Starting a community nursery

Community nurseries are a source of inexpensive plants for environmental restoration, beautification or wildlife enhancement. The following pages lay out the steps you can take to start your own nursery, large or small. Since many of our more unusual native trees and shrubs are not available commercially, a community nursery may be the only source of these valuable species. The nurseries already set up across the province are promoting the use of native trees and shrubs, which must be present if we hope to preserve and restore natural ecosystems.

STEP ONE - Making plans

The first step in starting a community nursery is deciding that you want to use trees and shrubs to improve the environment. From organization to organization, the reasons will vary. Some groups might want to restore a favourite stream in the area. Others will be more concerned with protecting soil, restoring degraded forests, saving energy, enhancing wildlife or reducing global warming.

Community nurseries ideally are operated by volunteers from one or more local organizations. Find out who else is interested and how much time they will have to put into such a project. Local environmental groups, recreational fisheries associations, church groups, Rotary Clubs, Women's Institutes, 4-H Clubs and Boy Scout troops are good places to start seeking support. Try to get as many groups as you can involved in the project and don't forget local businesses - they may be looking for a project to support. The nursery and future plantings will build community spirit and demonstrate how people can really make a difference in improving the environment.

Good planning comes from knowing the needs of your area. What types of sites need restoration? What are your own interests? Nurseries primarily designed to restore a streamside will use different species and probably be on a smaller scale than one whose goals include urban plantings and wildlife enhancement. It is best to start small and let the nursery grow with your increased expertise, interest, volunteer base and funds.

The key to sizing your nursery is to decide how many seedlings you need to produce and, perhaps even more important, how many you are capable of planting out every year. Even a corner of your garden can produce a large number of seedlings. Conifers are usually grown in a seedbed for two years, then moved to a transplant bed for two years. Deciduous trees can be moved to transplant beds after the first year. Seedlings can also be started in containers or transplanted to containers after one or more years in a nursery bed.

STEP TWO - Location

Almost any site is suitable for a small, short-term nursery, including a section of backyard garden. More care should be taken in selecting a
site for a larger, permanent nursery. Here are some tips on what to look for and what to avoid.

**Access** - A road that is accessible during the entire growing season is almost a necessity, especially if you have to haul water or soil amendments (manure, compost, etc.) very far. This means siting the nursery beside a road or a well-maintained driveway. The closer a nursery is to the centre of your group's operations, the better. Volunteers will be more likely to help out if they don't have to drive long distances to get to the site. Accessibility has to be balanced against the chance of vandalism.

**Water** - no matter how much rain falls during the year, there are times when having water on site will make or break a crop of trees. Seeds need moisture to germinate, while a dry spell can ruin newly transplanted trees. Running water is the best solution - from a town system or well, or pumped from a nearby pond. If those are not available, you will have to haul water.

**Soil** - dramatically changing soil is a challenge, so start off with the best you can find. When selecting a site, consider the following:

- what has the site been used for during the past five years? Avoid land that was continuously cropped or had heavy applications of pesticides.
- what is now growing on the site? Alders will have added nutrients but can take quite a while to eradicate. Couch grass (also known as quack or witch grass) and thistles are hard to get rid of without losing a year of growing time. Again, if all other aspects of the site are ideal, it may be worth the effort.
- what is the drainage like? Building raised beds will help overcome drainage problems, but only to a degree. Make sure there is no standing water and avoid heavy clay soils.

**Site characteristics** - the site should be flat or slightly sloping, with a southern or south-western exposure. Light shade is acceptable, but the nursery must receive sun for most of the day. Avoid "frost pockets" that receive frosts earlier than surrounding areas. Someone who knows the area will probably be the best source of information on this subject.

**Shelter** - windbreaks that slow prevailing winds can be trees or even buildings. If there are no windbreaks, trees and shrubs can be planted for this purpose. Fencing made from slabs or boards can slow wind and keep out wildlife at the same time. Proper windbreaks reduce wind speed, allowing 50% permeability. Under normal conditions, a windbreak or fence 10 ft. (3 m) on the windward side of the nursery will protect plants up to 100 ft. (30 m) away.

