato Vine (*Ipomoea batatas*)

Trailing habit. Prefers full sun to part shade. Fertilize regularly. Keep soil moist, but do not overwater. May trim plants at anytime. Enjoys lots of warmth!

Torenia (*Torenia fourmieri*)

Heat tolerant, but does not like full sun. Plant in light shade/part sun. Keep soil moist but not soggy. Water daily during hot weather. Fertilize every two weeks in container plantings and once a month in landscape plantings. Use a well-balanced fertilizer high in nitrogen. Prune to maintain shape. Deadheading is not necessary. Space 8-10" apart.

Vine Assortment

Each vine in this collection prefers full sun to part shade in well-drained, average to fertile soil. Keep soil evenly moist and fertilize every 2 weeks.

Herb Growing Information

Basil

Annual. Follow potting instructions under General Planting Information on page 42. After danger of frost has passed, plant outside, spacing 12" apart. Choose a sunny spot with moist, rich, well-drained soil. See page 14 for more growing information. Height approx 18-24". Attracts bees and butterflies. Lift or take cuttings to root and grow inside in winter.

Lavender, Lady

Hardy Perennial. Follow potting instructions under General Planting Information in this section. After danger of frost has passed, plant outside in a sunny spot with moist, well-drained, sandy soil, spacing 12" apart. Height approx 10". See page 15 for more growing information. Zone 6.

Peppermint (*Mentha x piperita vulgaris*)

This is the true sweet candymint! Makes a great refreshing tea and excellent in desserts and other dishes. True sweet peppermint is not available from seed. Peppermint does best in a rich, moist soil and full sun but can tolerate part shade. Space 3' apart. Will spread through your garden by runners, so you might want to limit it by growing it in a bottomless bucket sunk into the garden. Height and width approx 2-3'. Hardy to zone 3.

Rosemary (*Rosmarinus officinalis*)

Tender Perennial. Grow in well-drained, sandy soil preferably in a large clay pot (so as to prevent over-watering). A 6" pot to start with is sufficient. Requires full sun and warmth. Water regularly during the growing season but sparingly during the winter. Place pots on a sunny deck or step during the summer and overwinter in a cool but frost-free sunny room for the winter. For more information see page 16. Hardy to zone 8.

Tarragon, French (*Artemisia dracunculoides*)

Hardy Perennial. After last spring frost, plant outside in full sun to part shade, spacing 2' apart. Soil should be rich, sandy, well-drained, and limed. Mulch well with compost. This plant often fails due to soil that is too wet or acidic. Begin harvesting leaves 6-8 weeks after transplanting outside. Handle plants gently as they bruise easily and harvest in the morning for best flavor. Tarragon is best used fresh but can be stored dry or frozen in plastic bags. Divide mature plants in the spring. Height 24-30". Hardy to zone 5 (or 4 with protection).

Stevia

Plant in a rich, fertile soil in full sun. Add a layer of compost around the base of the plant to protect and nourish the shallow root system. Take care not to over water and make sure the soil drains easily and isn't soggy. Frequent light watering is recommended during the summer months. Tender perennial. Grows 16" high.

Vegetable Growing Information

Tomato Plants & Pepper Plants

Immediately soak roots on arrival. Follow potting instructions under General Planting Information in this section. After danger of frost has passed, plant outside. See pages 11 and 14 for spacing and growing information. 🍅

ORNAMENTAL GRASS

Important! Upon Arrival

Dormant Bare-roots: We usually ship Grass roots to you in their dormant state, that is: bare roots, usually without leaves, in bags of loose peat moss. They may have some shoots beginning to grow. It is very important to plant these dormant perennials as soon as possible after you receive them. If it is absolutely necessary to store them for a short time before planting them, open the cartons and any plastic that is around the roots. If the roots appear dry, soak them for a few hours in warm water. Thereafter store in slightly moist peat moss in a very cold, but not freezing location until you can plant. They can also be placed in pots of soil if planting will be delayed for more than 2 weeks.

Non-dormant in Pots: These will be in pots and may have actively growing green leaves. These pots should be immersed in water upon arrival to thoroughly soak the root ball. These non-dormant plants must be hardened off before planting outside. Keep in a cool bright room, and place outside on mild days and gradually leave outside when it is cooler. After a week or so or when nighttime temperatures are above freezing, plant outside. If a severe dip in temperature is expected you may want to place straw or an old blanket over the green leaves to protect them from severe damage. Frost or cold will not permanently hurt the plant, but it may damage the new leaves and set growth back.

General Planting Information

Grasses are easy to grow. In addition to year-round visual appeal, they add a dimension of motion and sound to your garden. Plant them by ponds, in perennial gardens, in groups together along walkways, paths or steep banks. Be sure to soak the root systems in warm water for a few hours before planting and water well afterward. Plant the crown level with the soil surface. Never plant grasses too deep. Mulching is great to conserve moisture, especially during the first season, but keep mulch away from the crown. If you want to fertilize, use an organic fertilizer like worm castings, compost or manure. Excess nutrients can make grasses, especially tall ones, weak and floppy. Water regularly the first year until established. Afterwards most grasses are very drought tolerant. Remove dead stems to 4-6" high in early spring or leave as is for winter interest. Grasses can be divided in early spring.

Blue Oat Grass *Helictotrichon sempervirens*.
Zone 4-9. Feathery and soft looking dense tufts of stiff blue-gray foliage. Produces golden flower spikes in the summer. Prefers Full sun and, fertile, well-drained limed soil. 12-18" high & 24" wide.

Feather Reed Grass 'Karl Foerster'
Calamagrostis x acutiflora. Zone 5-9. Showy plumes appear in June. They mature to striking wheat-coloured seed heads which dry well. Leave uncut for winter interest. Prefers part to full shade. Does best in moist, or even wet soil. Rate of growth is directly related to moisture available. Forms upright clumps, 6' tall and 2-3' wide.

Festuca 'Elijah Blue' *Festuca ovina glauca*
Zone 4-8. Prefers full sun and well-drained soil. Grows 8-12" tall.



Festuca 'Boulder Blue'
Festuca ovina glauca Zone 4-8. Prefers full sun to light shade and well-drained soil. Will benefit from watering during the first planting season. Somewhat drought tolerant once established. May self-seed. Grows 8-12" high.

Golden Japanese Forest Grass
Hakonechloa macra. Zone 5-9. Plant in average well drained soil. Prefers part to full shade and will tolerate sun with adequate moisture, making it a great pond side attraction. A slow grower that sets roots before foliage so be patient. Use as border accent or a specimen. Grows 12-18" tall and 1-2' wide.

Japanese Blood Grass 'Red Baron'
Imperata cylindrica 'Red Baron' Zone 5b. Maintenance requirements for this plant are few. Prefers average, moist, well-drained soil in full sun to part shade. It is useful in borders, rock gardens, and containers or as a colorful accent. Cut back in fall, as there is no real winter interest. Grows 14-18" high.

Little Bluestem
'Prairie Blues' Schizachyrium scoparium. Zone 3-9. Warm-season clump forming grass. Plant in average, evenly moist, well-drained soil. Prefers full sun but will tolerate light shade. Drought tolerant but will grow best in evenly moist, well-drained soil. Grows 3' tall and 18" wide.



Miscanthus
Warm season, clump forming grasses. Begins to grow later in the season so surround with spring blooming-plants. Make sure area is well-drained. Full sun.
"Little Zebra" - Height 3-4' tall and almost as wide. Zone 5.
"Graziella" - Height 5-6' tall and 3-4' wide. Zone 5.
"Huron Sunrise" - Height 5-6' high and wide. Zone 4.

Northern Sea Oats *Chasmanthium*
Zones 5-9. Warm season, upright clump forming grass that has light green, wide blades. Prefers fertile, moist, well-drained soil and is drought tolerant once established. Plant is quite adaptable to sun and shade but is best in part shade. Unique dried flower. Grows 2-3' tall and up to 2' wide.

Pampas Grass 'Pumila' *Cortaderia sellonana*
Zones 7-10. Tender Perennial. Plant out in early spring when soil is cool and a light frost is still possible. Performs best in fertile to average, well-drained soil and should be planted in full or afternoon sun. Leave standing over the winter before cutting it back hard in mid-spring. Resistant to deer and rabbits. Where not hardy it can be overwintered in a planter somewhere dry, cool, and frost free.

Panicum *Panicum virgatum*
Warm season, clump forming grass. Prefers full sun and any well-drained soil. Drought tolerant but grows best with even moisture. Grows 4' - 5' high and 2' - 3' wide. 'Heavy Metal' is hardy to zone 5. 'Prairie Fire' - Zone 4.

Pennisetum
Warm season clump forming grass. Easily grown in average, moist, well-drained soil in full sun. Tolerates part shade, but may not flower as well. Drought tolerant once established.
'Karly Rose' - Height 36" tall and wide. Hardy to zone 5.
'Little Bunny' - Height 12" high and wide. Zone 5.



Red Switch Grass *Panicum virgatum*
Warm season, clump forming grass. Prefers full sun and any well-drained soil. Drought tolerant but grows best with even moisture. Grows 3-5' high and 2-3' wide. 'Prairie Fire' and 'Rostrahlbusch' are hardy to zone 4.

Sedge *Carex elata 'Atra'*
Zone 5. Forms golden, compact clumps that are often evergreen. Moderate spreading habit. Prefers moist, soil in full sun or part shade. Can grow in 2-3" of water. May scorch in hot, direct midday sun. Grows 2" high and wide.

FRUITS & BERRIES



Important! Upon Arrival

Please open your package upon arrival and notify us immediately if there is a problem. These are live plants and proper care must be taken to ensure their health until you are ready to plant. We cannot guarantee the plants beyond this time, as storage and growing conditions must be carefully controlled. Keep moist and cool. Fruits and berries are shipped in dormant form so they can be transplanted out once the soil can be worked in the spring. Light frosts will not damage the plants as they are in the resting stage. If you are unable to plant immediately, the plants can be stored for a short period of time. This should be a dark, cool (but not freezing) location (unheated garage, fridge or a cold cellar). They should also be kept moist, but not wet, until they are planted.

Currants & Gooseberries (*Ribes*)

For these plants, choose a sunny location that has good air movement to reduce disease problems. Currants and gooseberries can be long lived so be sure to prepare the soil well before planting. Add compost or well-rotted manure to the hole before planting. Plant the canes slightly deeper than they were growing previously (look for soil mark on stem). Plants should be spaced 3 ft apart in rows 6 ft apart. Prune back to 2 buds so as to encourage vigorous growth. It is important to have 2-4" of mulch around the plants as they like cool, moist soil. Straw, bark, or grass clippings all work well. Plants should be pruned in late winter or early spring when the plant is dormant. Black currants will bear fruit on 1-yr. old wood, so each year, older canes should be removed. About 12 canes per plant is an ideal number to maintain. Gooseberries bear fruit primarily on 2 and 3-year-old wood, so equal numbers of 1, 2 and 3-year-old shoots should be maintained to insure a constant renewal of fruiting wood.

Blueberries (*Vaccinium corymbosum*)

These highbush blueberries will grow upwards of 4' in height as mature plants and will yield large berries in late summer. Choose a full sun location with well drained,

loamy or sandy soil with a pH of 4.5-5.2. You can reduce your soil pH by mixing in sphagnum peat moss or by mixing in compost made from pine needles, oak leaves and/or bark. Work plenty of nutrient-rich compost into the top few inches of soil. Space plants 4' apart, alternating cultivars for effective cross-pollination. Rows should be 7' apart. Water with liquid fertilizers such as manure tea or fish fertilizer. Water frequently and mulch heavily around plants. Growth is slow and production will peak at 6-8 years of age. Yearly pruning of mature plants will encourage larger fruit and heavier production.

Grapes

Site Selection: Choosing the right spot for any long-lived perennial plant is important. More so with grapes as the right site will help reduce disease problems and ensure fruit for many years to come. The 4 factors are: 1) Soil Drainage - grapes do not like wet feet, so avoid sites where the soil is heavy or water sits for any amount of time; 2) Air movement - Good air circulation will reduce disease problems; 3) Avoid Frost Pockets - plant grapes in an area where they will not be exposed to late spring frosts; 4) Sun exposure - grapes like full sun.

Soil Preparation: Since this will be the permanent home for the grape it is important to properly prepare the soil before planting. Grapes like a moderately acid soil (between pH 5.5-6.0) so liming is not generally required, unless your soil is very acidic. Grapes are not heavy feeders, but working some compost into the soil should help them get a good start.

Planting: Space grapes 8 feet apart in rows 10-12 feet apart. The soil should be lightly packed around the plant and well watered until the grape begins to grow. They can be fertilised 3-4 weeks after they are planted out, with a balanced fertilizer.

Pruning: Since grapes can be very prolific and only bear fruit on 1-year-old wood, they need to be pruned and trained to bear an abundant harvest. The process below describes a common pruning method called the 4 arm Kniffen system, but the principles can be applied to any form. This system involves using galvanized steel wires spaced 3 feet apart on posts 16 feet apart. Grapes should be pruned in late winter, early spring before the buds have begun to grow.

Year 1: In the first years growth the grapes should be tied up to a stake and only the strongest 2 shoots allowed to grow. Figure 1

Year 2: Select the stronger of the two canes to be the main trunk of your grape. If the cane has only reached the first wire then restrict it to shoots (Figure 2A). If it has reached the top wire then once the shoots begin to grow remove all but the strongest 4-5 at each wire, these will be the arms of you grape vine. (Figure 2B)

Year 3: At each wire select the strongest cane going in each direction and prune to 3-4 buds in each cane. (Figure 3) These will provide the fruiting wood for next year.

Year 4 and beyond: Finally the first fruiting year has arrived. Select the stronger cane at each wire and prune to 6-10 buds each. This cane will bear the grapes. Also leave one shoot in each direction pruned to 2-3 buds, this will supply next years fruiting canes and is called a spur. The fruit should be harvested in the fall. The colour will change before the grapes are ripe, so a taste test is the best way

Figure 1 PRUNING GRAPES

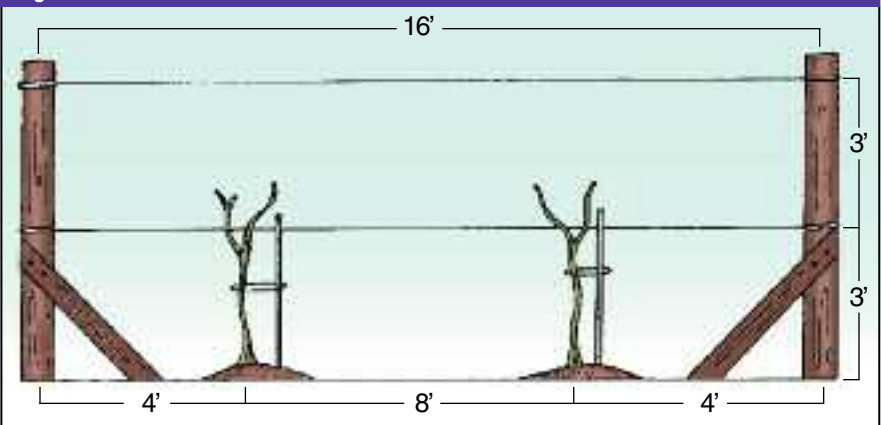


Figure 2

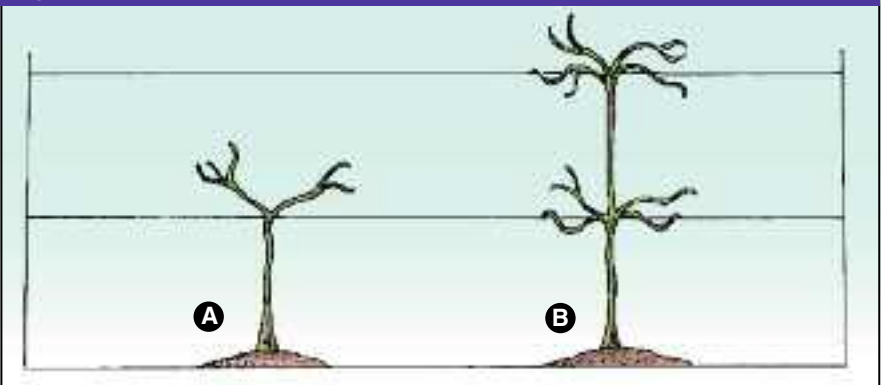


Figure 3

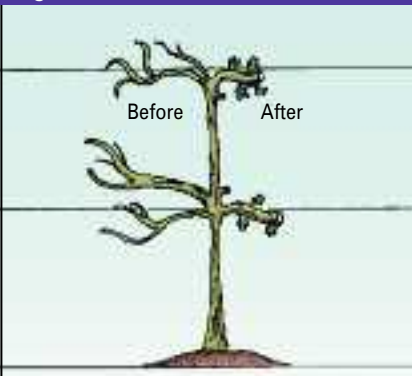
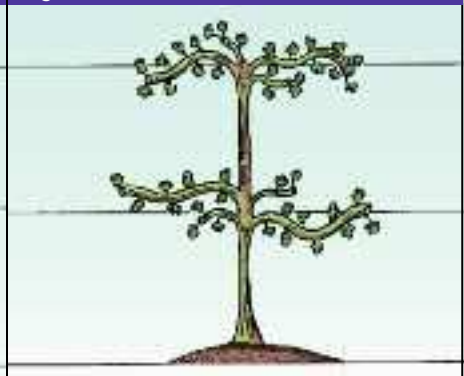


Figure 4



to know when they are ready. In future years prune back the previous year's wood and select a new fruiting branch and spur.

