

Riparian FACTSHEET



Ministry of
Agriculture

Riparian Factsheet - No. 6 in Series

Order No. 810.210-6
June 2012

RIPARIAN PLANT ACQUISITION AND PLANTING

Establishment of riparian (close to water) vegetation is the integration of species selection, plant acquisition, outplanting and establishment.

After selecting the right species (see *Selecting Plants for Agricultural Riparian Plantings*, Factsheet No.4), the question of how the plant is to be established in the riparian area arises. This factsheet provides information on the establishment of riparian plants including details that will help you decide the stock type, stock sources, planting timing and



Riparian planting

planting methods. This factsheet should be considered along with the companion factsheet *Planting Agricultural Riparian Areas*, Factsheet No.2.

Stock Type and Planting Methods

Planting stock can come in many shapes and sizes from **seed** for the establishment of grasses and forbs to **cuttings** for woody plant establishment, **plugs** for establishment of trees and shrubs, and **potted plants** (of various sizes). The pros and cons of these stock types are discussed below along with planting methods.

Seeds

Grasses and legumes that are commonly used for ground cover and erosion control are most easily established from seed. For optimum germination, seeding should occur in the spring or fall. As an erosion control measure, seeding is suitable anytime during the growing season to protect disturbed soils.



Broadcast Seeding

A variety of seeding methods are available, from hand broadcast seeding using a “Cyclone” type seeder to drill seeding using agricultural equipment. Hydroseeding, where seed, fertilizer and sometimes other ingredients (mulch, tackifier, etc.) are mixed with water and sprayed on the site from a special piece of equipment is a useful, but expensive technique for applying seed.

Selection of seeding methods depends on the site you are dealing with. Hand seeding is especially useful for small areas that are hard to reach with equipment. Where slopes are steep (>2:1), and there is a need to “stick” the seed to the slope in order to establish a vegetation cover, consideration should be given to using a hydroseeder and a specialized hydroseeding mix.

The seeding mix should be selected depending on local site conditions (soil moisture, soil type, climate) but will usually include fall rye and local grasses. Avoid sod-forming species (e.g. timothy or other pasture grasses) that can overwhelm planted cuttings. Assistance from knowledgeable people can help develop an effective seed mix.

Cuttings

Direct planting of dormant hardwood cuttings is a very effective way of establishing important riparian species, although only a few species root easily from stem cuttings. Fortunately, these are the very species that are important in riparian



Willow cutting growing

restoration. Willows, cottonwood and red osier dogwood will all root readily from stem cuttings (See Tables 1-3 in Factsheet 4). Planting of cuttings is very inexpensive and can be conducted during times of the year that are less busy (during dormancy).

The following important points should be kept in mind when using **cuttings** as a technique for riparian restoration:

- Cuttings should be collected during the dormant period for the plants (September to March in BC). Early spring is generally the best.
- Cuttings should be collected from native plants from sites that are similar to the planting site in terms of ecological conditions (within 100 km and 1,000 m elevation).
- If you need to store cuttings, keep them wet-preferably submerged. Willows in particular need to stay wet.
- Cuttings should be soaked in clean, fresh water for 8 to 10 days prior to planting.
- The cuttings must be at least 2 cm in diameter at the smallest part, larger cuttings can be used.
- The cuttings need to be at least 40 cm long.
- Poke a long hole using rebar, then insert cutting and tamp down. At least 80% of the cutting should be in the ground.
- Start planting next to stream and work out. Plant ~30 cm apart. Drier areas may need watering.
- Use vole guards if planting site is near a pasture and rodents may be an issue.
- Protect cuttings from browsing by domestic animals. Repetitive browsing destroys whips.
- Keep records of dates of cutting, planting, inspections, watering, re-planting etc to determine what works best.

There are many different techniques for getting cuttings into the ground. Steel bars, dibbles and other similar tools can also be used as long as most of the cutting is inserted into the soil. Where soils are very soft, cuttings may be simply pushed into the ground.

