

'Prairie Sky' Poplar

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Poplars (*Populus* L., Salicaceae) are grown extensively and are selected primarily for their rapid growth and wide adaptability to adverse growing conditions, including drought and cold. Many hybrids that incorporate rapid growth and disease resistance are used in forestry and agriculture. The Agriculture Canada tree-breeding program was established to develop cold-hardy, disease-resistant shade and shelterbelt trees for prairie environments. 'Tower' poplar, selected from a cross between *P. alba* L. x *P. tremula* L. 'Erecta', was released in 1980 (Ronald, 1980) and has subsequently received the Canadian Society for Horticultural Science's outstanding cultivar award. 'Prairie Sky' is the second poplar to be released from this program.

Origin

Populus x *canadensis* Moench. 'Prairie Sky' poplar originated from a cross between a vigorous native selection of *P. deltoides* Marsh. and the columnar *P. nigra* L. 'Thevestina'. Controlled crossing was conducted in a greenhouse using detached twigs. Seed was collected and subsequently germinated. Field-planted progeny were observed for cold hardiness, form, vigor, and pest resistance. 'Prairie Sky' was selected from a seedling row in 1978 and has been tested since that time as MRS #78101 in local and prairie regional trials.

Description

'Prairie Sky' is a tall, narrow, single-stem, male tree with generally small lateral branches. Ten-meter-tall trees are usually <2 m wide in the canopy and maintain a dominant central axis. Growth of established plants averaged >1 m·year⁻¹ under prairie growing conditions, which indicates that hybrid vigor is present. Diameter of 12-year-old trees at 1.5 m (breast height) was 51.3±1.5 cm in replicated plantings at Morden. Height was 10.2 ± 0.5 m.

In mature trees, winter bark is yellow-green (147C; Royal Horticultural Society, 1966). Summer bark is yellow-green (146C) on trunks and yellow-green (148D) on 1- and

3-year-old twigs. Bark texture is smooth (type 5; Zsuffa, 1984). Winter buds are gray-orange (165B). Terminal buds average 10.0±0.2 mm long and 4.0 mm wide (Fig. 1). Buds are resinous and range from narrowly oblong to oblong. Lateral branches tend to have limited secondary thickening, which contributes to their fine-textured appearance. Epicormic branching, particularly on the main stem, has been observed. Branch angle of origination averaged 28.6°±1.5°, while termination angles averaged 81.8°±1.4°. The upward orientation of lateral branches contribute to the development of an ascending crown shape.

Leaf shape is deltoid with a broadly cuneate base (Fig. 1). There is no incision at the union of the leaf blade and petiole. Leaf blade length is 10.0 ± 0.5 cm, blade width averaged 10.9 ± 0.6 cm, and petiole length averaged 6.1 ± 0.2 cm. Leaf angle of origination from the stem is 35.0° ± 1.7°. The angle of the lowest leaf vein to the midrib (Zsuffa, 1984) averaged 60.0° ± 1.2°. The leaf tip is acute, whereas the leaf edge is serrated. Leaf midrib and petiole color are similar to leaf color, except lighter in

tone. Reddish tinges on the petiole have been noted. The leaf scar is generally triangular (type 6; Zsuffa, 1984). Stipules are ascending and deltoid with a sharp point.

This interspecific hybrid is highly resistant to canker (*Septoria* Sacc. spp.) and only slightly susceptible to leaf rusts (*Melampsora* Cast. spp.). 'Prairie Sky' test plantings in Manitoba have generally been free of canker (*Septoria* spp.) Only one canker has been noted in test plantings at Morden in 12 years, and that canker was compartmentalized effectively by the tree. The disease did not spread. Leaf rust (*Melampsora* spp.) has only been observed under extremely moist conditions and this was not severe enough to cause any defoliation.

'Prairie Sky' is propagated easily by hardwood and softwood cuttings. Rooting success has averaged >90% in trials. Rooted cuttings routinely produce 2.0 m of new growth in the first growing season.