Hardy Kiwi (*Actinidia*)

Plant in loamy, pH neutral, well-drained soil. Avoid areas with late spring frosts. Tolerates shade but does best in full sun. Hardy kiwis are not heavy feeders, but an appli-

cation of compost or well rotted manure to the hole when planting would be beneficial. Do not allow the roots to dry out during the establishment year. Mulching around the plants will help to keep the soil from drying out. Plant hardy kiwis 4-5 feet apart. Since kiwis are a very vigorous vine and can grow to 10 feet tall they will require the support of a trellis or fence. When the kiwi is planted prune the stem back to 2 buds. Once these buds develop into



shoots choose the larger of the two to be the main trunk and remove all others. Train this main trunk up onto the support by tying it to a stake or a wire. Do not allow it to twine around or this will cause problems as the vine gets older. Once the main trunk has reached the desired height nip off the growing tip. From the shoots that will begin to form, choose 2-4 shoots to serve as the main branches and remove the others. Now that you have established the shape of the plant future pruning will be to help insure proper fruit set. This pruning should be done in the spring before the buds begin to grow. Hardy kiwi mostly set fruit on wood that was produced the previous year. Remove any wood that fruited the previous year and any damaged canes. Leave well spaced (10-15" apart) 1-year-old canes. Prune these canes back to 8 buds. Hardy Kiwis require aggressive pruning and you should be removing 60 to 70% of the canes.

Haskaps (*Lonicera*)

For individual bushes, plant 4-6' apart and for a hedge row 3' apart. Plants will arrive in a root ball and can be planted 1-2" deeper than the original depth to compensate for heaving and to help develop a deeper root system. Water right after planting. Haskap, also known as Honeyberry, are hardy to zone 2 and can be planted in spring or fall. Shrubs grow 4-6' tall and wide and require a two varieties in order to produce fruit. Pollinator variety can pollinate up to 7 or 8 females. They prefer full sun and well-drained soil but will grow in wet soil and have a wide pH range of 5-8. Ensure the soil is adequately moist for the first few growing seasons. Grow them in a sunny spot where they will get at least 6 hours of full sun. To keep shape prune in late winter or early spring and thin out older branches when shrub gets too dense. Bushes can often bear a few fruit 1 year after planting but yield abundantly once 2 to 3 years old. Berries ripen in June and the flavour improves if the fruit is left longer on the bush. Mature shrubs can yield up to 5-7 kilos per plant. Fruit can be used the same way as blueberries. Honeyberries have few pests and diseases other than being eaten by birds, deer and mice. Bird netting is recommended. Powdery mildew may be a problem on some cultivars.

Rhubarb (*Rheum rhabarbarum*)

Rhubarb is an extremely easy plant to grow and will reward you with fruit for years to come. Plant as soon as soil can be worked. Choose a sunny, well-drained area for your rhubarb bed. Dig a hole several inches deep to accommodate root and space plants 18" apart. Add a generous amount of compost. Apply mulch to smother weeds and retain moisture. Sidedress with compost or fertilizer in midsummer. Break off flower stalks to encourage leaf stalk production. Roots can be divided and replanted in early spring of the third and subsequent years. Do not harvest the first year and harvest only stalks that are at least

1" thick during the second year. Stalks are best when harvested in the spring and early summer.

Saskatoon Berries (*Amelanchier*)

Saskatoons are very hardy, but sites with late spring frosts should be avoided. They do not have high nutrition requirements, although compost worked into the soil prior to planting will help maintain soil moisture while the plant establishes. A well drained soil and a soil pH of above 6.0 is preferred. The roots should be well covered and the soil firmed around the plant. Plants should be spaced 3-6 feet apart in rows, where they will grow to form a solid hedge. During the establishment year it is important to control weeds around the young plants. Saskatoon berries will begin to bear fruit at 2-4 yr. of age. Fruit will ripen in late June at the ends of the branches. Most of the fruit is born on healthy 2 to 3 year old wood. Plants generally will not require pruning until they are 7-9 years old. Then remove damaged, weak, or crossed branches. Pruning should be done in early spring before growth begins.

Strawberries (*Fragaria x ananassa*)

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" apart 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). Day Neutral or Everbearing varieties do not need to be pinched off during the first year. 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. During the second year, after strawberries have produced their crop of berries in June, the plants should be mowed down and fertilized to encourage new runner production. Even a well looked after stand of strawberries begins to wear out after 2-3 years of production, so to ensure continued harvest, plant a new crop during the 2nd year of production. After the third year of fruit production the strawberries should be tilled under. Strawberries should not be grown in the same place for 2-3 years to prevent build up of diseases.

Raspberries & Blackberries

(*Rubus idaeus*) Choose a sunny site in your garden with good air circulation and water drainage and a pH of 6.0-7.0. Keep roots moist until planting. Work plenty of organic matter into the soil and mulch to keep out weeds. Plant as soon as the soil has warmed. Dig a hole large enough so as not to bend roots. Trim canes to encourage new growth. Plants should be set out at least 2' apart in rows 5-6' apart for raspberries and 7' apart for blackberries. Trellising is beneficial for cane support. Produces fruit on second-year canes (floricanes). In the fall of the 2nd year, prune spent canes to ground level and thin others to approximately 4 canes per foot of row. Cut off suckers which grow outside of rows. Trim remaining raspberry canes to 4-5' and blackberries to 7'. 🍷

BULBS & PERENNIAL ROOTS

Important! Upon Arrival

We are often asked questions about the proper storage of the bulbs and roots that we offer. In response, we offer you these guidelines...

Bulbs for Spring Planting

Plant the bulbs as soon as you receive your shipment. If you cannot plant the bulbs immediately, remove the bulbs from plastic bags and put them on a tray with damp peat moss or sawdust in a cool, dark, dry, well-ventilated place until you have a chance to plant them. Do not let the bulbs freeze. Plant outdoors when the conditions are right for your zone.

Bulbs for Fall Planting

Plant the bulbs as soon as possible, after you receive them. If you cannot plant them right away, open the cartons and if the bulbs are in plastic bags, remove them from the plastic. Place them on a tray with peat moss or sawdust in a cool, dark, dry, well-ventilated area until you can plant them. Do not store them at temperatures below 4°C. Generally all bulbs planted during the fall are hardy and do not need any special protection unless specified in this planting guide.

Perennial Roots

Dormant Bare-roots: We usually ship perennials to you in their dormant state, that is: bare roots, usually without leaves, in bags of loose peat moss. They may have some shoots beginning to grow. **It is very important to plant these dormant perennials as soon as possible after you receive them.** If it is absolutely necessary to store them for a short time before planting them, open the cartons and any plastic that is around the roots. **If the roots appear dry, soak them for a few hours in warm water. Thereafter store in slightly moist peat moss in a very cold, but not freezing location until you can plant.** They can also be placed in pots of soil if planting will be delayed for more than 2 weeks.

Non-dormant in Pots: Some Perennials will be shipped to you from our greenhouses. They will be in pots and may have actively growing green leaves. These pots should be immersed in water upon arrival to thoroughly soak the root ball. These non-dormant plants must be hardened off before planting outside. Keep in a cool bright room, and place outside on mild days and gradually leave outside when it is cooler. After a week or so or when nighttime temperatures are above freezing, plant outside. If a severe dip in temperature is expected you may want to place straw or an old blanket over the green leaves to protect them from severe damage. Frost or cold will not permanently hurt the plant, but it may damage the new leaves and set growth back.

General Planting Information

Where to Plant

The most important rule when planting is to choose an area that is well-drained. Most bulbs will rot or deteriorate



Loosen the soil and add fertilizer or compost.

quickly where soil is constantly damp. Most bulbs thrive in full sun, or at least 5-6 sunny hours daily. Some, like Fritillaria and wood hyacinths prefer filtered shade. Others like tuberous begonias and caladiums, do best in partial shade.



Place bulbs firmly in soil, pointed end up. Plant in clusters for best effect.

Soil Drainage

Most Bulbs, Perennials and many other garden plants require 'well-drained' soil in order to thrive. Areas that often have 'sitting' water or constantly soggy soil can quickly cause roots to rot and deteriorate, especially over winter.

Testing for Drainage

Dig a hole 1-foot deep by 1-foot wide. Fill the hole completely with water and record how long it takes for the water to completely drain. The ideal time is between 10 and 30 minutes. If it drains in less than 10 minutes, the soil is drought-prone and most suitable for plants that need dry or very well drained soil. If it takes 3 to 4 hours, your soil is poorly drained, due either to a large percentage of clay or due to compaction or an impermeable layer of minerals below the surface that blocks water movement.

Improving Soil Drainage

Any soil is improved by working in lots of organic matter, such as manure, compost or peat moss. Thoroughly till or double dig the area to a depth of 10-12". If your soil drains too quickly, organic matter will help it hold moisture. If

No Blooms?

The overall cause of a bulb not growing or not producing a bloom, but many nice leaves, is either the bud was damaged or a flower bud wasn't formed. NO bud equals NO flower. Cultural conditions can also lead to diseases or conditions that cause the leaves to be deformed or the bulb to disappear. The following may lead to no flowers or no growth:

Fertilizing & Watering: If bulbs have been fertilized or watered too much. Most bulbs prefer dry summers and a single application of bulb fertilizer in the fall. If your bulbs were planted near perennials, annuals or a lawn that you are constantly watering and fertilizing, they will not be happy.

Sun: If there wasn't enough sun last spring or they are planted in a shady area. Most spring blooming bulbs prefer full sun for 6 hours per day.

Competition: If they are in competition with other plants, such as shallow rooted trees and aggressive perennials they may be weakened.

Poor drainage: If water puddles where they are planted, they will get basal rot fungus, not grow properly and die out. Bulbs need excellent drainage.

Leaves Removed: If the leaves were cut off last season before they withered on their own. The leaves produce and store energy for next year's flowers. If they were removed too soon, the bulb cannot flower.

Need Dividing: If they have multiplied and are crowded, you may just need to divide them. This is not normally a problem in a home garden setting, but if there are scads of crowded leaves, you can try division.

Shallow Planting: They may be planted too shallow. They should be planted to a depth equal to at least three times the width of the bulb, up to 10", but at least 3" for small bulbs.

Planted Too Early: You may have planted them too early last fall. If the bulb had rooted and the soil was still warm, it may have started to produce a flowerbud. Once the flowerbud emerges it will live or die depending on the current soil temperature. If it emerges when it is too cold, it dies and then next spring, no flower. Plant most fall bulbs after the soil has cooled. This is usually September in Zones 2 and 3, October in Zones 4 and 5, November in Zones 6-7 and December in Zones 8. Plant your daffodils in the early part of your fall (when leaves start to fall from the trees) to give them some extra time to root in.

Animals Pests: Squirrels, mice, deer, rabbits or other pests may have eaten or damaged the bulbs.

Winter Temperatures: If you had severe alternating temperatures during the winter, the bulbs may have been pushed out of the ground or started to grow during a mild spell and been damaged by subsequent very cold weather. A heavy winter mulch of straw, leaves or evergreen boughs helps prevent this.

Immature Bulbs: In rare cases, if bulbs are immature or too small, they may not have a developed a flower bud and so cannot bloom. They may bloom the second year.

Spring Temperatures: If temperatures fluctuate severely before bloom time, flower buds may be aborted.

your soil is poorly drained, organic matter will improve the texture. Very poorly drained areas may need to have drainage tile installed or you may need to garden in raised beds. Raising the soil level by just a few inches greatly improves drainage.

Planting Bulbs

Plant bulbs individually by digging a hole for each bulb with a trowel or bulb planter, or place several bulbs on the bottom surface of a larger hole, then cover with soil. As planting depths and spacing varies depending on the type of bulb, refer to the cultural information found later in this guide. Whichever method you use, be sure to loosen the soil at the bottom of the hole and work in a handful of fertilizer such as Veseys Bulb Fertilizer or bonemeal. Then press each bulb firmly into the soil, top pointing up and fill in the hole. When in doubt as to which way is up on a bulb, plant it on its side and let 'mother nature' decide. After planting, water the area well to settle the soil and to start the roots growing. If rainfall is sparse, you may need to water the bulbs once a week, to help them get established. For strongest visual impact, we suggest planting your bulbs closely in groups, drifts or clumps of a single kind and colour. With small bulbs like squill, snow crocus or grape hyacinths, it is essential to plant them in generous drifts if they are to be noticed. When planting bulbs, be sure to take colour into consideration. In general, groups of a single colour have the most impact.

Planting Perennial Roots

It is a good idea to soak any bare-root perennials in water for a few hours, but no more than a day, before planting. Add organic matter to the area and provide good drainage unless the variety can tolerate wet soil. Unless otherwise specified, bare-root perennials are usually planted with the crown (where the roots meet the shoots) an inch below the soil surface. Firm soil gently to eliminate air pockets and water in well. Mark the area clearly since it may be a while before the plant shows itself. Perennials in pots should be watered well before planting. Loosen any tight roots and plant at the same depth as the plant was in the pot. If the leaves were green and growing, you should protect them from frosts with straw mulch, Remay or an old blanket. If white or pale yellow shoots or leaves developed during storage, protect them from wind and harsh sun with Remay or a burlap screen, until they green up. Pay particular attention to watering any new plants during the first season. Once established most plants are drought tolerant.

Naturalizing

Naturalizing bulbs is a popular planting technique to achieve a natural effect in the landscape - as if nature had planted them. You can naturalize bulbs in a meadow or woodland, in areas under deciduous trees and shrubs, in a lawn or at the edges of paths and walkways. The traditional method of naturalizing is to scatter the bulbs across the area and plant them where they fall. Or you can simply plant the bulbs at random, avoiding any resemblance to rows or patterns. In succeeding years, the bulbs will multiply and fill in the spaces. Daffodils naturalize beautifully in open areas at the edge of woodlands, or on the slope of a lawn. Small bulbs such as snow crocus, snowdrops and Siberian squill, whose foliage matures fast, are best for naturalizing in lawns, set out individually or in clusters.

Maintenance

Fertilizing & Watering

Once planted, bulbs are very easy to care for. Most bulbs will multiply and reward you with increased bloom in years to come. In subsequent years, work some 5-10-5 fertilizer into the soil around summer flowering bulbs sever-

al times during the growing season. Fall planted bulbs such as tulips and daffodils will respond well if you feed them every autumn with a slow-release fertilizer like Veseys Bulb Fertilizer. Work it into the soil surface and the nutrients will be released to the bulbs during the entire fall and spring growth cycle. Be sure to water well after these feedings to get the nutrients down to the bulb. You can also use a water-soluble fertilizer directly on the foliage for a quick energy boost. If the season is rainy, give your bulbs an extra dose to compensate for leached-out nutrients. There is no benefit to fertilizing fall planted bulbs while they are flowering or after flowering. Excess nutrients at this time can in fact lead to fusarium bulb rot, which is the number one cause of bulb loss. Indoor pot-grown bulbs do best if a houseplant fertilizer is applied weekly during active growth.

In dry conditions, give your bulbs adequate water. Water deeply enough to reach the roots. This is especially important after rapid growth begins. Compost or other organic material applied 2"-3" deep as mulch around new shoots will help greatly to conserve moisture.

Important! It is critical in caring for your bulbs to allow the foliage to mature naturally. The leaves are the bulbs' principal source of energy for next year's bloom and must mature for several weeks. When the foliage withers, you can cut it off at the base. Adequate moisture while the foliage is ripening is also important.



When dividing bearded Iris, make sure each new division has a strong root section and a single fan of leaves.

Dividing

If, after several years, your bulbs or perennials have formed large clumps but blooms are sparse, they most likely have run out of space and are competing fiercely for the available light, water and nutrients. This is a sign that you should divide them, and is best done right after flowering. When the foliage is ripening, dig up the clump, break or cut it apart and replant where you want a good show. You may find smaller bulblets or tubers adhering to the parent bulb. These may be discarded or replanted where they can grow to blooming size in a couple of years.