**STEP THREE - Soil conditioning**

The ideal soil for a nursery site is a light, loamy sand with plenty of organic matter. Take samples from several areas on the site and test for nutrients, pH and organic matter. The provincial Department of Agriculture and Forestry can instruct you in this and charges a nominal fee for the test. Once you know the condition of your soil, begin preparing the site. If the nursery will occupy part of your garden, the work may already be done. Small plots in urban areas can be worked with hand labour and/or a rototiller. Use a spade to strip off the sod, which should be piled together and allowed to slowly decompose. The ground should be worked as deeply as possible, using a spade and a garden fork.

To improve drainage and add nutrients, add well-rotted manure and compost if available. Most of our beds at Macphail Woods are roughly made up of 1/6 part well-rotted manure, 1/3 part topsoil, 1/3 part potato compost or some other low-nutrient organic matter, 1/6 part leaf mould. We might also add seaweed, mussel mud or other organic matter on hand at the time. Any natural soil amendment that may be available in your area should not be overlooked. Crab and lobster shells, fishmeal and bonemeal are excellent sources of nutrients. In the spring, spread dolomitic limestone to bring the pH up to about 5.5, then use a garden fork or rototiller to prepare the soil for planting.

For larger nurseries in rural areas, you may decide to hire a nearby farmer to prepare the site, making use of his/her expertise. Perhaps you could trade for a future windbreak planting. Plowing should be followed by spreading manure or compost. This can be disc in while the soil is still workable. Spread limestone in the spring, then harrow several times or use a rototiller.

Some old fields may have developed a hard pan, a compacted area just below plowing depth that can hamper drainage. A chisel plow, designed to break up the subsoil and disturb the surface as little as possible, can solve this problem. It should be noted that even rototilling too often at the same depth creates a hard pan. Tillers can be used for initial preparation of the site and seedbeds, but should not be used more than absolutely necessary. Excess tillage can destroy the soil texture that you have worked so hard to achieve.

**THE BUCKWHEAT METHOD**

If your site is very weedy and lacks nutrients and organic matter, prepare the site and plant buckwheat in the spring. When this crop is in the flower stage, turn it under and plant more buckwheat. When it reaches the flower stage, turn it under and plant winter rye. Next spring, disc in the winter rye and harrow or rototill. The soil will be almost weed-free with improved levels of nutrients and organic matter.
STEP FOUR - Laying out the site

In gardens and urban areas, fencing may not be necessary, though cats and dogs can become problems. In some rural areas it may be best to fence the nursery before planting, although we have stopped using fencing at Macphail Woods and have suffered little damage. A 4-6 ft. (1.2-1.8 m) fence will usually keep snowshoe hare from browsing twigs in winter. Fencing can be made of chicken wire, boards, slabs, snow fencing - whatever is handy.

Between the fencing and the actual planting beds, maintain a weed-free strip. This will stop weeds that spread by underground stems from creeping into your nursery. Lay down newspaper and then a heavy mulch, or till the strip regularly.

Your nursery may include one or more seed beds, potting area, transplant or container area, compost bins and watering system.

Seed bed - a good working size for all beds is 3 ft. (90 cm) wide by up to 20 ft. (6 m) long, with 18 in. (45 cm) paths. Mark out beds with string and use a spade to move soil from paths into beds, making the centre of each bed slightly higher than its edges. On heavy soil, beds should be 4 in. (10 cm) above paths; on well-drained soil, 2 in. (5 cm); and on very sandy soils the beds need not be raised. Soil in beds should be firm (but not compacted) using the back of a garden rake or a tamping board.

Framing a raised bed with 8-10 in. (20-25 cm) wide planks or boards is more costly but offers several advantages. The bed is easier to weed; dries out more slowly along the edges; erodes less; and is more easily screened to keep out rodents.

