



# TECHNICAL NOTES

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PLANT MATERIALS - 29

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## **Collecting Willow, Poplar and Redosier Dogwood Hardwood Cuttings for Riparian Site Plantings**

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### **Introduction**

When a shrub or tree planting is to be made in a riparian site, determining the kind of materials to be used and the method of planting is necessary.

Woody plants can be propagated from seed, softwood cuttings, hardwood cuttings, semi-hardwood cuttings and root cuttings. All of these materials can be used to develop rooted containerized plants. However, with species easily propagated with hardwood cuttings, this option is often more economical than other methods.

Direct field planting on riparian sites of unrooted hardwood cuttings offers advantages over using rooted containerized plants. It minimizes to some extent the physical resources needed - - no greenhouse, lath house, plant media, plant containers, etc. The time frame between obtaining propagation material and the field planting date can be shorter. Dormant cuttings do not have to go through a "hardening off" process as live plants do. Maintaining cuttings during storage requires less personal attention than live leafy plants and dormant cuttings are less susceptible to after-planting frost than live leafy plants.

Willows, poplars, cottonwoods and redosier dogwood are examples of species which may be planted direct into riparian sites as hardwood cuttings. Check with your Plant Materials Specialist for information on a particular species.

**Hardwood cuttings** are leafless stem cuttings taken during the dormant season, usually after temperatures drop into the 30-40°F range to allow for adequate cold treatment of buds. In much of eastern Washington, December 1 would be considered late enough to make hardwood cuttings. Many species of willow and poplar will root without application of root promotion hormone applied to the basal cut. Redosier dogwood will also root without hormone application, but may take longer to root than poplar or willow. Cuttings should have at least 2 nodes. All cuts should be made with a sharp tool which leaves a clean, smooth cut. Shattering or smashing of the stem is undesirable. Sometimes hardwood cuttings are made in the field then cut to length off-site. Bandsaws or circular saws are acceptable for this purpose if they can make relatively smooth cuts.

Two potential options exist for planting after cuttings are made. First, cuttings can be collected, trimmed and planted without need for storage if planting is done soon after cutting. Second, cuttings can be collected, trimmed, bagged and stored pending planting at a later date. Consideration should be given to available labor and site conditions for either option chosen.

**Whips** are flexible hardwood cuttings approximately 4 feet long, usually about 1/2 - 3/4 inch minimum in diameter at the basal end. Potential diameter will vary with the species and site. Hardwood cuttings may be collected as whips on site, transported and later cut to a desired length or planted soon after cutting.

**Pole cuttings** are rigid and larger in diameter than whips. Potential diameter of pole cuttings is usually limited by practical things such as cutting weight and equipment ability to make the necessary hole size for planting. Length may be greater than whips. More source plants are required to support this option. Also, logistics and planting equipment are more complex. Success rate of pole plantings is greater due to ability to plant deeper into the moisture zone.

### **Plant Materials Collection**

Collection site selection could be affected by numbers of plants needed to provide quality cuttings. If plant numbers are limited, it may be useful to get an "eyeball" estimate of the potential numbers of cuttings available. Approximate number of cuttings needed should be known ahead of time.

The collection site should be accessible, have a reasonable population of desirable source plants and be within an acceptable distance. For whips and small diameter cuttings parent plants should have vigorously growing stems, have young stems with minimal branching and have no apparent disease. Pole cuttings will need to be made from older wood.

Best cuttings are those which are fairly straight and have little branching which necessitates less trimming. There should be healthy buds on the cuttings. Willows, poplars and cottonwood will root from much older wood, therefore size (diameter) that can be handled becomes more of a factor than age, especially with pole plantings. Generally, basal diameter should be a minimum of 3/8 - 1/2 inch in diameter for cuttings 12 - 18 inches long. Longer cuttings will naturally have

a larger basal diameter. Realistically, "ideal" cuttings cannot always be obtained. Emphasis should be placed on obtaining quality materials. (Cuttings from native plants may be available in the local area).

**Length of cuttings:** Direct planted dormant hardwood cuttings of willows have been more successful in western Washington sites when approximately 4 foot long cuttings or whips were used when compared to 18 - 24 inch cuttings on similar or same sites. (See WA Technical Note 21 for more information). The longer length allows cuttings to be planted deeper and into the mid-summer moisture zone. Cuttings planted into soil which dries out below the cutting and its developing roots have poor survival rates.