Animal Pests

If wild animals like squirrels, chipmunks and mice are dining on or carrying off your bulbs, try the following:

- Put sharp gravel around the bulbs when you plant. Improves drainage and deters critters.
- Cover newly planted bulbs with very small wire mesh.

Remove in spring.

- Interplant daffodils and fritillaria among your tulips and crocus. Squirrels hate them.
- Clean up bulb debris (Tunics, etc.) after you plant, so pests aren't attracted.
- Feed the squirrels in fall and winter. The White House puts out six peanut feeders every year to keep the critters away from the new plantings.
- Mothball flakes, human or pet hair, or pine needles sprinkled on the ground may work.
- *Cayenne pepper works, but is considered inhumane. The squirrels get it in their eyes, which causes temporary blindness and extreme discomfort. It's better to humanely trap, shoot or poison them.
- Do not put winter mulch on your planting until after the ground has frozen in December or January. If you put it on earlier you are creating warm, winter nests for rodents looking for winter homes!
- Try commercially prepared repellents such as 'Ropel' or 'Critter Ridder', which leave a very bitter taste or odour on bulbs or plants.

Overwintering

Hardy Plants are those that can be left in the ground safely all year even where frost penetrates deeply into the soil. Most of the beloved bulbs of spring (bulbs planted in the fall) are in this category - crocus, daffodils, tulips, and hyacinths are the most familiar ones. Lilies and many perennials are also hardy in most zones. It is important to know your hardiness zone, so that you can know what is hardy in your garden. The lower the zone number, the colder the zone. For example, Zone 2 is colder than zone 3. A plant that is hardy to zone 3, may not overwinter in a zone 2 garden, unless given special protection. **Bulbs benefit greatly from a 2 to 4" deep winter mulch of straw, pine boughs, shredded bark, compost or leaves. Mulch prevents the ground from alternately freezing and thawing, which can heave the bulbs out of the ground during winter.** In summer, a mulch conserves moisture and suppresses weeds. Wait until the ground freezes before applying a winter mulch to fall planted bulbs.

Tender Plants are those that can't survive the cold temperatures in your area. In most Canadian zones, you must dig up bulbs like begonias, dahlias, and gladioli before fall frost, winter them indoors and plant again in spring. Of course, in very warm climate zones, such as coastal BC, some can be left in the garden year round. When brought indoors for the winter, storage temperatures may range from 7°-15°C depending on the type of bulb. Many gardeners treat them as annuals and replace them each season. If a bulb or perennial is border-line hardy in your area and you must provide protection, apply a thick winter mulch.

Bulbs and corms that have a protective papery husk are easy to deal with. Simply dig up in the fall and shake the soil off. If the foliage has not quite died, leave the bulbs upright in a cool spot for a couple of weeks. Cut off the dead foliage and store the bulbs in old nylon stockings or mesh bags in a cool but frost-free area. Summer blooming bulbs with fleshy tubers or roots should be dug before frost and spread out in a shaded spot (like a garage) until the outside of the tuber feels dry. Then lay them in uncovered shallow flats or boxes filled with peat moss, sawdust or vermiculite. Check monthly to make sure they are not drying out and shriveling. They should stay plump until spring planting time, so you may have to sprinkle them

with a little water to keep the right moisture. Caution: too much water will cause mold.

Other Uses

Bulbs for Outdoor Containers

Many summer-blooming bulbs take beautifully to container growing. To get a longer growing season, you can start many of them indoors early in spring and move them outdoors, pot and all, when temperatures are warm enough. Tuberous begonias, caladiums, calla lilies, dwarf cannas, dwarf dahlias and zephyranthes are some of the best to try. Whether potting bulbs for indoors or outdoors, make sure the pot has good drainage by placing gravel or broken pottery in the bottom of the pot. Position the bulbs at the recommended depth and water well once, and then water sparingly until top growth appears. After that, keep the soil moist and remember that clay pots dry out very quickly. In hot weather, water daily. Turn the pots a bit each day to keep stems straight.

Bulbs for Cut Flowers

You may want to grow some summer bulbs - particularly dahlias, callas, lilies, gladioli, and anemone coronaria - primarily for cutting. A separate bed, or a section of your vegetable garden, is often the best solution for growing large quantities of these bulbs. If good drainage is a problem, make a raised bed. Follow the same recommendations for spacing and depth (given in the following pages) as you would for using them in the border.

Bulbs as Houseplants

Several of the summer bulbs do well as houseplants. Be sure to provide at least 4 to 6 hours of sun each day, adequate humidity, and, for some bulbs, cool enough temperatures. Over-watering of summer bulbs indoors is as bad as poor drainage outdoors. Let the surface become almost dry to the touch before watering. Caladium and cyclamen are the exceptions; they need constant moisture. Use a porous soil mixture, not garden soil and coarse drainage material in the bottom of the pot. Set the pots on trays of pebbles with water added to increase humidity or group plants together. Most summer bulbs grown indoors require temperatures ranging from 4°C to 15°C. Even if you can only offer temperatures from 15°C to 21°C, you can still grow a wide selection of bulbs including gloriosa lily, vallota, eucomis and the amaryllis relatives. Most bulbs grown as houseplants need a rest period of at least a few weeks in winter. Water minimally, if at all, during this period.

Forcing Bulbs Indoors

A container of sunny daffodils, or cheery crocus, blooming on your windowsill in February, can be a treat. In order to enjoy these beautiful blooms in winter you must make plans in late fall. Depending on the type of bulb, it may take anywhere from 1 to 4 months from the time they are potted up until they bloom.

Potting up:

Select a container that is at least twice as deep as the height of the bulbs. Shallow, heavy containers will not topple as readily as high containers. If you are planting your bulbs in potting mix, your pot must have drainage holes. Fill pot with mix (at least 2" for root growth). When bulbs are placed on this layer, their tops should be even



with the rim of the pot. Use several bulbs for an attractive display. Cover with potting mix and water in to settle.

Cooling/Rooting Period:

Be careful if using a residential refrigerator. Ethylene, which is a gas produced by certain fruits and vegetables, can retard flower development in the bulb. Avoid storing the following fruits and vegetables anywhere near your bulbs. Passion fruit, apple, avocado, apricot, cantaloupe, kiwi, peach, banana, tomato, honeydew, cucumber, pepper, pineapple.

Forcing Blooms:

Most types of bulbs will bloom 3 to 4 weeks after you bring your bulbs into a warm, bright room. Pots should be kept at 60°F/15°C with indirect sunlight for one week. Move pots to a warmer room (68° F/20°C), with direct sunlight until buds take on colour. Return plants to indirect light and cooler temperatures to help blooms last longer. After blooming, hardy bulbs can be planted into your garden where they will bloom again in a year or two.

Easiest Bulbs for Forcing

Large Flowered Crocus: Use at least 15 bulbs per 6-8" container. They require a 12-15 week cold rooting period and can be forced in water.

Hyacinths: Hyacinths are often forced singly in glass forcing vases using only water. They can also be potted up in groups. Either way give them 4 to 8 weeks in a cool, dark place before forcing.

Iris: Dwarf Iris are suitable for forcing, especially Iris reticulata and Iris danfordiae. Place in cold treatment for 8-12 weeks. These species can handle very cold temperatures. When you take these out of cold treatment be sure to keep temperatures below 65°F or they may not bloom.

Tulips: Tulips require a long (12-15 weeks), even, cold treatment. Plant with flat side of bulb facing rim of pot for a more attractive display. Early, shorter varieties are the easiest to force.

Daffodils: Plant in larger, deeper pots to accommodate long, heavy roots. Place in cold treatment for 12 to 16

weeks. Daffodils need very bright, direct sunlight to bloom properly.

Scilla and Grape Hyacinths: Cool for 10- 16 weeks. Use lots per pot.

Growing Information

Abyssinian Gladiolus (*Acidanthera*)

Formerly known as *Acidenthera murielae*, this close relative of gladiolus needs full sun and good loamy soil. As soon as the soil starts to warm in spring, set the corms 4" deep and 8" apart, in groups of at least 3 for a graceful and showy display. The fragrant flowers, which bloom over an extended period in late summer, make gorgeous long-lived cut flowers. In zones lower than 8, dig the bulbs before fall frost and let foliage die back. Once yellowed cut foliage off at bulb then place bulbs in slightly moist peat moss or vermiculite. Store in a dark, cool, dry place where the temperature stays above freezing. Plant in spring when soil is workable. May overwinter in Zone 7 with protection.

Acanthus mollis

Zones 7-8. Also called Bear's Breeches. Plant crowns 1" below soil surface, 2" apart. Flowers best in full sun, but prefers some shade where the afternoon sun is really hot. Highly drought tolerant will not survive in wet, poorly drained soils. Blooms in summer. Leaves die back after bloom. Cut stems back to ground level in spring.

Achillea ...see Yarrow.

Achimenes (*Stars of India*)

Zones 10-11. Easy to grow plant and multiplies rapidly. Start rhizomes indoors in April or May. Plant 1/2" deep and 1" apart in a mixture of moist peat moss and sand. Place in a warm (60-65°F), lightly shaded, location. Maintain even moisture, but do NOT overwater as rhizomes may rot. As growth appears, increase watering slightly and give plants more light (never hot direct sunlight). Feed when actively growing. After danger of frost has passed and plants are 3" high, transplant into a shady garden. Instead of garden soil, use a loose mixture of peat moss, sand or perlite and leaf mold. Fertilize once a month and protect from direct sun and wind. When plants are 6" tall, start pinching off top shoots to promote bushiness. Continue pinching until early to mid-July. Great as a hanging basket plant. At end of growing season lift and dry rhizomes. Store in a cool dry place. Alternatively, if grown in pots, let the plants die back normally in fall, cut off foliage, and place whole pot in a cold cellar for the winter. In March bring out and water lightly. In about 2 weeks, dump out soil, pick out the bulbs and re-pot them.

Acidenthera ...see Abyssinian Gladiolus.

Aconitum ...see Monkshood.

Agapanthus (*Agapanthus africanus*)

Zone 8. Best grown in containers in well-drained, slightly acid, sandy soil mix. Appears happiest, and flowers more heavily, as it becomes root-bound. Grows best in shallow containers and will flower regularly if fed with a slow release fertilizer. Keep well watered during the growing season. Overwinter in a bright, cool (5-10°C), frost-free place indoors, such as a conservatory, porch or unheated, but insulated, shed with a window. Keep the plants on the

dry side during fall and winter until growth resumes in the spring. Divide only when necessary. Does not like having its roots disturbed. Grows 18"-36" tall. Flowers from summer to early fall.

Allium

Zone 4. All thrive in sun and will tolerate some shade. Make sure that soil is well drained. The tall varieties should be planted in groups of at least 3 bulbs toward the back of the garden: the shorter varieties in groups of 6-10. Plant 20 cm bulbs 10" -12" apart and 6" deep; 10-12 cm bulbs 8" apart and 4" deep; smaller bulbs 3"-4" apart and 3" deep. Alliums are drought tolerant. The foliage of many larger Alliums, withers just as the plant blooms, so plant behind bushy perennials, such as daylilies.

Leaves die back after flowering: Globemaster, Gladiator, Galaxy Flower, *A. christophii*, Sicilian Honey and Honey Garlic. **Leaves remain green for most of the season:** *A. atropurpureum*, Blue Drumstick, Jade eyes, *A. roseum* and Hair.

Alstromeria

Zone 5-8. Also known as Peruvian Lily. Plant roots 8" below soil surface, or 4-6" deep in warmer climates. Alstromeria is susceptible to root rot, cultivate to a depth of 15" to avoid this. Mulch in early winter and do not disturb roots. Handle the tuberous roots gently as they can be brittle. Space 12" apart. Prefers full sun to partial shade and well-drained, organic, moist soil. Blooms June to September. Grow against a warm wall and provide winter mulch where marginally hardy (Zone 5). Where not hardy, dig and store roots in moist potting mix and store at 2-5°C.

Amaryllis

Zone 9-11. Plant your amaryllis in a pot 1-2" wider than the diameter of the bulb and about the same depth. Fill the pot 1/3 full of moistened potting soil and place the bulb on top of the soil spreading out the roots. Add additional soil around the bulbs to be sure it is securely anchored, and water thoroughly. You should still be able to see the top inch or two of the bulbs. Place the pot in a warm bright place and water sparingly. When growth starts, increase watering to keep the soil evenly moist and provide plenty of light. If your bulbs do not start to sprout within 4-5 weeks after planting, gently remove the bulb from the soil and check to see that it is still firm and that roots are starting to grow. You can try soaking the bulb in warm water for several hours, replanting, watering well and placing in a warm location. Some bulbs are slower to start than others are. As the stalk elongates, rotate the pot to keep it straight. Flowers usually open 8-10 weeks after planting. For a succession of glorious amaryllis blooms all winter, start forcing a bulb or two every two weeks from October on. After the flowers fade, cut back the stalks but not the leaves. After danger of frost has passed, bury the pot in the garden up to its rim. Water and fertilize it regularly throughout the summer. In early September, lift the pot and bring it indoors. Withhold water and let foliage die as the bulb goes dormant. After a couple of months, you can restart the growth cycle as above by beginning to water the pot. **Hardy Amaryllis:** Zones 6-10. Each bulb produces two stems that are crowned by three or four lavish, 4-5" diameter flowers. Plant in full sun to mild shade at the surface of the soil. Grows 18-24" tall.

Growing Tips

The rule of thumb for planting bulbs is: bury them about three times as deep as the diameter of the bulb. Measure planting depth from the soil surface to the shoulder of the bulb. In heavy clay soil they should go a little less deep; in sandy, porous soil they should be planted a little deeper.

Plant early-blooming bulbs like winter aconite, dwarf iris, snowdrops, miniature daffodils and snow crocus in a very sheltered sunny spot for earlier bloom. You'll get the most enjoyment of these tiny gems if you place them where you see them often - by a doorway or at the base of a retaining wall.

If your bulbs, tricked by a late winter thaw, start poking their tips up only to have a blizzard of snow dumped on them, don't worry. The cold and ice returns them to their dormant state until warmer weather settles in. Few blooms will be lost.

Learn to live with withering foliage, or camouflage it by inter-planting with perennials and annuals. The leaves are the bulbs' main source of energy for replenishing the food supply and creating the embryos of next year's flowers. This process continues for weeks after the flowers die and is the most critical phase of the life cycle of a bulb.

Cut your flowers freely, just as the buds are opening. The stem tips of daffodils should be quickly seared with a match or stove flame to seal the stems. Cut flowers last longer if allowed to stand in deep water in a cool place for several hours before you arrange them.

Take time to cut the flower stalks after the blooms fade. This prevents the development of seed, thus conserving energy for next year's regeneration.

Anemone blanda

Zone 5-9. Before planting, soak the rhizomes in tepid water for 24 hours. Plant immediately after soaking, 3-4" apart and 2-3" deep. If you cannot tell top from bottom plant the tubers on their sides. Best grown in full sun. In part shade, anemones naturalize less readily, flower later and have smaller blooms. Divide mature clumps of *Anemone blanda* as soon as the leaves have died back.

Anemone coronaria

(DeCaen, Mr.Fokker, The Bride) Zone 8-10. Part shade, and rich, moist soil. Soak the tubers in water the night before planting. Some rootlets should be visible on the bottom of each tuber; but if they are not evident, plant the tuber on its side. Space 4" apart and 2-3" deep in groups of at least 6 tubers, after all risk of frost has passed. Lift tubers in fall and store indoors over winter in a cool place.

Angel's Trumpet ...see Brugmansia.

Aquilegia ...see Columbine.

Arisaema triphyllum (*Jack in the pulpit*)
Zones vary depending on varieties... see our catalogue for zone descriptions. This native perennial grows 1-2'

high and wide. Blooms early spring to early summer. Plants will die away in fall, then spikes of bright orange berries appear. Takes a few years to form a nice colony. Usually does not bloom for 2-3 years after planting. Shade to dappled sun. Best planted in woodland gardens in cool, moist, humus, neutral to acidic, soil. Space 1' apart, 1-2" deep.

Arisarium ...see Mouse Plant.

Arum italicum (Candle Flower)

Zone 5 with protection. Grow in rich moist, organic soil and part or full shade. Top-dress every year with compost to keep the soil moist and rich. Flowers in spring and bright orange-red berries appear in fall. The bulbs soon form clumps 8-12" across. Soak bulbs in warm water for 2-3 hours before planting. Set tubers with tops 4-6" below the soil surface, 12" apart. Grows 12-18" high. A sheltered spot helps protect the evergreen leaves. Keep well-watered during growing season.