Potting area - this can include a shed for tools and working indoors when it rains, or be as simple as a large table at convenient working height. Whether planting sprouted seeds or year-old seedlings into containers, a good soil mixture is important. No one formula will fit every situation, but here is a good general mix: 2 parts garden loam; 1 part compost or leaf mold; 1 part clean, coarse sand. The addition of pulverized rock phosphate and either granite dust or greensand (1 tablespoon of each per 2-litre container), will reduce the chance of nutrient deficiencies. Take a sample of the mix and raise the pH to about 5.5. About 6 lb. (2.7 kg) of dolomitic limestone will raise the pH of 1 cu. yd. (.77 cu.m) of mix 1 unit (e.g., 5.0 to 6.0).

Transplant or container area - whichever method or combination of methods you choose, the area will be at least four times the size of the seedling area. Both systems have advantages. Transplants in beds are easier to water; require less water; have better drainage; can be grown in a smaller area; and suffer less loss from winter damage. Container-grown plants can be planted out throughout the spring, summer and fall. This is especially important if you will be doing plantings around certain events that take place outside of early spring and allows you to spread the work over a longer period. In addition, plants in containers often experience better growth and suffer less setback when transplanted.

Containers can be anything you find locally, preferably for free. This system works well: use wooden grape crates (free from most grocery stores) to hold 12 2-litre or 24 1-litre milk cartons. Cut off tops and use a knife to make 1/2 in. (12 mm) drainage holes in bottoms of cartons.

Compost bins - a three-bin system, using wire fencing or boards for sides, will give you room for all the composting materials you collect. It is also easy to aerate the material as you periodically move it from one bin to the next. All dimensions of each section should be about 4 ft. (1.2 m).

Watering system - however you obtain it, water must be clean and adequate to ensure good growing conditions. A convenient way to transport large quantities is in 45-gallon (205-litre) food-grade plastic barrels. These can be purchased from fish-packing plants and beverage companies.

STEP FIVE - Collecting seeds and wild plants

Most seeds are best planted in the fall soon after collecting, while some prefer the spring. Plant seeds no deeper than two times their diameter. Small diameter seed can be broadcast and covered with a 50-50 mix of inland sand and sawdust, about 1/4 in. (6 mm) deep.

For fall planting, wait until the ground is frozen and then cover the bed with a 4-6 in. (10-15 cm) mulch of eelgrass, leaf mould, chopped straw or pine needles to prevent repeated freezing and thawing. In the spring, remove most of the mulch and keep a close eye on the bed. The seedbed should be kept moist until the seeds have germinated and established roots. For both seeds and tender seedlings, use a watering rose or a special hose nozzle that spreads out the water. These most closely emulate natural rainfall.
Stratification beds - acorns and butternuts can be overwintered in boxes with 10 in. (25 cm) wooden sides. Over a one-inch (2.5 cm) layer of sand, spread one layer of nuts. Cover with another layer of sand and peat moss. Attach hardware cloth to the top of the frame, cover with a piece of plywood and mulch with 6 in. (15 cm) of eelgrass, straw or sawdust. Check regularly in the spring and plant in containers or beds when the seeds have begun to sprout. For the first two months after germination, apply water several times a week if it does not rain. After that, a thorough, weekly watering will usually be adequate. Deep watering promotes better root growth at lower soil levels.

Most seedlings need partial shade during the first summer to conserve moisture and escape excessive heat. The simplest way is to make a frame to support snow fencing about 1 foot (30 cm) over the bed. You can also use laths at the same height - anything that gives you about 50% shading. If the weather is especially wet and muggy, you should remove the shading to allow the beds to dry out faster. This helps avoid problems with fungi and bacteria.

Transplanting is usually not a desirable way to get much planting stock. Often you can not be sure what the parent stock was like. The act of transplanting itself usually damages the transplant and other plants growing nearby. Here are some areas where you can safely get transplants:

1. **forest roads** - most people do not want trees growing up on their forest roads. Most of the plants would get run over by machinery anyway, so this is a great place to practice guilt-free transplanting. Be careful of damaging roots of trees growing alongside the road - they spread for long distances at shallow depths.

