

Planting Methods

Hybrid Poplar Best Management Practices

Planting Stock

There are a number of types of poplar planting stock that can be used to fit the application in Minnesota. There are unrooted hardwood cuttings and poles (whips), cut back rooted cuttings (called barbatelles), bareroot stock, softwood (greenwood) cuttings, container stock and balled and burlap (B&B) stock. Each of these may suit certain planting purposes. The majority of poplars planted in Minnesota are either unrooted hardwood cuttings or bareroot stock. These preferences are due to cost and availability from nurseries.

The recommended practice of planting stock size is 8" to 10" for unrooted hardwood cuttings. However, because of increased deer browsing and warmer, drier weather conditions in recent years, larger unrooted stock (12 to 18" long) are now recommended. Larger stock and bareroot stock grow larger, faster to minimize deer browsing during the establishment year. Containerized stock is recommended only for the aspen and aspen hybrid clones as these trees do not root readily from cuttings.



Bareroot poplar stock (rooted)



Unrooted Hybrid Poplar Cuttings

Containerized stock of hybrid poplar is sometimes used in harsh prairie soils (Oosten, 2006). Cottonwood and cottonwood hybrids grow "best" from bareroot stock in Minnesota, because warmer soil temperatures are needed for their root development. Cottonwood can also be grown from barbatelles, which are bareroot stock cut back to 1 foot in height.

Storing Planting Stock

Unrooted hardwood cuttings should measure from 3/8 to 3/4" in diameter and should be stored in sealed plastic bags at 32 to 40 degrees F. The cuttings should be warmed to room temperature before planting for 5 to 7 days and should be soaked to 3/4 of their length in water and placed in the shade with the buds upright. Cuttings are ready for planting when the buds begin to turn green and when the roots are about ready to sprout.

Bareroot stock and barbatelles, like cuttings, should be stored in a cool place before planting and then soaked in water at room temperature for a few days before planting. Containerized stock should be kept in dormant state until planting.

Time of planting

In Minnesota poplar planting should be in May to early June. Earlier guidelines that recommended planting in mid-April have led to much dieback in Minnesota due to late spring frost and freezes. The exception to this guideline is dormant container stock and B&B plants which can be planted in April. B&B stock can also be planted in autumn.

Unrooted hardwood cuttings and bareroot stock should be planted when the soil is moist or when rain is expected. Container stock should be watered before planting. Planting stock should be covered with a tarp during planting. Success improves when soil temperatures are above 50 degrees F. Temperatures of 65 to 70 degrees are optional. In dry, prairie soils in northwest Minnesota bareroot stock is preferred over unrooted cuttings because the soils dry out before the unrooted cuttings become established.

Planting

Planting methods are critical to planting success. Planting unrooted hardwood cuttings can be done by hand or machine. The planting layout at the desired spacing should be marked in advance by hand with a hand operated distance measuring wheel and with biologically safe paint. For large tracts, a tractor driven marking device can be used. Unrooted cuttings should be planted with one or two buds exposed. **Cuttings must be planted upright.** A hand planting tool for cuttings works well and the soils should be pushed in against the cutting to fill air gaps. There are several makes of tractor mounted cutting planting machines.

Unrooted whips or poles should be planted at a depth of 2 to 3 feet. Except in very moist soils, they could be planted with a hand-held power auger (6" diameter) or a tractor driven auger designed for post holes. In clay soils a larger hole is needed because the hole side may restrict root penetration.

Bareroot stock or barbatelles can be planted by hand or by machine. The stock should be planted slightly deeper than they grew in the nursery (about 1 to 2 inches). The stock can be shovel planted or planted by machine. There are planting machines that make a furrow to plant bareroot stock. With this machine it is crucial that each tree be planted upright in the furrow with a symmetric distribution of roots. If trees are not planted properly (upright) in furrows, roots grow horizontally and the trees are not wind firm.

For smaller tracts where there is a shallow hardpan layer in the soil or where the landowner wants early deep penetration of roots for environmental purposes such as phytoremediation or near livestock operations, auger planting is recommended. There are one-man, two-man, skid steer mounted, or tractor mounted augers available commercially or for rent. Many farmers already have a 3-point hitch tractor mounted post hole digger which works well. Bareroot stock or barbatelles are planted in a 6 inch to 1 foot hole dug to about 2-3 feet deep. The holes are backfilled with native soil, soil amendments or compost. Excess soil or amendments should be left above the ground line to allow for settling. Soil should be pressed around the stock to minimize air gaps.

Slow release fertilizers such as 14-14-10 Osmocote (or comparable product) should be used with auger plantings. Regular agricultural or lawn fertilizers are **NOT** recommended because they are too harsh for developing roots. They are beneficial after the trees are established. Compost and mulches can be substituted for commercial fertilizers, but use of lawn clippings should **NOT** be used if "weed and feed" fertilizers have been used. These lawn clippings contain the herbicide 2-4 D which is harmful to young trees.

For more information visit:

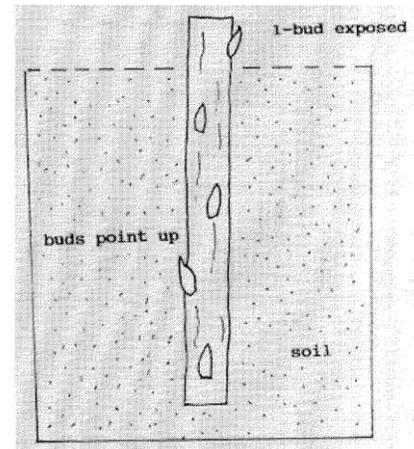
www.extension.umn.edu/agroforestry "Growing Hybrid Poplar in MN"

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Planted cutting



Planted Unrooted Hybrid Poplar Cutting