Asclepias ...see Butterfly Plant.

Astilbe

Zones 4-8. (zone 3 with protection). Astilbes require moist, organic, slightly acid soil and partial shade although they will tolerate more sun if there is ample moisture. Mulch in summer and incorporate organic matter into the soil. Cover the crown, including emerging shoots, with about 1/2" of soil and space at least 1' apart. Dig and divide every 3-4 years in early spring or fall. The varieties we offer will flower in late spring to early summer. .

Astrantia

Zone 4-7. Also called Masterwort. This clump forming herbaceous perennial prefers being planted in a full sun to part shade location. Grows best in moist, fertile, humus-rich soil. Will tolerate some drought once established. Plant 12-16" apart, 1/2-1" below surface. The flower heads can be used in dried flower arrangements. Blooms in early to midsummer. Can be divided in spring every 3-5 years.

Baptisia australis (Blue False Indigo)

Zones 3 -9. Blooms late spring to mid-summer and requires little care although some gardeners prefer to cut back the foliage after blooming for appearance. It grows well in a variety of conditions and thrives in average, well-drained soil although it will tolerate semi-drought once established. Prefers full sun but will tolerate part shade. Grows 3-4' tall and wide.

Bat Flower (Tacca chantrieri)

Zone 10-11. The Bat Flower grows naturally in the jungle regions of Southeast Asia so it is important to try and recreate the jungle-like environment in which it thrives. Plant bulbs individually, just below the surface of the soil, in 10" pots, in a light, well-draining potting mix. Some experts suggest using an 'Orchid Mix'. Provide a temperature of 25-29°C (75-85°F) through the summer and 15-18°C (60-65°F) through the winter. It prefers at least 4 hours of bright, indirect sunlight a day; avoid direct sunlight. Enjoys summers outside if protected from all wind. Bat Flowers are heavy feeders and drinkers so, from spring- fall, water often and fertilize every other week. In early fall begin to withhold water and fertilizer to encourage the plant to go into dormancy. When the leaves have turned yellow and died back they can be removed and the

plant can be brought inside in its pot. Store in a warm, dark, dry place and do not water the plant, but do not allow it to become bone dry. A light spritz of water once a month should be enough. In spring, two to three weeks before average nighttime temperatures are expected to remain above 12-13°C (55°F), move the Bat Flower to a sunny window and bring it out of dormancy by watering it. Start off slowly with just a little bit of water and gradually increase the amounts of water as the foliage begins to grow. Re-pot every two to three years in spring; divide plants or put into larger pots. When watering, occasionally add a cup of hydrogen peroxide per gallon of water. The extra oxygen will kill fungus spores, prevent root rot and encourage roots to grow.

Beebalm (Monarda didyma)

Zone 4-10. Plant with crowns at soil level, 12" apart in well-drained, organic, moist soil. Prefers full sun or light shade. Bee balm forms large clumps once established and can be divided in early spring. Blooms in summer, Cut leaves to the ground when they begin to yellow.

Begonias

Zone 10. For earliest bloom, start the tubers indoors 6-10 weeks before the last spring frost date. Firmly press the tubers, concave side up, into shallow flats or plastic trays filled with damp peat moss. Do not cover the tubers. Keep in a warm (70-80° F) place and water sparingly until growth starts. If pink buds are not apparent on concave (top) side of tuber after several days, press tuber upside down into potting mix temporarily. Check, every day, and once pink buds appear, plant right side up as usual. Once active growth starts, set them in a bright spot protected from direct sun and keep soil evenly moist. When growth reaches 2-4" high, transplant to pots, allowing one bulb per 6" pot. Use a porous, peat based soil mix, covering the tubers with not more than 1" of soil. After all danger of frost is past, put the pots outside or transplant the begonias into the garden, setting them 12-15" apart. All tuberous begonias demand well drained but moisture-retentive soil. Never let them dry out. Begonia stems are quite brittle and need protection from strong wind. Fertilize twice during the summer with a weak liquid organic fertilizer such as fish emulsion. For hanging basket varieties, transfer the begonias from the flats directly into the baskets. A 12" basket will accommodate 1-3 tubers. Before frost, bring pots indoors or dig up plants and let them dry. Remove withered foliage and store tubers over winter in dry peat moss, in a cool place indoors.

Bell Worts (Uvularia grandiflora)

Zone 4-9. Shade loving perennial. Does best in moist, well-drained soil. Yellow tubular blooms grow 1-2" long. Hardy, yellow-green foliage lasts from spring until fall. Space plants 18-24" apart with the growing tip, or crown (where the roots meet the stems), of the plant just under the soil surface.

Bellflower ...see Campanula.

Black Mondo Grass ...see Ophiopogon.

Bleeding Heart (Dicentra)

Zone 2 with protection. Plant in moist, rich, well-drained soil in full to part shade. Allow 18-24" between plants for their spreading foliage. In most areas, the foliage dies back by midsummer, so place them where other plants

will fill in the gap. You may cut down foliage when it turns yellow. Divide in early spring if necessary.

Black-eyed Susan ...see Rudbeckia.

Bletilla (Hardy Orchid)

Zone 6 with protection. Plant bulbs in partial shade in moist, rich soil. Space 6" apart and 4" deep after last frost. When grown indoors, plant the bulb in a 4" pot about 2" deep. Keep in a cool area with indirect light. Fertilize about once a month.

Blood Lily ...see Haemanthus.

Blue False Indigo ... see Baptisia.

Brodiaea

Zone 5-8 with a heavy winter mulch. Belonging to the genus *Triteleia*, this variety grows well in full sun to part shade but must have exceptionally well drained soil. Because the grass-like foliage often disappears before blooming starts, plant the bulbs in groups of at least 6 and leave the clumps undisturbed. Plant the bulbs 4" apart and 4 to 6" deep.

Brugmansia (Angel's Trumpet)

Zone 10. Plant one per large (at least 16" wide), heavy container with drainage holes. A layer of coarse gravel in the bottom helps drainage and provides weight. Use a peat based potting mix with 1/3 good topsoil mixed in. *Brugmansia* can go outside when nighttime temperatures stay above 10°C. Grow in full sun, or light shade where summers are hot, and keep thoroughly watered. Apply a balanced, water-soluble, fertilizer every two weeks. Prune untidy or lanky stems at any time. Will not bloom until the plant has forked, or formed a "Y", on the main trunk. The fragrance is incredible, especially at night or early morning! Remove flowers as they fade. **Overwintering Inside as a Houseplant:** Bring container inside in the fall when nighttime temperatures go below 10°C. Put it in a sunny, warm, location, water as the soil dries out and fertilize lightly once per month. You can prune it back at this time. It is best if nights are a bit cool. You probably will not see many flowers during the winter but it has nice foliage.

Overwintering as a Dormant Plant: Store in a cool, but not freezing (between 5-8° C), location, such as a garage, or basement. This place can be dark. It is best to cut it back by 1/2 to 1/3 before storing. Water sparingly - about once per month. It will lose its leaves and some of the outer branches may die, but as long as the trunk is still green, it is alive and well. A month before spring nights are above 10°C start to water more frequently, and bring into a warm sunny area. The branches should be pruned back and/or dead twigs removed. Repot in the spring by pruning back the roots and using fresh mix. Once you put your *Brugmansia* back outside, its growth will be very rapid.

Brunnera macrophylla (Siberian Bugloss)

Zone 3-8. Plant so that crowns are just below soil surface, 12-18" apart. Prefers fertile, organic, moist, well-drained soil and partial shade. Remove any all-green shoots from variegated plants. White leaf edges may scorch from hot sun or winds.

Butterfly Bush (Buddleia davidii)

Zone 5. Grow in average, medium-moisture, well-drained

soil in full sun, spacing 4-5' apart. Tolerates some drought once established. Removal of spent flower spikes during the growing season will encourage additional bloom. Regardless of winter protection, this plant will usually die back to the ground in winter, but roots will survive. Even if it does not die back to the ground, it will usually grow more vigorously, produce superior flowers and maintain a better shape if it is routinely cut back to a framework close to the ground in late winter. When hard-pruned annually, butterfly bush will typically grow to 6-8' tall.

Butterfly Flower/Plant (*Asclepia tuberosa*)

Zone 3-9. This perennial plant is a native to North America. The clusters of fragrant orange flowers form on top of 2'-3' stems. The slender leaves are 2"-3" long and fuzzy. Butterfly weed grows best in full sun, with sandy, well draining soil. It resents transplanting. Blooming period is from July through August. On a large plant, you could easily find several butterflies at any one time.

Butterfly Tulip ...see Calochortus.

Caladium

Caladium are winter hardy only in zones 10 and 11. In other areas, they must be dug and stored indoors for the winter. For maximum performance start bulbs indoors about 6 weeks before the last frost date. Start in flats or individual pots. Plant, with the rounded side up, approximately 1" deep and 3" apart in damp peat moss or vermiculite. Water well and keep in a very warm area. Transplant outdoors when all danger of frost has passed and the soil has warmed. Outdoors, plant 1" deep and about 10" apart. Grow in full to partial shade. Water frequently and fertilize once a month. Caladium are highly recommended for container gardening. Grows 12-18" tall.

Calla Lily

Zone 8-9. (zone 7 with protection). PLANTING IN SPRING: Start inside 8 weeks before your last frost date, especially if your season is short. Plant one tuber per 6" pot, 4" deep. Water thoroughly. Place pot in a sunny, warm spot and you should not have to water again until shoots appear unless the soil dries out. Do not plant outside until all risk of frost is past and the soil has warmed. Provide a warm, sunny, sheltered location. Plant 12" apart in the garden or continue to grow in containers. Manage water carefully; Provide regular, plentiful water, but do not let them sit in water. Fertilize occasionally. Remove flower stems as the flowers fade. Leaves will remain attractive after flowering has stopped. Reduce water towards the end of the summer until the leaves die back. After leaves have yellowed and before heavy frosts, dig up tubers. Wash tubers gently, being careful not to injure them. Dust with anti-fungal bulb dust and cure for 7 days at 21-26°C in an airy place. Store tubers in a single layer in a shallow box or in onion or paper bags in a cool, (5-10°C) dark place. You can split tubers in spring before replanting but be sure to allow cut surfaces to air dry for a few days before replanting. PLANTING IN FALL: Plant one rhizome 4" deep in a 6-8" pot filled with good potting soil, or 3 rhizomes in a 10-12" pot. Water thoroughly. Place pot in a sunny, warm spot and you should not have to water again until shoots appear unless the soil dries out. Place in a sunny window where the pot will receive a minimum of 4 hours of direct sun. Water regularly and fertilize every 2 weeks. Indoors, callas prefer cool (15-17°C) temperatures and high humidity. Rest the bulbs for 3 months by gradually withholding

water until leaves wither. Start into growth again by watering.

Calochortus

Zone 6-9, 5 with protection. Also known as Mariposa lily. These bulbs like very well drained soil and a sheltered, sunny or partly shaded location. Set bulbs 3-4" deep and 4-6" apart in clusters. A fine cut flower in late spring/early summer; Bulbs may also be grown in pots to overwinter in cold frames. Grow 25" tall. Can also be grown in greenhouse or sunroom.

Camassia esculenta

Zone 4. Plant in sun or partial shade, 3-5" deep and 4-6" apart in groups of 5 or more. Camassia grows well in ordinary garden soil but adapts well to damp soil and can be used along streams or in damp woodlands. Once established, Camassia does not like to be moved.

Campanula (*glomerata*)

Zone 3-8. Prefers average to fertile soil that is moist but well drained. Plant with the crown of the plant at soil level and water well. Cut back after flowering to encourage a second flush of bloom. Grows 12-16" and blooms May-July. Full sun to part shade.

Canna

Zone 7 with protection. Easy to grow, cannas require full sun and moist, rich soil. In cooler zones start cannas indoors in large pots, 6-8 weeks before the last expected frost. Lay the roots on their sides and press firmly into a mixture of soil and peat moss until they are just covered. Water lightly until growth starts. When nights become warm (10-15°C) transplant to the garden, covering the roots with 4-5" of soil. Space 1-2' apart. Feed monthly with a 5-10-5 fertilizer. For optimum foliage colour, keep well watered. Remove old flower trusses as they fade. Cut the stalks to the ground after frost blackens them and store the roots, frost-free, in vermiculite or peat moss. If you grow cannas in tubs, move them to a frost-free place for winter and let dry.

Candle Flower ...see Arum italicum.

Cardiocrinum ...see Giant Himalayan.

Chionodoxa (*Glory of the Snow*)

Zone 3-8. Prefers full sun or part shade, in any soil; and they naturalize well, forming large colonies quickly. Plant bulbs in large groups, 3" apart and 3" deep so you achieve wide drifts of their intense blue.

Childanthus ...see Daffodil, Summer.

Chrysanthemum, Hardy

(*Chrysanthemum x morifolium*) Plant in average to rich, moist, well-drained soil. Growth will benefit from a top dressing of compost in early spring or late fall. Pinching back stems will help produce more blooms. Flowers start in September and continue through the fall. Once established these beauties will spread into a nice mound. Note: Leaves may cause irritation to the skin. Grows 18-30" tall. Zone 3-9.



Clematis

Clematis hybrids are hardy in zones 4-8. Clematis Florida Plena and Clematis florida sieboldii are hardy to zone 6. Clematis integrifolia is hardy to Zone 3. Clematis prefers a soil rich in organic matter that is well drained yet retains moisture. Prefers full sun conditions, although some will tolerate part shade. Clematis use lots of water all season. Drought is the number one cause of transplant failure. Avoid planting under the eaves of buildings, as it is too dry. Dig the planting hole at least 1' deep and wide. Fill the hole with compost-enriched soil and a handful of bone-meal. The crown of the plant should be at least 2" below the soil. The buried stems will produce roots and thus ensure the plants survival, even if the above ground stems are broken off. Mulch and water in well. You can fertilize with manure tea or a water-soluble fertilizer. Do not use fresh manure or fertilizers high in nitrogen. Keep the new plant well watered, but not soggy, until it is established. Keep it weeded and maintain mulch over the soil. Soil should be kept cool by shading with a planting of low growing, shallow rooted perennials. Clematis really starts to suffer if soil temperatures exceed 27°C (80°F). Clematis have twining tendrils that they use to grow up supports. You must provide a strong trellis, or wires, and tie them to the support initially, until they climb on their own. They can also be grown up a healthy, sturdy tree or large shrub. **Pruning Clematis** - There are 3 groups: **Group 1:** Includes Alpinas and Macropelatas. Pruning is not required, but they are often pruned after flowering to reduce size, or to encourage branching. **Group 2:** This group flowers on the last season's wood in late spring, then smaller blossoms on new wood during the summer. In early spring, prune back dead wood until green wood is encountered in the stem. Leave all live wood. If some thinning is necessary on older plants, do so immediately after the early blooms are done. Varieties include Bee's Jubilee, Blue Light, Henry I, Violet Charm, Mrs. Norm Thompson, Nelly Moser, Duchess of Edinburgh, Pink Champagne, Florida Sieboldi, Multi Blue, Niobe, Empress, Crystal Fountain, Florida Plena, and Josephine. **Group 3:** This group flowers during the summer on new wood only. These should be pruned 8" from the ground in very early spring. Varieties include: Jackmanii, Earnest Markham, Avant Garde, and Blue and Pink Fantasy.

Climbing Lily (*Gloriosa Lily*)

Zone 7. Climbing lily is best treated as a pot plant, spending the winter indoors and basking outdoors in summer. It climbs by tendrils to a height of 3-4 ft., sometimes 6 ft. in rich soil. Provide a light support, such as fencing, string or a small trellis. Plant one tuber in a 10-12" pot of peat based potting soil, with the growing tip just under the soil surface. It will often bloom twice a year - first at a sunny warm window in winter or spring and again during the summer outdoors. After blooming, withhold water from October through January. Bring it back into growth by watering, sparingly at first. Keep soil moist during blooming and give it full sun and warm temperatures. Pot up inside. Place outside after last frost, laying them on their sides 8-12" apart and 4-5" deep. In Zones 3-7, lift the tubers in fall and store indoors.

Colocasia (*Colocasia esculenta*)

Zone 8 with protection. Elephant Ears prefer deep, rich, well drained, but moist soil and part to full shade. Start the tuberous roots indoors, 4-6" deep, 8-10 weeks before last spring frost, one root per 8" pot. When nights become warm (15-18°C), transfer the plants out of the pots and into the garden or into tubs. Sheltered spots are best because wind will damage the leaves. Plants thrive in heat and humidity and can be grown in containers set in ponds or water gardens. Elephant ears will stop growing if the temperature goes below 15°C. and will also stop growing if they are rootbound. Dig up the tubers after the first fall frost and allow them to dry for a week before storing them in a dry potting medium. Or, if you have room in the house, move tub-grown plants indoors before the first fall frost and place the tub where it will receive bright indirect sunlight at temperatures from 18-21°C. Keep moist and feed every 3-4 weeks.