2. **fields** - if you are looking for white spruce or alders to plant, many farmers will let you dig them for free from their fields if they have started to grow up. Other species not wanted by farmers can be found in fields, such as willow, red-osier dogwood and hawthorn.

3. **roadside ditches** - often a good source of willow, alder and red-osier dogwood. These are usually hacked down by machines or workers every year, so taking some of the smaller plants does little harm.

Always transplant in early spring before plants produce new growth, unless you are able to dig up and carry a substantial ball of earth around the roots. Seedlings up to 2 ft. (60 cm) give best results. Deciduous seedlings should be marked in the fall with flagging tape (a different colour or code for each species) while they are still in leaf, since it is often difficult to identify leafless seedlings in the spring. Make sure the seedling has good form and avoid suckers that have grown up from a stump. Some species such as beech put up many root suckers, which make poor transplants. Deciduous and coniferous trees can be transplanted bare root or with a plug of soil. Treat transplants the same as if you were moving seedlings to transplant beds (Step Six).

**STEP SIX - Transplanting seedlings**

Transplanting seedlings within the nursery and letting them grow for a year or two produces stocky plants with dense root masses and no tap root. Before new growth has emerged, use a garden fork to move seedlings to transplant beds or containers. Take care to avoid damaging any roots or branches.

On seedlings under 2 ft. (60 cm), prune roots longer than 8 in. (20 cm) with hand pruners or a pair of sharp scissors. Seedlings with split roots or other major defects should be discarded. Prune multiple leaders (the growing tips of the plant) to a single stem. Roots MUST NOT be allowed to dry out. They can be bunched together in wet moss and burlap, dipped in thin mud, or placed in a bucket of water. It is best to dig up small amounts of seedlings and transplant them quickly.

Plant seedlings in rows across the bed. A handy tool is a 6 in. (15 cm) wide board, 3 ft. (90 cm) long, marked off in increments of three, four and five inches (7.5, 10 and 12.5 cm). Using a spade, dig a trench next to the board deep enough to hold the roots. The side nearest the board should be vertical. Place seedlings against the vertical wall of the trench at the same depth as they grew in the seedbed, indicated by a slight change in bark colour at the root collar. Roots should be spread out evenly, not twisted together or L-shaped. Spacing differs for each species, but use the markings on the board to ensure each is the same distance apart. Replace soil and firm around transplants to eliminate air pockets. Water deeply. Transplanting should be done in the evening or on a cloudy or rainy day. The greatest risk is loss of water from shoots, especially if roots have been damaged in transplanting. If you must transplant seedlings after they have leafed out, prune immediately to reduce the area from which water loss can occur. For trees, trim off about 30% of each branch but avoid cutting the leader if at all possible (this is less crucial for shrubs than trees). It depends on the health of the transplants and weather conditions.

Treat transplants as you would new seedlings - a deep weekly watering and regular weeding are essential. A 1/2 in. (1.3 cm) mulch of eelgrass, leaf mould or composted bark will help to keep weeds down and conserve moisture. Using a shade table (which allows only about half the available sunlight to get through, also helps save moisture and can mean the difference between a successful transplant and a total waste of time.

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STEP SEVEN - Maintenance

Apply a 3-4 in. (7.6-10 cm) mulch to the seedling and transplant beds in November before the snow falls. This will protect the roots from freezing and thawing and prevent frost heaving. Remember to apply mulch late in the fall and remove it early in the spring. If you have trouble with rodents, you may have to pull the mulch away from the seedlings and transplants, let some local cats patrol the area, or spray on some non-toxic rodent deterrent.

Overwintering container stock can be especially tricky - they do not have the large thermal mass of soil for protection. Containers can be moved into an unheated building (a garage or your front porch). If left outdoors, pack containers tightly together and place sawdust, seaweed or spruce boughs around the outside of the area to lessen frost damage to roots. They should be in an area that will collect snow, which is an excellent winter mulch. Snow fencing or spruce boughs can be used to trap snow.