The Aberdeen, Idaho Plant Materials Center's direct plantings on riparian sites with willow, poplar and redosier dogwood indicate larger diameter cuttings survive better than the smaller diameters. Cuttings up to three inches in diameter have been used with excellent survival. (Hoag and Short, 1993)

After parent plants are cut back the first time, subsequent growth frequently produces cuttings of better quality and higher numbers. If sufficient lead time is available, parent plants could be cut back, allowed to regrow, then used for hardwood cuttings in the following dormant season. Furthermore, if a local need for cuttings exists over more than one growing season, sites which have had cuttings taken from them should be considered as potential sites again the following year.

**Tools:** Short handled hand pruners are adequate if stem diameter is not more than approximately 3/8 inch and numbers cut are not large. Long handled lops or pruners provide a longer reach and more leverage, allowing a larger diameter stem to be cut. Power saws may be useful for larger diameter stock.

**Time of year to take cuttings:** Hardwood cuttings should be cut from source plants during the dormant season, usually December 1 and later in much of eastern Washington. Western Washington cuttings can be harvested in January and February. Dormancy usually occurs after a hard frost. Then buds need an adequate "rest" period. Use of dormant cuttings allows more time for the cuttings to produce roots before energy is diverted to leaf production. Time of year to take cuttings during the dormant season will depend on whether cuttings will be stored after cutting or planted into the field right away. Planting right away will be affected by field conditions where cuttings will be taken and also where they will be planted. Both sites must be accessible by workers and equipment.

Cuttings which will be direct planted into a site may need to be trimmed, culled and counted.

Depending on the time of the year cuttings are taken, consideration should be given to keeping the cuttings cool and moist after they are cut. If cuttings are to be transported a distance away from the collection site, consideration should be given to covering them with a tarp or other suitable cover to prevent drying.

## Storage

Cuttings should be trimmed to a single stem. If the base of the cutting is frayed or crushed, a new "clean" cut should be made. Bottom ends of cuttings should all be at one end of the bundle or plastic bag. Keeping cutting counts in each bundle or bag to a consistent number (25's, 50's, 100's, etc.) will help assure easy counting later on, assure enough cuttings are collected and help assure enough cuttings are sent to a particular field site for planting.

It may be desirable to paint the tops of the cuttings to help planting crews get the "right end" up, especially when using inexperienced crews. This can be done with a fast drying spray paint of a color (white, etc.) which is easy to see. Other types of paint which dry slowly may present problems in drying in cooler temperatures during the time of year cuttings are collected. Paint should be dry before cuttings are bagged and stored or before further handling after painting.

Cuttings can be sprayed with water to help keep them moist prior to bagging for storage. Bags should be made of fairly rugged plastic. Addition of moist peat moss to the bag prior to tying the top is desirable. Cuttings should fit comfortably inside the bags. Bags should be heavy enough to prevent punctures which tend to occur when handling bagged cuttings. Bags should be able to retain moisture around the cuttings.

**Storage conditions:** Cuttings should be stored in the dark, at temperatures approximately 24 - 32°F (ID Technical Note 23, 1993). Longer storage than 60-90 days necessitates storage as close to 24°F as practical. The intent of refrigerated storage is to retard development of leaf buds so that leaves do not appear during storage, retard premature development of roots and keep cuttings moist. Willow and poplar cuttings may develop short roots while in storage, regardless of low temperatures if stored long enough.

**Length of storage:** Storage time of 30-60 days should be adequate for most needs. Cuttings of willows and poplars have been stored successfully for 6 months at 24°F. (Cram and Lindquist, 1982).

## Pre-plant Conditioning of Cuttings

There has been some evidence suggesting that willow, poplar and redosier dogwood cuttings benefit from pre-plant conditioning. Storage with moisture in bags at low temperatures (32°F) for 2 - 4 weeks will provide this pre-plant conditioning if storage temperatures are above 32°F. Also, if planting is done soon after cuttings are collected, some feel that soaking the cuttings upright with bottoms in a bucket or barrel of water prior to planting is beneficial. Soaking should be for a minimum of 24 hours (ID Technical Note 23, 1993).

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