Columbine (*Aquilegia*)

Zone 3-8. Plant 12-18" apart, with crowns at soil level in well-drained, moist soil. Prefers part shade, especially if summers are hot. Deadhead regularly and water during dry periods. Usually 2-3' tall.

Coral Bells (*Heuchera*)

Zone 3-10. Plant in well-drained soil enriched with organic matter. In areas with hot summers plant in partial shade. Space 12"-18" apart. In cold climates, mulch after the ground has frozen to control heaving of the roots. Divide in spring when bloom diminishes and crown becomes woody, usually every 4-5 years. Grows 12"-30" tall. Flowers spring to summer.

Colocasia ...see Elephant Ear.

Coneflower ...see Echinacea.

Convallaria ...see Lily of the Valley.

Coral Drops (*Bessera elegans*)

Zone 8-11. In spring, plant corms 2.5" deep in well-drained soil, in full sun. Keep moist until growth appears, water moderately during growing season. Lift these tender corms in fall and keep dry over winter.

Coreopsis

Zone 3-10. Plant in well-drained, ordinary soil in full sun. Space 12-24" apart. Plants are slow to appear in spring; be patient. Grows 12-18" tall. Blooms all summer to fall.

Corn Lily ...see Ixia.

Corydallis

Zone 5-9. Plant in part to full shade with top of root just below surface in rich woodland soil that remains evenly moist. Space 6 to 12" apart. Mulch around but not on top of the plant with organic compost or leaf mould. Water well until soil is completely moist. Apply a light application of organic fertilizer to the top of the soil in early spring. Prefers slightly acidic soil but will tolerate poor soil and has a tendency to go dormant in mid-summer in hot areas and drought. Care is easy and this plant can survive serious neglect once established. This plant grows in a mound 8-14" h x 12-16" wide.

Cote d'Azur ...see Saponaria.

Crinum powellii

Zone 9-11. For container growing plant the bulb in spring with the neck just above soil level, the same as you would an Amaryllis. Prefers rich, well-drained, evenly moist soil in partial to full shade. Water well when in growth and, once flowers have died back, reduce watering to encourage the bulb to go dormant. Outdoors, grow in deep, fertile, humus-rich, moist but well-drained soil. Deer resistant Blooms Sept-Oct. Grows 3-4' tall.

Crocsmia (Montbretia)

Zone 5-8. Plant the corms outdoors in spring, after danger of frost, in full sun to light shade, spacing them 4-5" apart, and cover with 3-6" of soil. Feed with a 5-10-5 fertilizer when shoots appear and again in midsummer. Apply a heavy winter mulch. Where crocsmia are hardy, dig the clumps up and divide the crowded corms every third spring. North of Zone 5, lift the corms, cut off the stems and store with the soil still clinging to them in a dry potting medium. Montbretia (crocsmiflora) is to be cared for following the same guidelines as above.

Crocus

Zone 3 unless otherwise specified. Crocuses are especially lovely naturalized in lawns where their foliage will ripen before the first mowing. Prefers full sun and well-drained, average soil. Plant 3-4" deep, 3-5" apart in large clumps. Crocus will thrive and multiply for many years.

Fall Crocus and Colchicum

Plant as soon as you receive these bulbs or they may bloom in the box! Plant in late August to late September, in moist, well-drained soil in full sun to partial shade. Plant 4" deep and 6" apart. Flowers appear soon after planting. Usually foliage will develop in spring but will wither by early summer and then flowers appear alone in autumn. **Crocus sativus: "The Saffron Crocus"**. Lilac flowers with prominent bright orange-red stigmas that are used as a spice and a dye. To collect the saffron, pick the stigmas as soon as the flowers open. Air dry the stigmas as quickly as possible and store in a closed container away from light or heat. Does best in areas with warm, sunny autumns. Plant in a sheltered, warm location. 4-6" high. Zone 5

Crocus speciosus: "Showy Crocus" The most reliable and popular of the fall crocuses. Easy to grow, it naturalizes well and is sweetly scented. It usually begins to flower in late September and continues through October. Grows in full sun or light shade. Dark Violet Blue flowers with brilliant stigmas. Plant in coarse well-drained soil. 4-6" high. Zone 4.

Colchium: Botanically distinct from Crocus, but often grouped together because of similar cultural requirements. (Note: Colchiums are not edible like the saffron crocus!) Deer will not eat Colchiums. Colchiums do not tolerate limed soils very well. Water only during extremely dry spells. Once established each corm increases like daffodil corms do. You can divide crowded clumps just after they flower. Carefully lift the clump and separate individual bulbs. Replant immediately.

Colchium bormuelleri: This cultivar flowers in late September and early October. Fragrant funnel shaped rose pink flowers with creamy white centres. Each corm can produce 1-6 flowers. The variety tolerates light shade. 4-6" high. Zone 4.

Colchium speciosum "Double Waterlily": One of the most popular varieties. Grows best in rich, organic soils in full sun. Each double pink flower has more than 20 petals. Mulch around these bulbs to keep the heavy flowers out of muddy, autumn soil. 4-6" high. Zone 4.

Colchium "The Giant": This hybrid is the result of a cross between *C. giganteum* and *C. bormuelleri*. Extra large lilac flowers with white centres that grow up to 25 cm tall on very sturdy stems. This extremely vigorous variety multiplies quickly when planted in rich soil. Blooms in late September and early October. Zone 4

Sternbergia "Lutea": Also called "Autumn Daffodil", this species is often grouped with autumn crocus. Prefers full sun to part shade and very well drained soil. Plant 6" deep. These plants will form large clumps and will often self seed. Lance shaped leaves appear with the golden flowers in autumn and last all winter. 4-6" high. Zone 5.

Crown Imperials ...see Fritillaria.

Curcuma (Pinecone Ginger)

Zone 8. Plant in part shade in deeply prepared, moist soil. Loves warm summers and high humidity. Plant outside after last frost or start 4-6 weeks earlier indoors. Plant 1" deep and 12" apart or one rhizome to a 6" pot. Keep soil moist and provide as much warmth as possible. To overwinter dig the rhizomes after a light frost and store in damp peat moss in a cool (12°C), dry place.

Cyclamen hederifolium

(Neapolitan cyclamen)

Zone 6-7 with protection. Prefers compost-enriched, well-drained soil and light shade. An annual winter mulch is beneficial. Plant as soon as the bulbs arrive, 1-2" deep and about 6-8" apart. Plant rounded side down or on side.

Daffodils (Narcissus)

Zone 3, with protection - except for 'Paperwhites' (see page 64). Easy to grow in full sun or filtered shade, and very well-drained soil. Plant in borders where emerging perennial foliage or spring-planted annuals will hide their ripening leaves. Allow foliage to die back completely before removing. Plant several weeks before freeze-up to allow them to root in. Plant 6-8" deep, 4-6" apart in groups of at least five bulbs. Closer spacing makes the best display at first, but may need to be divided sooner. Divide after blooming if necessary. Replant immediately and water well. Blooms in spring. 'Erlcheer' Summer Daffodils have been specially programmed to bloom during the summer for one season only and will bloom in spring in subsequent years. The Latin name for daffodils is 'Narcissus', and both names are used interchangeably.

Daffodils, Summer (Chilodanthus fragrans)

Zone 8-11. Annual. (Perfumed Fairy Lily) Grow in well-drained, sandy soil in full sun. In early spring, plant bulbs 3" deep and 6-8" apart. Keep well watered throughout the growing season. Allow to dry out as bulb goes dormant. In fall, lift bulbs and store indoors for the winter in a cool dry location. Grows 10" tall, blooms in July. Indoor Culture: Chilodanthus makes a good potted plant. Plant 1 bulb per 6" pot, with the tip of the bulb barely exposed above the soil.

Daffodil, Peruvian ...see Ismene.



Dahlia

Zone 8-10. In areas with short seasons, tubers can be potted up 4-6 weeks before last frost date with the buds just at the soil surface. Keep pots warm and moist and in a bright spot. Plant potted tubers outside after fear of frost has passed. Lay tubers flat in holes 6" deep and cover with 3" of soil, filling in the hole later as the shoots grow. Plant 1-3 feet apart depending on the mature size of the dahlia. Cultivate the area where dahlias are to be planted quite deeply, at least 12", to encourage a large, deep root system. Dahlias require abundant organic matter and very rich soil. After planting, fertilize once a week with a balanced fertilizer and water during dry periods. To grow stockier plants, encourage branching by pinching off the tops of the stems. To grow the biggest possible Dinner Plate or Cactus-type flowers, pinch off all but the terminal (topmost central) bud on each stalk. A few days after frost blackens the plants, lift the tubers and hang them to dry as stems may have water in them. Dust tubers with sulfur dust to prevent rotting, then lay them in shallow boxes or crates and cover with slightly moist peat, sand or vermiculite. You can also wrap tubers in several layers of newspaper. Store them in a cold but frost-free place that stays above freezing and check periodically to ensure tubers aren't shriveling. If dry mist them lightly with water in a spray bottle. Remove any soft or rotten roots and add dry

peat moss if they are too moist. Dividing tubers in spring: A week before your last spring frost date, spread out the tubers indoors and cover them with 1" of damp peat to encourage budding at the stem end. After 10 days, or when the buds are visible, divide each clump into sections so each new tuber has at least one bud growing.

Daylily (Hemerocallis)

Zone 3-9. Daylilies are wonderful in bloom and their fountains of leaves are handsome all season. Plant daylilies 18-24" apart in any good garden soil with the crowns about 2" below the soil surface. They thrive in full sun or part shade. Most hybrids bloom best with 6-8 hours of sun each day. Daylilies tolerate poor soil and drought but bloom best if soil is kept moist. Deadhead regularly. Divide plants in fall or spring.

Delphinium elatum (Larkspur)

Zone 3-7. Plant with crowns just under soil surface, 24" apart. Delphiniums prefer a fertile, deeply prepared, well-drained soil and full sun. Remove the first flower shoot as it fades to obtain late season bloom. Regular watering and fertilizing is needed. Apply no fertilizer after August. Stake the spikes before the flowers open to prevent injury while the spikes are elongating. Only well-grown plants are long lived. Poor soil conditions result in inferior plants. A check in growth, early in the season, causes widely spaced florets on the spikes.

Dianthus

Firewitch: Zone 3-9. Raspberry Swirl: Zone 5-9. Plugs should be transplanted into a pot so the original soil line of the plug is even with the surface of the growing medium of the new container or directly into the garden at the same depth. Plant in spring or fall, spacing plants 6 to 12 inches apart, depending on the type. Be careful not to plant the crown too deeply as this can cause crown rot. Carefully fill in around the root ball and firm the soil gently. Water thoroughly. Prefers full sun and can be grown in part shade but will have fewer flowers and its foliage will not be as lush. Once established Dianthus can tolerate dry, hot locations. If deadheaded they will rebloom in fall.

Dicentra ...see Bleeding Heart.

Dichelostema congestum

Zone 4. Grow this American wildflower in full sun or partial shade in rich, well-drained soil. Plant corms in early fall, 3" deep for small corms, and up to 5" deep for large ones. Best results occur when planted close together, 2-3 inches apart. Plants require even moisture while actively growing, and warm dry conditions while dormant during the summer. Since the foliage is often dying back when the plants are flowering, underplant with shallow-rooted annuals such as alyssum or violas. Can be grown in containers. Propagate by separating offsets just as the plants go dormant or by seeds.

Digitalis ...see Foxglove.

Dog Tooth Violet ...see Erythronium.

Dracunculus vulgaris

Zone 6-9. Grow in full sun or part shade in rich, well-drained soil. Plants require moist soil in spring and drier soil in the summer. Where they are hardy, plant tubers 6" deep in autumn. Space 18" apart. In zones where they are

not hardy, grow in containers or dig and store tubers in the fall when foliage fades. Store tubers in pots of dry soil or in dry peat moss at 10°C (50°F) during the winter. Propagate by separating offsets when the tubers are dormant in spring or fall. This variety usually grows 3' tall but may reach 5'. The exotic maroon and black arum type flowers reach lengths of 18" but are quite foul smelling (keep this in mind when selecting location).

Dragon Arum ...see *Dranuncululus*.

Echinacea (*Purple Cone Flower*)

Zone 3-8. Coneflowers grow well in full sun to light shade in any well-drained soil and are quite drought tolerant once established. Deadhead the flowers to encourage continued bloom. Plant with crowns just under soil surface. Space plants 18-24" apart. Dig and divide in spring or fall if they start to die out in the center or outgrow the space.

Echinops ...see *Globe Thistle*.

EGRET FLOWER

(*Habenaria radiata* or *Pecteilis radiata*)

Zone 7-10. Also called Japanese bog orchid, 'Sagi-so' or Crane Orchid. Soak the small corms in warm water for one hour before planting. Plant 1" deep, one bulb per 6" pot in a mix of 50% peat /50% coarse sand. Keep soil at 15-18°C and constantly moist. Provide lots of bright light but no direct sun. When danger of frost has passed, the growing plant may be transplanted into a shady border. It is best to plunge the whole container into the garden. Will not tolerate dry, hot weather, so it is best to grow as a pot plant. Top-dress the plants with organic mulch to conserve moisture. Where not hardy (north of zone 7) pots should be brought indoors before frost. From October to April, reduce watering but keep the soil slightly moist. Allow leaves to die back and plant to go dormant. Resume watering in spring. Dormant tubers should never be allowed to dry out, but if they get too wet, they will rot. Overwinter by lifting the tubers and washing them thoroughly. Put in a good quality freezer bag with some slightly damp vermiculite. Place this in the refrigerator for the winter months and replant in the spring.

Elephant Ears ...see *Colocasia*

English Bluebell (*Hyacinthoides non-scripta*)

Zone 3-9. Excellent for woodland plantings, English Bluebells grow best in moist, rich soil in dappled sun or part shade. Fragrant, violet blue flowers appear in mid-spring. Soak bulbs in warm water for several hours before planting. Plant the bulbs 3" deep and 3-4" apart. Keep watered until established and during dry spells. Allow leaves to die back on their own. Usually self-seeds and spreads to form large clumps. Does not always bloom the first year after planting. Grows 10-18" tall.

Epimedium (*Epimedium rubrum*) (*Barrenwort*)

Zone 4-9. An excellent, carefree choice for edging and can be used as a groundcover that grows well under trees. Prefers cool shady areas; tolerates dry soils. Plant in a mixture of compost and sand. Space 8-12" apart. Plants may be divided in early spring or late summer. Evergreen foliage turns a beautiful red-bronze in fall with spring flowers that float above the foliage. Grows 12" tall and 10-14" wide.

Eranthis (*Winter Aconite*)

Zone 4. Plant as early in fall as possible, as they often start blooming in late winter. Soak the tubers in water overnight before planting. Plant in part shade and rich, moist soil, 2-3" deep and 2-4" apart. Spreading quickly by seeds and roots, they form large colonies. A mulch of leaf mold or compost encourages more rapid spreading. Dislikes disturbance.

Eremurus ...see *Foxtail Lily*.

Erythronium (*Dogtooth Violet*)

Zone 3. These graceful little lily-like flowers with their handsome mottled leaves thrive in rich, moist soil in part to full shade. Plant several bulbs in a group, 4-8" apart and 3-6" deep. The tooth-like roots should go upright, not horizontal. Plant as soon as possible after receipt.

Eryngium alpinum

Zone 5-8. Sea Hollies thrive in full sun and average, well-drained soil. They tolerate heat and drought and poor soil, but require excellent drainage, especially in winter. They have deep taproots and resent being disturbed, so select a permanent location. Plant 2" deep and space 12-24" apart. Blooms from midsummer to fall. Often self seeds and small seedlings can be replanted at any time.

Eucomis (*Pineapple Lily*)

Zone 6 or 7 with protection. Set the bulbs about 12" apart and 4-6" deep in full sun, in rich, well-drained soil. In Zone 3-6, plant in spring, after all danger of frost is past in the garden or in pots. Let the plants over-winter indoors in a cold, frost-free location. Where hardy, eucomis may be left in the garden undisturbed for years. For containers, plant 1 bulb per 4" pot or 3 bulbs to a 10" pot. Set the bulbs just beneath the soil surface in spring and move the pots outdoors after danger of frost. Keep the container well watered from spring to fall and withhold water during the winter. Responds well to fertilizer. Pot-grown eucomis should be repotted in fresh soil each year.