Planting cuttings can be a fun job for groups of people such as stream stewards. Where many cuttings are to be planted, making a day of the process can ease the workload and can be a fun experience for all. Watching the cuttings grow is very rewarding.



Stream stewards assist with riparian planting

Plugs

Most nursery stock used for commercial reforestation is grown from seed in Styrofoam blocks. Similar

techniques can be used to grow plants for riparian restoration. Seeds or cuttings of the desired species are collected from the local area and are grown in standard styrofoam blocks. The resulting plugs can then be planted in the riparian area using techniques developed for reforestation. A wide variety of species can be grown in this manner, and for some of the more common riparian species, local nurseries may have suitable stock on hand. Although in many cases obtaining suitable stock requires some pre-planning, the results can be very rewarding.



Planting plugs

Potted Plants

Planting nursery grown potted plants can be an effective way of establishing larger plants in riparian areas. However, larger potted plants are more expensive and the shock of planting larger plants may offset any size advantage the larger stock may have over normal plugs. Where there is competition from herbaceous vegetation, including seeded grasses and legumes, the use of larger planting stock may be an advantage as competition can be a significant problem for smaller plants.

Planting larger plants takes longer as holes must be dug to plant the plants. This may be a problem where soils are stony or compacted. Holes for planting potted plants should be slightly larger than the pot so that the plants can be established in a bit of a dish that will hold moisture. In addition, it is essential that the top of the root ball be level with or slightly below the surrounding ground surface.

Fisheries and Oceans Canada (DFO) has riparian planting criteria that they recommend:

- All tree and shrub species should be native to the local area. Prior removal of invasive plant species (e.g. Himalayan blackberry, scotch broom) may be required to enhance survival of transplants.
- When nursery stock is used, the correct botanical name should be used to order plant stock and tags should be left attached for field identification.
- Purchased plant stock should be a minimum of 2 years old, and if transplanting an entire area, planted no greater than 2.0 meters apart for all stock.

- Salvage native plants wherever possible for replanting of disturbed area.
- Fruiting trees and shrubs should be planted to promote re-colonization by seed and provide wildlife food sources.
- Stock should be planted in the fall (September to October) or spring (March to April) depending on local conditions.
- To ensure success of the transplants, at least 80% should survive within the first year of planting.
- Additional fertilizing, dedicated watering and/or replanting may be required to establish vigorous vegetative cover throughout the first year of growth.

Timing for Planting Riparian Plants

Seeds

Seeding work is best conducted in the fall just before the first winter snowfall or in the early spring prior to bud burst except in coastal areas where fall planting should be undertaken between August 15th and September 1st. Seeding in the early fall in coastal areas allows the seeds to germinate and start to grow prior to the onset of winter. In the Interior, seeding just before the winter snow allows the seeds to lie dormant under the snow and to sprout early in the spring as the soils are moist and conditions are ideal for seedling growth. In some cases in the Interior, where seeding is undertaken too early, the legumes (clovers, alfalfa, etc.) that start to germinate can be killed by the frost. Similarly, in coastal areas where wet snow and rains dominate the winter season, seeding too late when temperatures are too cool for effective germination results in seeds rotting rather than growing.

Plugs and Potted Plants

Planting rooted plants (plugs or potted plants) should be undertaken during the dormant season if possible. Planting in the spring or the fall while the plants are dormant allows the plants to acclimatize to their new homes with minimal stress. In addition, weather conditions during the spring and fall can be cool and damp, ideal temperatures for planting riparian plants. If plants must be planted during the growing season, consideration should be given to providing some form of irrigation to protect the plants from drying out during the heat of the summer. In most cases, the top growth of rooted plants will be greater than the roots can support. Therefore, planting when the weather will be warm and dry can cause the plants to die. Planting in the early spring or in the fall is generally best.

Planting Layout

The planting layout will depend on the individual site and what is required to re-establish or enhance existing vegetation. For site specific advice on plant selection and/ or layout, please consult with a qualified professional or other knowledgeable source.

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