Be a regular visitor to the nursery - this is the only way to avoid serious problems with underwatering, pests and diseases. Many insect and disease problems can be avoided by growing plants in healthy soil with adequate water. Plants that are undernourished, overfed or subject to repeated dry spells are prime targets. When absolutely necessary, look for organic insecticides that are the least harmful controls. Most of these also kill beneficial insects, so use them sparingly.

Good record keeping is an important part of nursery work. Seed batches should be labelled with species name, collection date and where they are from; beds should be marked to clearly show the species and age of the plant. A nursery map to identify seedling and transplant locations is also essential. Accurate records allow you to learn from successes and mistakes.

After a few years of growing seedlings, you will probably want to develop new beds so that crops can be rotated. This will allow you time to plant green manures and add nutrients to beds so that seedlings and larger transplants always get off to a good start. It will also let you take care of weed problems before they get out of hand, significantly reducing time spent on maintenance.

STEP EIGHT - Finished stock

This is the fun part, where your planning and work pay off. Before deciding on a planting site, consider the possible effects of moving a plant to the area. Will the plant be too successful and crowd out what is already growing? Can you transplant and not damage roots of existing plants? Are you meeting the growing needs of the plant (amount of sunlight, water, soil conditions) so that the plant will be healthy? Are you going to run into conflicts with other people using the area, such as local farmers? Certain plants are hosts to rusts and diseases that can affect farm crops, while other plants can become invasive in fields. Do you want to produce hardwood lumber for a future harvest? Here are some potential uses, with suitable species:

1. Streamside restoration
How many of us have seen a favourite stream go from prime fishing habitat to a silted, sluggish brook. These areas should be rich in wildlife, yet often are severely degraded. To restore badly eroded and silted streams, you will often need to plant willow and alder along the banks. These species grow quickly under difficult conditions and their roots help stabilize the soil. Once the stream banks are more secure and the shrubs are providing shade, underplant species such as yellow birch.

2. Urban landscaping
Trees can help convert unused and degraded urban areas into ecologically healthy and diverse parks, nature trails and "green spaces"; provide beauty and shade and reduce air pollutants. Red oak, sugar maple, red maple and white birch are excellent choices for city plantings, as park trees or planted along streets. Shrubs such as alternate-leaf dogwood, serviceberry, beaked hazelnut and mountain ash beautify areas and attract wildlife.

3. Soil protection and crop improvement
In rural areas, windbreaks and hedgerows slow the wind and help prevent soil erosion by wind and water. They also have a positive effect on crops, with yield increases of 5-40% commonly reported. Mixed plantings of conifers and deciduous species will also attract beneficial birds and insects. Species often used in these types of plantings include white spruce, larch, red oak, white birch, red maple, apple, mountain ash, serviceberry, highbush cranberry, wild raisin and willow.

4. Energy conservation
Sugar maple, red oak, white birch or white ash provide summer shade and reduce cooling costs when planted to the south of your home. Plant a windbreak with conifers and shrubs along the north side of your house to block prevailing winds and lower heating bills. A well-planned shelterbelt can also prevent snow from piling up around the house and on the driveway.

5. Restoration of degraded forests
Across much of the province, forests have been simplified and important components may be missing
even in mixed wood stands. Underplant red spruce, yellow birch, sugar maple, white pine, and/or eastern hemlock, at rates of 5-20/acre (12-50/ha). In stands that are primarily white spruce, create small openings and plant red oak and white ash.

6. Wildlife enhancement
While all trees and shrubs have value for wildlife, certain species are favoured over others. They may provide food for rarer types of birds; offer a food source throughout winter; blossom early; or provide dense cover for small mammals. Plant both deciduous and coniferous species, from low shrubs to tall trees. Learn about needs of birds and mammals you want to attract.