Eupatorium (*Eupatorium dubium*)

Zone 4-9. (Dwarf Joe-Pye Weed) performs well in full sun to part shade and prefers average to wet soil. It is very easy to care for and will tolerate both alkaline and acidic soil. Plant approximately 2' apart in spring or summer. Produces fragrant flowers that are great for cutting and can be used in containers. It blooms mid summer to fall, is a great addition to any perennial border and will grow 30-48" tall. Deer and rabbit resistant.

Euphorbia characias (*Cushion Spurge*)

Zones 6-9. Plant in full sun to partial shade in any ordinary garden soil. Euphorbia is extremely heat and drought tolerant. Excellent for use in the perennial border and can be grown in patio containers. The milky-looking sap is considered an irritant and in high dosages can be poisonous. Grows 20" tall.

Fairy Lily ...see *Zephyranthes*.

Ferns

Zone 3-7 (zone 2 with protection). Ferns add grace to informal plantings and can be used in woodlands, among shrubs, as a shade-loving ground cover, or in the shady

border. They must have moist, rich, loamy soil and full or part shade. Prepare the soil before planting by adding peat or compost. Space 12-24" apart, depending on the mature size of the variety. Cover the roots with at least 2" of soil. Water well during dry spells and mulch lightly over winter.

Foxglove (*Digitalis*)

Zone 4-9. Plant in full sun to part shade, in moist, porous, soil enriched with organic matter. In hot areas, shade the plants lightly. Space 12-18" apart. Cut down flower spike after it blooms and it may rebloom. After the ground freezes in winter, mulch to prevent crown rot. Grows 48-60" tall. Flowers late spring to summer.

Foxtail Lily (*Eremurus*)

Zone 4-8. These tuberous roots are quite delicate and need an extremely well drained location to prevent rot. Dig a hole 24" deep and mix in coarse sand, or put a layer of gravel at the bottom of the hole, then form a cone of soil in the center. Rest the crown of the root on top of the cone and spread its roots over the sides 'octopus style' so the crown of the root rests 6" from the top of the hole. Plant in full sun, in groups of 3 to 5 at 12"-18" apart. It is common and quite normal for Foxtail Lilies to appear spongy and somewhat discolored prior to planting. Staking may be necessary in windy locations. Grows 2-3' tall. Blooms late May-June.

Freesia

Zone 10. Freesias do best where nights are cool (10°C). Plant the corms in the garden after frost, 4-6" apart, in groups of 5 or more, in full sun and cover with 2" of soil. Freesia benefits from a monthly feeding of 5-10-5 fertilizer from the time shoots appear until the buds start to colour. The wiry stems may need support. In Zones 3-8, after the foliage withers, dig them and store in a dry place over winter. For container growing indoors, set the bulbs 1" apart in a large pot (about 6 per 8" pot) and barely cover with soil. Water lightly but do not let the pots dry out. Give the bulbs at least 4 hours of direct sun each day; temperature around 10°C in an unheated sun porch is ideal.

Fritillaria acmopetala

Zone 6. Give fritillaries a site in full sun or light shade with moist, well-drained soil that is rich in organic matter. Keep in mind that these bulbs are fragile and should not be allowed to dry out before planting. Fritillaries should be planted deep, at least 4 times the height of the bulb. This will also discourage offsets.

Fritillaria assyrica

Zone 7. Grow as *Fritillaria meleagris*.

Fritillaria imperialis (*Crown Imperial*)

Zone 5-9. These tall, dramatic plants grow in full sun or part shade and must have very well drained soil. They are regal behind clumps of white daffodils. A bit of lime added to the soil is beneficial. A 1" layer of sand in the bottom of each hole will lessen the chance of rot. Plant very deep at least 10 inches to the base of the bulb, and lay the bulb on its side to prevent rot. Plant in raised beds or very well drained soil or these bulbs will rot.

Fritillaria meleagris (*Guinea Hen Flower*)

Zone 3. These dainty bell-like flowers grow best in rich, moist soil in full to part shade. May also benefit from

being planted on their sides. It takes at least 10 bulbs to make a show. Plant 6" apart and 3" deep.

Fuschia

Zone 6-10. Plant in well-drained, moist, fertile soil in full sun to light shade. Space 24-36" apart. Pinch plant when young to achieve a bushy shape. Prune as necessary in spring, removing any dead wood and cutting back last year's growth to 2-3 buds. Grows up to 6' tall. Blooms June-August.

Gaillardia (*Gaillardia x grandiflora*)

Zone 3-10. Also called Blanketflower. Prefers full sun. Tolerates poor, dry soil. Short lived in heavy soil. Plant 12" apart with the crown (where the roots meet the stems) 1" below soil surface. Do not over fertilize. Deadhead regularly. Divide every 2-3 years in spring. Cut flowers last almost 2 weeks and dries well if hung upside down.

Galanthus (*Snowdrops*)

Zone 3. Plant in groups of at least 25 bulbs to make a great display that will soon form dense colonies. Prefers part shade and rich moist soil. Plant 2" apart and 3" deep.

Gentiana

Zone 4-9. Upright, herbaceous perennial with bluish-green leafy stems and lance shaped to ovate leaves. Terminal and auxiliary clusters of tubular-bell shaped blue flowers open in late summer. Plant in alpine gardens, rock gardens and woodlands. Sensitive to over-watering, therefore, must have good drainage. Plant in light, humus rich, moist but well drained soil. Can withstand full sun locations where summers are cool and damp, elsewhere, plant in part shade. Grows 14-24" tall and 20-25" wide.

Giant Himalayan Lily

(*Cardiocrinum giganteum*)

Zone 7-10. This bulb is best suited for woodland gardens. Plant on a slope so that water runs off, or in very well drained soil. Prefers partial shade and deep, rich, moist, soil. It is best to protect the 5-10' stalks from wind. Plant so that the nose of the bulb is at soil level. Use organic mulch to keep the soil moist and cool. Space bulbs 24-36". Water during dry periods. A heavy winter mulch is helpful. After the bulb has bloomed it will die and must be dug out. Replant the small daughter bulbs, which will flower in about 3-4 years. If you want flowers every year, you must plant new mature bulbs at least 3 years in a row.

Ginger Lily (*Hedychium gardnerianum*)

Zone 9-10. Also known as Kahlili Ginger. Plant in moist, humus-rich, well-drained soil in a semi-shade location. If growing indoors an eastern exposure will work well. If planting outside, plant in semi-shade and keep the soil moist. Ideal temperatures range from 18-30°C (65-85°F). Plants grow best with regular applications of a balanced fertilizer. The Ginger Lily goes dormant after it blooms and will come back in the spring. Care is the same as with Canna lilies; cut stalks to the ground after frost blackens them and store the roots in vermiculite or peat moss, in a frost free place. If you grow Ginger Lily in pots, move them to a frost-free place for winter and let dry. Grows 6-9 feet tall.

Gladiolus

Zone 8-10. Glads do best in full sun in a light, evenly moist, soil. A light application of a low nitrogen fertilizer



can be used at planting time. Glads need plenty of water during growth but they also must have good drainage. Plant the corms 6" deep pointed ends up and 6" apart at 2-week intervals. Start planting after the last spring frost and continue until the end of June for a long season of bloom. Staking is usually necessary after the plants are 12" high, or you can try hilling up soil around the stems to a height of 6". Deep planting reduces the need for staking. If you are planting glads in a cutting garden (or stealing a row from your vegetable garden), set the corms at the bottom of a trench 8" wide by 8" deep, covering them with 2" of soil initially, then gradually filling in the trench as the plants grow. When cutting the stems, leave 4 leaves on each stalk. If flowers do not open or are deformed and streaks appear on the leaves, you may have thrips. To control gladiolus thrips spray with a registered pesticide throughout the season or dust bulbs with a bulb dust before storage. After the foliage yellows in early fall, dig the corms, cut off the tops and store them in a dry airy place for 3 weeks. Then separate the largest of the new corms that have formed on top of the old withered ones. Store these in bags made from old nylon stockings (for good air circulation) in a cool dry place over winter.

Gladiolus, Hardy (*Gladiolus Byzanthinus*)
Zones 6-11. Plant corms 4-6" apart in clumps approximately 3" deep in well-drained garden soil in full sun. Fertilize when planting with any 5-10-5 fertilizer but avoid animal manure since it may encourage rot. Grows 24-36" tall. Blooms July-August.

Gladiolus, Peacock ...see Abyssinia Gladiolus.

Globe Thistle (*Echinops ritro*)
Zone 4-9. Prefers full sun and well-drained soil that is low to moderately fertile. In rich, fertile, moisture-retentive soil, it will grow lushly and require staking. Cut off the blooms early in the season to promote a second blush of bloom. Space plants 18-24" apart with the growing tips just under the soil surface. Do not divide or transplant if possible.

Gloriosa ...see Climbing Lily.

Glory of the Snow ...see Chionodoxa.

Glory of the Sun ...see Leucoryne.

Grape Hyacinth ...see Muscari.

Gunnera
Zone 7-10. A very large specimen plant that is great for moist to wet locations especially water features. Allow at least 4-6' of open space for this plant to grow. Plant in moist soil in full sun to part shade. Entire root system should be planted in a humusy soil about 1" below the soil line. Do not let the soil dry out. Plant needs some winter protection in zone 6 or colder by applying a layer (approximately 6") of straw or leaves. Blooms mid-late summer. Grows 6-10' tall.

Haemanthus (syn. *Scadoxus*)
Zone 9-10. (Blood Lily) Plant the bulbs in 6" containers as soon as they arrive in the spring. Set the bulb in well-drained potting soil so the bulb tip is at the soil surface. Place container in a sunny to partially shaded location and keep soil moist, but not waterlogged. Leaves and the flower stem will appear within 12-16 weeks after planting. Remove spent flower stem after blooming. In the fall, start withholding water and allow foliage to ripen before removing. Store bulbs in their pots in a cool, dry, frost-free location over the winter. Do not re-pot. They grow and bloom best when pot-bound. Then, in the late spring, bring container into a cool, sunny location and begin watering. New growth will appear and the growing cycle starts all over. Grows 10-12" tall.

Hardy Geraniums
Zone 3-8. Hardy Geraniums can take some shade but are best when they receive sun for most of the day. Plant in ordinary, well-drained soil, in full sun to partial shade. In hotter areas, plant in partial shade. Space 18-24" apart, with the growing tips just under the soil surface. Divide in spring or fall when necessary. Grows 12-24" tall, spreading 18-36", depending on variety. Flowers from late spring to summer.

Hardy Hibiscus (*Hibiscus moscheutos*)
Zone 4. Easily grown in average, moist well-drained soils in full sun. Regular deep watering is advisable. Grows best in full, but will tolerate some light shade. Needs good air circulation. Place 24-36" apart, in locations protected from wind to minimize risk of windburn. Deadhead individual flowers to maintain plant appearance. Cut back stems to approximately 3-4" in late autumn. New growth shoots are slow to emerge in spring, however, once new growth begins it proceeds quite rapidly. Plants will benefit from regular fertilization during the growing season. Grows 4-6' tall and 3-4' wide. Produces huge flowers over a long mid-summer to fall bloom period.

Hardy Orchid ...see Bletilla.

Helenium
Perennial. Also known as Sneezeweed, this perennial is easy to grow in average to poor soil that is well drained. It has very few requirements and adapts well to dry locations once established. Overly rich soils can cause plants

to stretch and become top heavy. Pruning early in the season will reduce the need to stake but the flowering will be delayed. Helenium form underground rhizomes so will spread relatively quickly but can easily be divided to control the spreading. It is best to divide in spring or fall. Grows 3-4' tall. Zone 4.

Helianthus
Zone 4-8. Prefers full sun and well-drained soil that is low to moderately fertile. This mid-sized variety of perennial sunflower is tolerant of dry and sunny conditions and is best suited for the middle of the border; blooms July through September to a height of 36-48". Plant approximately 18-24" apart. Easy, low to no-care once established! Good cut flower and seed heads provide winter interest. Prune plants back to ground in early spring.

Helleborus
Plant Hellebores in light to full shade with rich, evenly moist, well-drained soil. Planting under deciduous trees (Maples, birches, etc.) is ideal since it will provide winter sun and summer shade. A sheltered site protected from winter winds keeps the foliage looking its best. Once planted, they are best left undisturbed and thrive for years without needing division. Established clumps spread from about 1 to 1½ feet. Add lots of organic matter and some bonemeal into the soil before planting. Neutral to slightly alkaline soil is best, so add lime to acidic soil. Plant in large holes, at least 1 foot deep and 1 foot wide, with 1" of soil above the point where the roots break from the crown of the plant. Fertilize with slow release fertilizer in spring. Mulch in fall with compost or aged manure and remove old leaves after new shoots appear. Keep well watered during dry spells. Watch out for slug or snail damage. Hellebores will often self-seed and you can easily move young seedlings to a permanent location. The seedlings tend to vary a lot and you may get many different colors and plant forms. Seedlings should flower in 2-3 years. May take several years to become established enough to bloom after being planted or moved. In cold, windy areas it is recommended that you provide winter protection. A mulch of evergreen boughs or a windbreak of burlap will help protect your plants during the winter.

H. orientalis, *Lenten Rose*. Also listed as *H. X hybridus*. Grows 12-16" high and blooms in shades of cream, greenish white, white, purple, or mauve in early spring. Can be divided in spring before new growth emerges. Make sure each division is quite large. Zones 4-9.

H. niger, *Christmas Rose*. Grows 12" tall and produces white flowers very early, in late winter or early spring, before other Hellebores. Divide in early spring after it has flowered. Zones 4-8

H. argutifolius, *Corsican Hellebore*. Grows to 3 feet high and produces apple-green flowers in early spring. Does not divide easily. Zones 6-9.

Hollyhock (*Alcea*)
Zones 3-9. Biennial. Prefers rich, moist soil in full sun to part shade and may need staking once it starts to bloom. Provide good air circulation and plant 12-18" apart. Removing spent flowers will encourage a second bloom in late summer. Will self seed. Grows 24-36" tall.

Hemerocallis ...see Daylily.

Heuchera ...see Coral Bells.

Heucherella (*Heucherella hybrid*)
Zone 3. A sterile, man-made cross between Heuchera and Tiarella. Plant in well-drained soil enriched with organic matter. Prefers shade to part shade. Space 12-18" apart. In cold climates, mulch after the ground has frozen to control heaving of the roots. Divide in spring when bloom diminishes and crown becomes woody (usually every 4-5 years). Flowers spring to summer.

Himalayan Blue Poppy
...see *Meconopsis betonicifolia*.

Hostas
Zone 3. Plant in well-drained, moist soil, in light to full shade, with the growing tips at the soil surface. Space 2-3' apart, depending on variety. Water more during hot, dry spells. A 2" mulch of compost or shredded bark is beneficial. Can be grown in full sun in areas with cooler summers or if constant root moisture can be provided. Hostas take 2-4 years to become established and to reach their full size after planting. Divide in spring or fall if necessary. 'White Feather' Hosta needs at least 2 hours of direct sunlight in the morning, and dappled shade for the rest of the day - not full shade. This plant's lack of chlorophyll requires that it has more sun than other hostas. Start in large pots (1-2 gallons). Keep moist but not soaking. Plant in garden when size is reasonable. As leaves mature it becomes streaked with green - in some cases becoming almost totally green. The plant is only pure white when emerging in spring.

Hyacinthoides ...see English Bluebells.

Hyacinths (*H. orientalis*, *H. multiflora*)
Zone 4 (with deep planting). Full sun, and average to rich, well-drained soil. Plant 6-8" deep and 4-8" apart, in clumps of at least four bulbs. In cold zones apply a thick winter mulch after the ground has frozen in fall and remove it in early spring. Hyacinths produce the largest, more formal blooms the first spring, and smaller, looser spikes thereafter.

Hysop (*Agastache*)
Zone 6-9. Plant in average to fertile, well-drained soil, in full sun. With fragrant foliage, butterflies and hummingbirds will love this plant. Drought tolerant once established. Needs very good drainage, therefore mix gravel and/or sand at the bottom of planting hole. Grows 24-36" tall and 18-24" wide.

Ipheion uniflorum (*Spring Starflower*)
Zone 6-9. Grow in full sun in average soil that is moist and well drained. Plant 3" deep and 4-6" apart. Where not hardy, grow starflower in pots. Pot up in autumn with tips of bulbs ½" below soil surface. Keep in cold frame or in cold room (5-10°C) keeping soil just barely moist over the winter. After plants have bloomed in spring, water & feed regularly until the leaves yellow. Store pots nearly dry until next year. Repot in fall as necessary. Division is not necessary, but they can be divided in summer just as the leaves disappear.

Iris, Bearded (*Iris germanica*)
Zone 4-9. Plant or divide in August to early October, 4 to 6

weeks after blooming. The milder your climate, the later you can plant into the fall. It is important that the roots of newly planted irises be well established before winter. Soak rhizomes in water for 2-3 hours before planting. Prefers full sun, or at least half day of sun, in order to bloom well. Be sure to provide your irises with good drainage by planting on a slope or in raised beds. Standing water can cause rot, especially in spring. Irises will thrive in most well drained soils. Work soil to a depth of 10" and add organic matter. Plant so the tops of the rhizomes are exposed to the sun while the roots are placed deeper in the soil. Firm the soil then water to settle. Do not plant too deeply! Space 12-24" apart. Water regularly until established. Mulching of bearded irises is to be avoided during the growing season. If you desire to mulch the bed for appearance, you should NOT cover the rhizomes. **We strongly recommend winter mulching newly planted irises.** Use pine needles or something that does not hold water or get too soggy. Remove winter mulch in spring.

Iris, Bulbous (*Dutch/Dwarf Iris*)

Zone 3. Grow in full sun and well-drained soil. They form large clumps and live for many years. Most require dry soil during the summer in order to bloom reliably in following years. Space the bulbs 4-6" apart and 2-4" deep in groups of at least six bulbs. *Iris danfordiae* & *Iris latifolia* - Zone 5; Dutch hybrids-Zone 4; *Iris reticulata*, *Iris xiphium*

Iris, Chrysographes

Zone 4-9. Perennial. Best grown in moist soil in full to part sun. Plant 8-10" apart and 1-2" deep. Height: 16-20".

Iris, Foetidissima (*Stinking Iris*)

Zone 6 with protection. Bears purple flowers in summer, followed by extremely showy scarlet seeds in fall. 1-3' high and spreads 1½'. Plant in partial to full shade in moist, well-drained, organic soil.

Iris, Japanese (*Iris ensata*)

Zone 4-9. Plant in slightly acidic to neutral, moisture-retentive soil in full sun to part shade. This Iris is happy in shallow standing water. It cannot tolerate hot, dry conditions. Plant rhizomes about 2" deep and 18" apart. Divide every 3-4 years, as plants become crowded. Divide after flowering or in fall. Replant divisions immediately - do not let them dry out. Grows 24-36" tall. Flowers in summer - the last of the Iris to bloom.

Iris, Louisiana

Zone 4-10. These 2- 4' tall Irises are water lovers and will be happy growing at a pond's edge or in a wet spot in your yard. They also grow well in acidic soils. They're rot-resistant. Foliage is tall, upright and sword-like. Plant 12-18" apart in full sun or part shade. .

Iris, Siberian (*Beardless*)

Zone 3. Cover roots with 2" of soil and space 12-18" apart. Thrives in most soils, even moist, boggy ones. Plant in groups of 3 or more. Full sun.

Ismene

Zone 8. (zone 7 with protection). Plant 4" deep and at least 12" apart in humus-enriched soil. Ismene is very sensitive to cold, so wait until after last frost to plant out in the garden or start them early indoors, in rich potting soil. Lift the bulbs well before frost. Lay them on their sides in an airy spot till the foliage withers. Cut off the foliage and store

upside down over winter in dry vermiculite or peat moss in a cool (55-60°F, 10-15°C) location.

Ixia (*Corn Lily*)

Zone 8-10. Plant 2" deep, 2-3" apart (5 per 5" pot). In spring, plant in an open, sunny location in well drained soil. Will flower in late summer. Lift in fall after flowering is finished, dry corms off, remove cormlets and store in mesh bags in a cool, dark, frost free area. Planting in fall: plant in pots using a soilless compost and place in a brightly lit spot in a cold but frost free greenhouse. Will bloom in spring or early summer.

Ixiolirion ...see Lavender Mountain Lily.

Jack-in-the-Pulpit ...see Arisaema.

Jacob's Ladder (*Polemonium caeruleum*)

Zone 3-8. Plant in cool, moist soil in partial to full shade. Grow in full sun only where summers are cool. Space 18" apart with the crown (point where roots meet the shoots) just below soil level. Grows 9-24" tall. Flowers throughout the spring, depending on variety.

Joy-Pye Weed ...see Eupatorium.

Kniphofia uaria

Zone 6. Common Torch Lily. Tough sun loving drought resistant. A little fertilizer now and then will extend the flowering season. Plant Kniphofia in full sun in average to rich soil that is evenly moist but well-drained. Plants do well in sandy soil. Space 18" apart. Cut flower stalks to the ground after they fade. Leaves may be cut back by late summer if they are untidy. Avoid dividing if possible. Blooms in early to late summer.

Lamium (*Lamium maculatum*)

Zone 4-8. Plant in ordinary garden soil in part to full shade. Grows well in dry shade. Space 12" apart. Will quickly form an attractive groundcover. Shear in midsummer after the first flush of bloom to keep a compact form. Grows 6"-8" tall. Flowers spring to late summer.

Lavender (*Lavender angustifolia*)

Zone 5-9. Plant 12-18" apart with crown at soil level in well-drained sandy or loose soil. Requires full sun. Harvest flower spikes and hang to dry before the last flowers open.

Lavender Mountain Lilies

(*Ixiolirion tataricum*)

Zone 5 with protection. This flower is grown commercially as a cut flower. Excellent for planting under groundcovers since the leaves are grass-like and disappear quickly. Grow in full sun in well-drained soil. Plant bulbs 3" deep and 2-3" apart.

Leucanthemum (*Shasta Daisy*)

Zone 5-9. Easy to grow, sun loving hardy perennial. Tolerates most soil conditions and light shade. Maintenance free once established. Blooms early or late in the season, depending on variety. Plant 12-15" apart. Position in the hole so that the soil level of the plug is slightly below the surrounding soil surface. Fill soil in around the plant completely, firming as you go. Apply a thick mulch after the ground freezes in the fall. Remove most of the mulch in early spring.

Leucocoryne (*Glory-of-the-Sun*)

Zones 9-10. Plant bulbs in spring after all danger of frost has passed and ground is warm. Grow in very well drained, sandy soil in full sun to light shade. Plant corms 3-6" deep and 6-8" apart. In fall, dig and store bulbs indoors for the winter. Grows well as a potted plant indoors in a warm sunny location. Grows 24" tall. Blooms June-July.

Leucojum aestivum (*Spring Snowflakes*)

Zone 4. For a good show, they should be planted in groups of at least 12 bulbs. They thrive in sun or part shade, even in soil with poor drainage, and they naturalize easily. Set bulbs 4" deep and 4" apart. Bulbs should not be disturbed after they are established.

Liatris

Zone 3. For best garden performance, plant Liatris in full sun and in very well drained soil. It will tolerate even poor soil and summer droughts. Plant the corms 1" deep and 6-8" apart.

Lily of Nepal (*Lilium nepalense*)

Zone 8. This species of lily prefers slightly acidic soil and requires cool, moist, very well-drained soil in partial shade. It should be kept dry from November-April and so many gardeners dig and store the bulbs in bags of peat moss in their refrigerator. Plant 6" deep, 1-2" apart.

Lily of the Nile ...see *Agapanthus*.

Lilies

Zone 3. Plant Lily bulbs as soon as possible. Lilies can be planted in your garden in very early spring or up to a month before soil freeze-up. Do not allow the bulbs to dry out before planting. Store them in your refrigerator and keep moist until planting time. All Lilies must have excellent drainage. They thrive where they get full sun on their tops but will also adapt to light shade. Plant them among leafy perennials, annuals or ground cover to keep the roots cool in summer. A 2" mulch is also helpful. All lilies benefit from extra water during dry spells. Space bulbs 6" apart and 6" deep (or 3 times the thickness of the bulb), preferably in groups of 3-6. The tallest varieties belong at the back of the border and may need staking. Shorter varieties are splendid as a mid-border or in clumps among shrubs or ornamental grasses. Remove spent flowers but do not cut stalks after blooming; wait until the foliage has turned yellow. Asiatic lilies increase quickly and may need dividing when the clumps become crowded or too large for their space. To divide, lift the entire clump in fall after the foliage has died, pry the bulbs apart and reset them.

Lily-of-the-Valley (*Convallaria majalis*)

Zone 3-9. An ideal carefree ground cover for shady areas. Especially appealing under spring flowering trees. Soak pips in warm water for 2-3 hours before planting. Plant in very early spring or fall in rich, well-drained soil; full to part shade. Plant the rhizomes (pips) on their sides, 1-2" deep and 4-6" apart. Lily of the Valley can be difficult to establish in some area and does not usually bloom the first year after planting. It often is more successful to plant the pips (5 per 8" pot) in pots of potting soil and get them growing before planting outside in late spring. Mulch heavily in fall with compost. After a few years, if bloom becomes sparse, lift some of the pips and divide them.

Lungwort ...see *Pulmonaria*.

Lupins (*Lupinus*)

Zone 6-8. Lupines are easy to grow when planted in rich, well drained, slightly acid soil in full sun to partial shade. Space 12-18" apart, with the crown (point where roots meet the shoots) just below soil level. Mulch well to conserve moisture. Lupine is not tolerant of hot summers. Water deeply during periods of drought. Cut back spent flower stalks to encourage a second bloom. Once planted, lupine does not transplant well. Grows 12-36" tall. Flowers late spring to early summer. Best in zones 3-6.

Lycoris radiata (*Spider Lily*)

Zone 7 with protection. Elsewhere, grow in containers. Plant in a sunny or lightly shaded, sheltered spot 5-8" apart and 3-4" deep. Grown in a container Lycoris are best planted with the neck of the bulb at the surface of the soil. Once plant growth starts water freely and apply a balanced liquid fertilizer monthly until leaves die down. Mulch well for winter protection. If in a container, move into a cool, dark, frost-free space to allow a period of dormancy of 8-12 weeks.

Malva sylvestris

Zone 5-8. Easy to grow, free blooming, vigorous herbaceous perennial. Ideal for the back for the border and for fresh cutting. Plant into a full sun or light shade location, 12-14" apart. Prefers well-drained, light soil and some shade if summers are hot. Feed and water regularly and cut back in autumn. Blooms all summer. Often a short lived perennial but self seeds regularly.

Mariposa Lily ...see *Calochortus*.

Meconopsis betonicifolia

(*Himalayan Blue Poppy*)

Zone 6. Best in cool, dappled shade. Avoid midday sun in warmer zones. Prefers humus-rich, well-drained soil. Work aged manure and lots of peat moss into soil. Enjoys the same conditions as Rhododendrons and makes a good companion plant for them. Avoid winter wetness and mulch in the summer to keep roots cool. Water during dry spells. If it is grown in alkaline soil, the flower colour will be more lavender than blue. It is advisable to remove the first year's flowering stems to promote the development of offsets. Space 18" apart. Grows 36-60" tall. Flowers late spring. Deadhead regularly to prolong flowering. Watch out for slugs and snails.

Mertensia (*Virginia Bluebells*)

Plant in acid, humus-rich soil in partial to full shade. Plant the rhizome horizontally about 1" below the soil surface, about 18" apart The foliage dies back in the heat of the summer. Grows 12-24" tall. Flowers late spring to early summer. May be divided after 3 years in summer before all of the leaves disappear. Often self-seeds and young plants are easy to move in spring. Hardy in zones 3-9.

Mexican Shell Flower ...see *Tigridia*.

Monarda ...see *Beebalm*.

Monkshood (*Aconitum*)

Zone 4-9. Also called Monk's Cap. Grow in part shade to full sun in rich, moist, slightly acid, well-drained soil. It will

grow in full sun if the soil is moist. Space plants 12-18" apart. Do not disturb the roots. Stake tall flower spikes. All parts of the plant are poisonous if consumed. Height 48" with a 12" spread. Flowers late summer to fall.

Montbretia

A vigorous and spreading perennial that was created by crossing *Crocus aurea* with *C. pottii*. Montbretia grows from bulblike corms that are about 1" (2.5 cm) in diameter. New corms are continually produced on short underground stolons rapidly forming large and dense clumps of pale green straplike leaves 2-3" (5-7.6 cm) long and 1-2" (2.5-5 cm) wide. Montbretia graces the summer with showy red, orange or yellow funnel-shaped flowers on slender, arching, zigzag spikes. Each flower is about 2" (5 cm) across and the nodding cluster can be several inches long. Montbretia dies back to the ground in winter only to regrow from its circular, flattened, corms in spring.

Mouse Plant (*Arisarum proboscideum*)

Zone 6-9. Curious long-lasting 'mice' flowers appear in spring. Beautiful glossy leaves appear in late winter and will persist until late summer if enough moisture is available. Grows 4-6" high and quickly forms colonies, but is never invasive. Plant roots 3" deep and at least 4" apart, in moist, well-drained organic soil in part sun to shade. Can be divided in very early spring.

Muscari (*Grape Hyacinth*)

Zone 4. All our muscari make perfect complements to daffodils and tulips. Muscari naturalizes easily and will form large colonies that persist for years. All have the same cultural requirements; they thrive in sun or part shade, in any well drained soil. Plant in groups of at least five bulbs, 3-5" apart and 3-5" deep.

Muscari macrocarpum

Zone 4. Grow as other muscari. Thrives in sun or part shade, in any well drained soil. Plant in groups of at least five bulbs, 3-5" apart and 3-5" deep.

Narcissus ...see Daffodils or Paperwhites.

Nectaroscordum siculum

(*Allium siculum*)

Zone 5. (zone 4 with protection). Plant in full sun and a somewhat dry location. Grow in groups of three or more bulbs and plant them 4" deep and 6-8" apart. Grows 3-4" tall.

Nerine bowdenii (*Guemsey Lily*)

Annual. Also known as Cape Flower & Japanese Spider Lily. Plant in spring in well-drained soil in sunny location. Space bulbs 10-12" apart and 3" deep. Do not water until flower spike emerges, then water well and fertilize until the foliage is of good size. Cut back on water as foliage matures. When foliage dies back completely, allow bulbs to dry and rest until flower spike re-emerges. In areas with winter frost, dig and store bulbs indoors over the winter. Grows 12" tall. Blooms late fall. Zone 8-10.

Ophiopogon (*Black Mondo Grass*)

Zone 5-9. Grows best in moist but well-drained fertile soil in full sun to part shade. It is clump-forming and mound and spreads slowly as a ground cover. Water freely and amend soil once a year with leaf mulch or compost.

Fertilizing once a month will encourage growth. Grows 6-8" tall. Produces pale purple to white flowers in summer.

Ornithogalum thyrsoides

Zone 7-9. Plant 3-4" deep and space 2-5" apart in groups of 5-7 bulbs, after last frost. They thrive in full sun or light shade. In colder zones, lift the bulbs after the foliage has died back and store indoors. To grow indoors as a houseplant, plant 6 bulbs in an 8" pot and place where they will receive a least 4 hours of direct sun. They do best in cool temperatures. After foliage turns brown, withhold water and fertilizer and allow to rest in containers until time to repot in autumn.

Oxalis (*Wood Sorrel*)

Zone 8-10. Prefers a sunny or partly shaded, sheltered place in the garden. Plant bulbs 2" deep and 4"-6" apart. Water well and fertilize throughout the summer. They need at least 4 hours of direct sunlight per day. In colder zones, Oxalis makes a most rewarding houseplant. Set 1 bulb per 4" pot or 3 in a 6" pot in well-drained potting mix. Cover with 1" of soil. Keep moist and feed monthly with a houseplant fertilizer until plant goes dormant. Blooms June-July. Grows 6-10" tall.

Paperwhite Narcissus

Zone 8. Fill an attractive shallow bowl 2/3 full of pebbles, gravel, stone chips or soilless potting mix. Arrange the bulbs on top of the filling material, tops upward, and add water so it just barely touches the bottom of the bulbs. Add just enough more gravel or potting mix to hold the bulbs securely in place - the top 3/4 of the bulbs should be visible. Set the bowl in a cool location (15-18°C), out of direct sunlight. In about two weeks, green shoots will appear. When these are 3-4" tall, move the bowl into a cool spot with direct sun. Turn the bowl often to keep stems straight and maintain the water level. Bulbs started in early November will be ready at Christmas time. Discard bulbs after blooming.

Pasque Flower (*Pulsatilla vulgaris*)

Zone 4. Easily grown in average, medium-wet, well-drained soil in full sun to part shade. Space about 12" apart. Prefers rich, humusy soils. Best in cool, moist climates. 2-4" flowers appear in spring before the foliage develops. Flowers vary in colour from blue to reddish-purple with a bushy center clump of golden yellow stamens. Flowers give way to feathery seed heads which are quite showy. Use in border fronts and rock gardens. Grows 8-12" high and wide.