7. Reducing global warming
Windbreaks and other energy-saving plantings save money and reduce the amount of fossil fuel burned to heat or cool homes and offices. This reduction means less carbon dioxide, a major contributor to global warming, is released into the atmosphere. Trees also remove carbon dioxide from the air and release oxygen. Planting a variety of native trees and shrubs is an environmentally-sound way to achieve this goal.

Plant propagation
There are four routes to acquiring native plants - buying from a nursery, transplanting from the wild, growing from cuttings and growing from seed. Local supplies of native plants are seldom available. Even if they are, few groups or individuals can afford to buy stock in the numbers required for most restoration projects.

The last three options make the best use of available resources and are the keys to any large-scale projects such as stream rehabilitation, windbreak plantings or forest restoration. Select seed, cutting material or transplants from good parent stock and know that you are maintaining or improving the quality of the species.

Here are some general tips on collecting material - whether seeds, seedlings or cuttings:
Always ask permission of the landowner: while this might seem unnecessary, it is in your best interest. At Macphail Woods we have been developing good relationships with landowners who are happy that we can make use of plants on their property.
Go easy on the environment: avoid degrading one area to improve another. You should never collect more than 10% of the total seed crop in an area. If others are using the same source, lower this considerably.
Prune with care: cuttings should be taken using proper pruning techniques, leaving the parent plant in good condition and able to produce some seed in the next growing season.
Look for healthy plants: always collect from vigorous plants. Poor parent stock often means poor offspring, so avoid collecting from diseased or unhealthy plants.

Transplants
Most trees and shrubs are easy to transplant, especially if under 2 feet (60 cm) tall. Dig plants early in the spring before new growth has started and ideally after a rain when the soil is soaked. Most roots will be within 8 inches (20 cm) of the surface, so a wide hole is better than a deep one. A bushel basket will hold larger specimens, while small plants fit into 2 litre milk containers. The better you treat the transplant, the more successful it will be. Here are some general tips:
- Try to keep all roots intact with as much soil in place as possible. Prune all damaged roots and branches.
- Keep transplants moist, but not soaking wet, at all times. Soil should be wet enough to hold together.
- Tall transplants of maples, alder, willow, wild rose and other species benefit by being pruned back to 1-2 feet (30-60 cm). The larger the root ball and the more you can water the plant, the less you need to cut it back.
- Plant in a suitable location (common elder from a wet area should not be placed in a dry windbreak).
- Place transplants into the ground at the same depth as they were originally growing.
- Water thoroughly at transplant time.
- Mulch transplants after planting, using wood chips, bark, leaves or eelgrass.

Cuttings
Many shrubs can be easily grown by taking cuttings in the summer, fall or winter. The pages on individual species contain specific recommendations. Use the following as guidelines for all cuttings:

Summer cuttings: use only the current year's growth, preferably taking the cutting mid-June to mid-August. Discard the soft, fleshy tip of the branch. The cutting should be about 6 inches (15 cm) long, with the top cut made at a low angle about 1/4 inch (6 mm) above a bud and the bottom cut straight across about 1/4 inch (6 mm) below a bud, with one or more buds in between. This is the ideal that is not often reached. Try shorter or longer cuttings if necessary. The angle of cuts is a simple way of making sure that you know which is the base of the cutting. This way, you will never plant a cutting upside down (a common mistake when using cuttings without leaves). Cut the top leaves in half unless they are quite small and strip away all remaining leaves.

As soon after collecting as possible, cuttings should be placed in a bed located in a semi-shaded area. The bed can be as large as you need and have time to look after. Let's use a 4 foot x 8 foot (1.2 m x 2.4 m) bed as an example. The easiest method is to scrape the weeds off an area with a shovel or mattock and place 3-4 layers of newspaper on the ground, extending beyond the boundaries of the bed. Construct your frame out of 1 inch x 8

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inch (2.5 cm x 20 cm) or 2 inch x 8 inch (5 cm x 20 cm) material and set in place. Place a 6 inch (15 cm) layer of clean, inland builder's sand in the bed and water thoroughly. Mulch outside the bed's base with wood chips or bark to keep weeds from infiltrating. Sprinkle a small amount of #2 rooting hormone (we use Stim-Root, available from most nurseries and stores with gardening sections), on the flat top of an ice cream container. Dip each cutting in the hormone, covering the base, just before you plant it. Rooting hormone stimulates better root development. Once it has come in contact with plant material, do not return the hormone to its original container. It can contaminate the remaining product and should be discarded at the end of each cutting session.