Penstemon

Zone 5-8 (depending on variety). Grow in full sun to light shade in rich, very well drained, evenly moist soil. Grows best in areas with cool summers. Water during dry periods. Divide plants every 4-5 years in early spring. Plant 2 ft apart with the crowns just below the soil surface. Keep mulch away from crowns to prevent crown rot.

Peony

Herbaceous Peony: Zone 3-8. Peonies will live for decades with a minimum of care. Peonies like full sun but will tolerate part shade. Plant them 3 ft. apart in rich soil, taking care that the tops of the buds are no more than 2" below the soil surface. In the border, plant them at least 18-24"

away from other perennials to allow room for the foliage. You may want to grow the plants through wire plant hoops to support the heavy blooms.

Tree Peony: Zone 3-9. Tree Peonies may live more than a hundred years. Fall or spring is the best time to plant a tree peony. New roots develop and grow rapidly in 18 to 25° C temperatures. Bare-roots should be planted as soon as possible upon arrival. They may be stored for a few days in a cool, humid, dimly lit area. Ensure that the roots remain moist at all times. Planted in full sun or part sun. Requires at least 4 to 5 hours of sunlight daily. In areas where it is very hot in late spring during the blooming season, it is better to plant it in a semi-shady area. Good drainage is essential. Sitting water can cause root rot and be fatal. Avoid planting tree peonies near large trees which may draw necessary nutrients and moisture away from the peonies. Plant in a permanent location. They dislike being moved. Tree peonies prefer loamy soil with lots of organic matter to a depth of at least 2 feet and a pH of 6.5 to 7.5. Space at least 4 feet apart. Tree peony roots grow 3 to 5 feet into the ground. When planting, the hole should be large and deep with ample room to accommodate all the roots. Build a soil cone to support the roots, set the crown on top of this mound, and spread out the roots, octopus style. The crown, or point where the roots meet the stem, should be 1-2" below the soil surface. Fill in the hole little by little using amended soil, hand-pressing to remove any air pockets and to stabilize the plant. Firm the ground gently and water it thoroughly. In cold zones or exposed sites, apply a winter mulch of straw, leaves or evergreen boughs to totally cover the plant for the first 2-3 seasons. Keeping covered with soft snow all winter is also great protection. For the first growing season water every week. You may lightly fertilize your plant one or two times annually with organic fertilizers such as compost, or well-rotted manure or with a balanced water-soluble fertilizer once a month. The best time to fertilize is after blooming or just before the first autumn frost. Tee peonies may bloom the first season after planting, but usually take longer. Once they start to bloom, you will be rewarded each year with an abundance of beautiful flowers.

Periwinkle (*Vinca minor*)

Zone 4. Easily grown in average, dry to -wet, well-drained soil in full sun to part shade. Prefers moist, humusy soils in part shade, but will tolerate full shade. Plant 12-18" apart to cover large areas. Forms an attractive ground cover. Blue flowers appear in spring and continue to flower intermittently throughout summer into fall. Good cover for bulb beds. Effective on slopes or banks to stabilize soils and prevent erosion. Height 3-6" and spreads 6-18".

Perovskia hybrid (*Russian Sage*)

Zone 4-8. Plant so that crowns are just 1" below soil, 2' apart. Prefers full sun and well drained soil. Blooms from mid summer through fall. Drought tolerant and pest and disease resistant.

Phlox paniculata

Zone 3-8. If roots appear dry it is helpful to soak them in warm water for a few hours to overnight before planting. They need full sun and organically enriched soil and benefit greatly from monthly fertilizing. Blooms late summer. Set the plants 12-15" apart with growing tips 1" below soil surface. They will form sizable clumps which can be divid-

ed every 3 years. Cut off spent flowers to extend the bloom time. Water during dry periods. Taller varieties may need staking. To prevent powdery mildew, provide good air circulation, keep plants healthy, and use wettable sulfur at the first sign of infection.

Pincushion Flower ...see Scabiosa.

Pineapple Lily ...see Eucomis.

Pleione formosana (*Windowsill Orchid*)

Zone 8. Plant bulbs so that the top 1/3 of the bulb can still be seen. One bulb in a 2" pot or several 1" apart in a larger pot. Use a coarse organic mix. Mix together one part untreated shredded bark, one part coarse perlite or gravel and one part peat moss. Water very little until leaves start to appear. Flowers usually appear 4-6 weeks after planting. Provide bright filtered light and humidity, fertilize at every third watering. Water freely in summer. Treat as an annual or when leaves turn yellow, stop watering, allow to go dormant and rest at 2-5°C for 2 months in winter. Repot and divide bulbs every spring.

Polemonium ...see Jacob's Ladder.

Poppy (*Oriental Poppy*)

Zone 3-7. The plants go dormant in early summer, so plant them near a later blooming perennial, like Echinacea or Gypsophila, or summer-blooming bulbs. (New foliage emerges in fall.) Poppies thrive in any well-drained soil and full sun. Space plants 15-18" apart with the crown (the point where the roots meet the shoots) just under the soil surface. Deadhead after blooming.

Potentilla nepalensis

Zone 4-8 (depending on variety). Grow in full sun or light shade in poor to moderately rich, well-drained soil. Divide clumps in spring or fall if they outgrow their space. Plant 12-18" apart with the crown just under the soil surface.

Prairie Mallow ...see Sidalcea.

Primula (*Primrose*)

Zone 5-8. Plant in rich, evenly moist soil in part to full shade. It is intolerant of hot, dry summers. Space 12" apart. Mulch in summer to keep soil cool and conserve moisture. Leaves may yellow mid summer. Blooms spring to early summer. Grows 6-10" tall.

Pulmonaria (*Bethlehem/Jerusalem Sage, Lungwort*)

Zone 3-8. Plant in cool, rich, evenly moist soil in partial to full shade. Grows well under deciduous trees. Intolerant of full sun. Space 18" apart. Grows 9-24" tall. Use for mass plantings, edging, and as a groundcover. Blooms early to late spring. Grows 10-14" tall.

Pulsatilla vulgaris ...see Pasque Flower.

Ranunculus (*French Peony*)

Zone 8-9. Plant in full sun in well drained soil after last spring frost. Pot up indoors 6 weeks before last frost date for earlier bloom. Soak the tubers in water for 3 hours before planting. Plant claw-side down, covering them with 1-2" of soil. Give them a thorough initial watering and wait until shoots appear to begin regular watering when soil surface appears dry. Fertilize weekly as soon as foliage

appears. In zones below 8, dig up after foliage withers and store in dry peat moss or vermiculite.

Red Barrenwort ...see *Epimedium*.

Rudbeckia (*Black-eyed Susan*)

Zone 3-9. Once established, Black-eyed Susans form large, dense clumps that will tolerate considerable drought. Plant 2' apart in full sun to part shade in ordinary soil so tops of plants are level with the surface. Deadheading encourages a longer blooming season. Plants are easily divided in spring when they become crowded.

Sage, Russian ...see *Perovskia*.

Salvia microphylla

Zone 6-9. Grow in full sun to light shade in average well drained soil that is evenly moist. Plant 18" apart with the crowns just below the soil surface. Protect with a winter mulch or plant next to a foundation.

Salvia nemorosa "Plumosa"

Zone 4-7. Plant crowns 1" below soil surface, 12-18" apart. Prefers full sun and moist, sandy soils. Tolerates drought, but will bloom longer if adequately watered. Remove spent flower stalks to encourage bloom throughout the summer. Cut back plants at the end of the season or if plants become floppy and unsightly after blooming.

Saponaria ocymoides (*Rock Soapwort*)

Zone 3-8. Plant with crowns just under soil surface, 12-18" apart. Prefers full sun to light shade and any type of well-drained soil. Cut back after blooming to encourage re-blooming. Blooms in summer. Excellent in rock gardens or as a ground cover.

Scabiosa (*Pincushion Flower*)

Zone 3. (Beaujolais Bonnets: Zone 4). Clump forming, mounding perennial with pincushion-like flowers. Blooms summer to fall. Ideal for cut flowers or drying. Attracts bees and butterflies. Lovely in mixed borders, cottage, rock or wildflower gardens. Plant in full sun, in moderately fertile, well drained neutral to slightly alkaline soil. Deadhead to prolong flowering, however, seed heads are also attractive. Divide in spring every 3 years.

Scilla campanulata

(*Wood Hyacinth*, *Hyacinthoides hispanica*)

Zone 4. Excellent for woodland plantings, wildflower gardens and among shrubs. Grows best in moist, rich soil in full sun or part shade. Plant bulbs 3" deep and 3-4" apart.

Scilla siberica (*Siberian Squill*)

Zone 4-8. Very easy to grow. Scilla even thrive under evergreens. Prefers full sun to part shade and well-drained moist soil. Plant in masses for the strongest colour effect, 3" deep and 3" apart.

Sea Holly ...see *Eryngium*

Sedum

Zone 4-9. Plant fast-draining soil in full sun. Drought tolerant. May tolerate light shade. Water sparingly. Space 18" apart, with the crown (the point where the roots meet the shoots) just under the soil surface. Grows 6-24" tall.

Shooting Star (*Dodecatheon media*)

Zone 5-8. A Native American wildflower. To some, the flowers have the pleasant smell of grape juice! Plant with crowns just below soil surface, 12" apart in full sun to part shade. Grow in average, moist, well-drained soil with lots of organic matter. Avoid poorly drained soils that hold water in the spring. Blooms in late spring. No serious insect or disease problems. Foliage disappears and plant goes dormant in summer. Perfect under trees or in woodland plantings. Divide every 3-5 years after flowering.

Sidalcea malviflora (*Prairie Mallow* or *Checker Mallow*)

Zone 5-9. Plant so that crowns are 1" below surface, in deep, fertile loamy soil in full sun to light shade, in groups of 5 - 7 or more, spacing 12-18" apart. Stake taller varieties. To encourage second flush of bloom, cut back after flowers fade. Blooms all summer. Height 24-48".

Silene (*Silene x robotii*)

Zone 4. Also called Campion. Prefers full sun to part shade. A good choice for the front of a sunny border, or in containers. Cut back by half after the first flush of flowers wanes in June, to encourage repeat blooming. Attractive to butterflies. Plant 12" apart with the crown (where the roots meet the stems) 1" below soil surface.

Snowdrops ...see *Galanthus*.

Sparaxis

Zone 7-10. In late spring, plant corms 4-5" deep and 3-4" apart in sandy, well-drained soil in a sheltered area. Grow in full sun. In autumn, dig and store the bulbs indoors for the winter. Grows 10-12" tall. Blooms May-June.

Speedwell ...see *Veronica*.

Spider Lily ...see *Lycoris radiata*.

Spring Starflower ...see *Ipheion uniflorum*.

Stars of India ...see *Achimenes*.

Stokes Aster (*Stokesia laevis*)

Zone 5. Easily grown in average, medium-wet, well-drained soils in full sun, spaced 12-15" apart. Wet soil in winter is the main cause of death for this plant. Appreciates a winter mulch. Deadhead individual spent flowers and remove spent flowering stems to encourage additional bloom. Good in border fronts or cottage gardens. Best in small groupings. 18" high and wide.

Tigridia (*Mexican Shell Flower*)

Zone 8. A colourful accent in the garden. Plant at least 6 bulbs in a group, 4" apart and cover with 4" of soil. Feed with 5-10-5 fertilizer every two weeks and keep the soil damp. Where not hardy, plant after all danger of spring frost, when the soil has warmed. Dig up after the foliage has browned but before fall frost. Store in peat moss, sawdust, or vermiculite in a frost-free place over winter.

Toad Lily ...see *Tricyrtis hirta*.

Tradescantia andersoniana

(*Spiderwort*)

Zone 5-8. Plant with crowns just under soil surface, 18"

apart. Prefers full sun or part shade and moist fertile soil. Blooms from early summer to early fall. Cut back after flowering to encourage further flowers.

Tricyrtis hirta (*Toad Lily*)

Zones 4-8. Plant so that crowns are just under soil surface, 12-18" apart. Prefers partial to full shade and moist, well-drained, slightly acidic organic soil. Will not tolerate dry soil. Mulch and water during dry spells. Blooms in late summer to early fall.

Trollius (*T. x cultorum*)

Zone 5-8. Also known as Globeflower. Plant so that crowns are 1" below soil level in moist, fertile soil, 12-18" apart. Prefers full sun to part shade and heavy soil that does not dry out. Cut stems back hard after first flush of flowers and fertilize to encourage further blooming.

Tuberose

Zone 7 with protection. For best effect plant tuberose in groups of at least 5 toward the back of the border. Prefers full sun and rich loamy soil. Because they are extremely sensitive to cold, plant them 3" deep and 5" apart, after last frost. For an earlier start, pot them up indoors 4-6 weeks before nights are warm and then transplant to the garden. Feed monthly from the time shoots appear. Lift in fall after foliage has browned, cut the stems off and store in a dry place. Many treat tuberose as annuals, starting with new bulbs each year rather than wintering over.

Tulips

Zone 3-8. By choosing carefully among the wide selection of tulip varieties, you can enjoy successive bloom for at least six weeks. Tulips do best when they get at least 5 hours of sun each day. Rich, well-drained soil will encourage tulips to return year after year. Species tulips, Fosteriana, Gregii, and Darwin Hybrids as well as other early tulips colonize and repeat well from year to year. Plant at least 6-8" deep. Deeper planting (8-12") will prolong the life of many of the later varieties, especially the Darwin Hybrids, for several years. Space bulbs 4" (9 bulbs/sq.ft.) - 6" (5 bulbs/sq.ft.) apart. If tulip bulbs send up leaves with no flowers, it's time to replace them.

Perennializing Tulips: How well tulips grow in future years (perennialize) depends a lot on the cultural conditions in your garden. Tulips are indeed true perennials, but they need the cold winters and hot, DRY summers of their native foothills of the Himalayas, or the steppes of eastern Turkey. Most tulips are grown as annuals, but if you want to increase the chances of your tulips coming back well year after year, here are some pointers:

- Always plant tulips in a well-drained and airy soil. Wet and/or compacted soil promotes fungus and disease, or can cause bulbs to drown out due to suffocation. Adding compost or other organic matter to soil will make it more airy. We recommend raised beds in wetter areas and suggest that you have at least a 10" depth of loose airy soil. Proper soil drainage is very important when planting bulbs.

- Plant in full sun. At least 6 hours of direct sun per day.
- Fertilize and water bulbs when planting. Though too much water is not good, sufficient water at the time of planting is necessary to get them growing and to ensure the start of a strong root system.

- Plant tulips about 6" to 8" deep measuring from the base of the bulb. If you add mulch after planting, include this as part of your overall planting depth.

- Deadhead. After the tulips have passed their peak, remove the flower stalk to prevent seed formation and let the leaves die down normally. Leaves should be allowed to ripen for at least six weeks after blooming. This will help the new bulbets grow bigger.

- Fertilize in early spring or fall with a low nitrogen fertilizer such as Bulb Fertilizer or top-dress with rotted manure or compost.

- Do NOT water or fertilize during the summer.

Uvularia ...see *Bellworts*.

Verbascum (*Mullein*)

Zone 5-8. Plant so that crowns are just under soil surface, 2' apart. Prefers rather poor, but well-drained soil and full sun. Do not fertilize, or verbascum will grow too tall and need support. Blooms in summer. Cut off spent flower spikes to encourage new flowers.

Veronica

Zone 4-9. Plant in average, moist, well drained soil in full sun to partial shade. Space 12-18" apart. Do not plant in rich soil or plant will become weak and sprawl. Divide every 3-4 years. Blooms June-September, depending on variety. Grows 12-24" tall.

Vinca Minor ...see *Periwinkle*.

Virginia Bluebells ...see *Mertensia*.

Wandflower ...see *Sparaxis*.

Winter Aconite ...see *Eranthus*.

Windflowers (See *Anemone blanda*)

Yarrow (*Achillea*)

Zone 3-9. Yarrow thrives in poor or light, well-drained, dry soil in full sun. Plant horizontally, 1"-2" below the soil line, with any green growth above soil level. Allow 1'-2' between plants. Stake if planted in a windy place. Divide in spring or fall. Grows to 36" tall with an 18" spread. Blooms in summer. Remove spent blooms to encourage reblooming. Hardy in

Zephyranthes (*Fairy Lily*)

They flourish in full sun or part shade. Plant them 3-4" apart and barely cover with soil, after last frost. In colder climates they must be dug up before first frost and wintered-over in dry peat moss or vermiculite. As a houseplant, grow 10-12 bulbs in an 8" pot. Water well and keep in a cool dark area until growth appears. Move to a sunny window sill. Keep soil moist and feed monthly with a houseplant fertilizer until foliage withers. Then withhold water and food for about 10 weeks and start watering again to bring back into active growth. Hardy to Zone 8. 🍀