Cuttings should be planted so that about 1 inch (2.5 cm) of the tip is exposed. Use a screwdriver, stick or whatever you have to make a hole, place cutting to desired depth and firm sand around cutting. Place cuttings 2-3 inches (5-7.5 cm) apart, depending on species and size of the leaves. A bed this size can hold between 500-1150 cuttings. Cover the bed with white plastic, old windows or plywood - anything to keep the moisture levels high. Beds should not be allowed to overheat. Check weekly to see if the sand is still moist, and water if necessary. After about three weeks, start giving a little tug on a few cuttings of each species. When you feel resistance, you have succeeded in getting root growth. Dig up a few and see what they look like. If the roots look strong and are between 1-2" (2.5-5 cm), cuttings are ready to transplant. Move them out into a shady, protected location or transplant them to the nursery and wait a year or two until you have larger plants.

**Winter cuttings:** these cuttings can be made as soon as the plants become dormant in the fall, after the leaves have dropped, and anytime before the buds swell in the spring. Again, use the current year’s growth, discard the softest growth at the tip and make cuttings the same as you would in summer. Remember to use a slanted cut at the top of the cutting and a straight cut at the bottom. We tie winter cuttings in bundles of 50, marking each bundle with a plastic tag and recording species, location, date and other information that might be useful. The base of the bundle is then dipped in #3 rooting hormone and the bundle is placed in a plastic bag. Store bag in a refrigerator or cool basement, or in sand in the cutting bed under a thick layer of mulch.

In the spring, as soon as the ground is workable, you have two options. Place the cuttings in a cutting bed to root and be transplanted later; or plant them in a regular garden bed at 3-6 inch (7.5-15 cm) spacings. Spacing depends on when you want to use the plants - wider spacing allows you to leave the cuttings in the bed an extra year if you want to set out larger transplants. These beds need to have loose soil so that the new roots are free to develop. Mulch lightly and keep well-watered, since a garden bed can not maintain the cutting bed's high humidity level.

**Seeds**

Saving the best for last is an old trick, but growing trees or shrubs from seed is really the best way to do large or small numbers of most species. You can select from local, reliable parents - vigorous plants with heavy crops of seed - and grow hundreds of seedlings for transplanting at almost no cost.

Most seed has some kind of dormancy which prevents germination in the fall during a warm spell. Dormancy can be quite complex - a hard seed coat that needs to break down over a winter, an embryo that is not fully developed, chemicals within the fruit that inhibit germination, or any combination of the above. Fortunately, you do not have to worry about dormancy, as long as you follow recommendations for each shrub. If you grow some species that germinate in the first growing season and some that sprout the second spring, separate these groups. It makes weeding and mulching much easier and efficiently uses available nursery space.

Seed preparation also differs between species - serviceberry fruits contain multiple seeds, while wild raisin has a single seed. Some seedcoats need to be removed or crushed, while others are fine to plant just as they come off the shrub. Just follow the recommendations for each species. Seeds should be planted as soon as possible after collecting, to prevent moulds from forming on the fruit or the seed from drying out. Planting depth is generally twice the diameter of the seed - plant small seeds such as roses about 1/8 inch (3 mm) deep and larger seeds like hawthorn about 1/4 inch (6 mm) deep. Place a 2-3 inch (5-7.5 cm) layer of mulch such as eelgrass over the beds in the fall and remove most of this in the spring. If the seeds need two winters before germinating, mulch again the second winter.