'Prairie Sky' may be distinguished from other similar clones on the basis of hardiness, disease resistance, leaf shape, main stem coloration, and overall form (Zsuffa, 1984). 'Gelrica' is an upright-growing *Populus*, but often has a crooked trunk (Krussmann, 1977). 'Serotina Erecta' is noted by gray-white bark. 'Eugenei' has more of a pyramidal shape and reddish new shoots. None of these clones is as hardy as 'Prairie Sky' as determined in trials at Morden.

This tree combines excellent winter hardiness (U.S. Dept. of Agriculture zone 3) from the female parent and some of the crown form of the male parent. Established trees have withstood temperatures of -35C with no symptoms of winter injury. One and 2-year-old

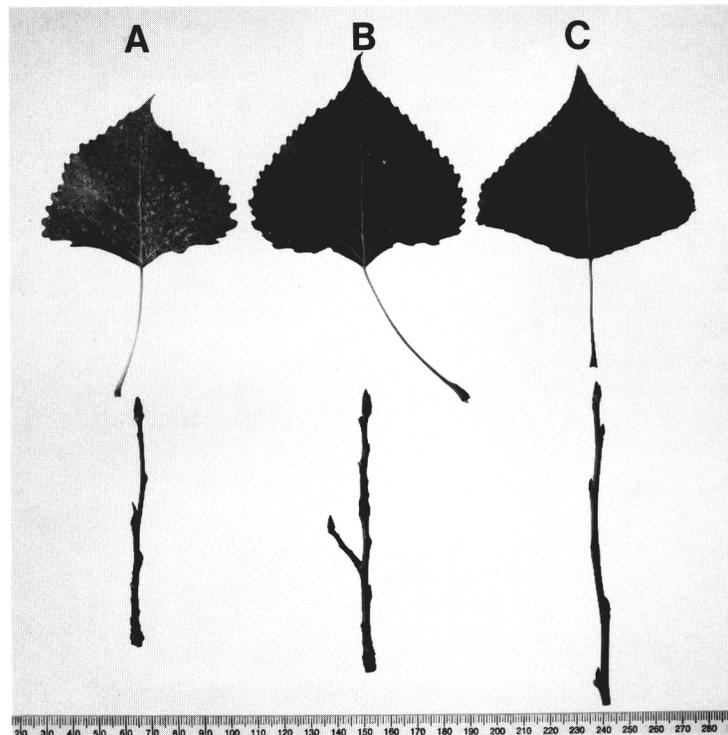


Fig. 1. Comparison of leaves and twigs of 'Prairie Sky' and both parents (A = *Populus deltoides*, B = *Populus canadensis* 'Prairie Sky', and C = *Populus nigra* 'Thevestina'). Scale divisions in centimeters.

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vigorously growing nursery plants can experience some tip kill; however, trees generally recover well and quickly establish a strong dominant central axis.

The name 'Prairie Sky' is registered with the International Poplar Commission (Rome, Italy) in accordance with the International Code of Nomenclature for Cultivated Plants (Brickell, 1975) and was chosen to represent the tree's vigorous growth rate and narrow crown formed under prairie conditions. Growth rates in warmer regions have not been assessed but should equal or exceed our performance estimates due to the tree's general adaptability to a variety of growing conditions. This cultivar is best suited for amenity-type plantings and for shelterbelt and woodlot situations.

A severe ice storm at Morden allowed assessment of the tree's adaptation to this type of injury. Relatively little structural damage

occurred even though ice loads were significant. A lack of major upper canopy branches combined with the tree's ability to replace damaged branches quickly contributes to its versatility.

Valuable traits such as hardiness, form, disease resistance, and seedless nature are often lacking in available *Populus* clones for colder regions of the plains and prairies. These characteristics plus rapid growth rate and ease of propagation and establishment should contribute to a high plantation success rate.

Availability

'Prairie Sky' is registered with the Canadian Ornamental Plant Foundation (COPF). A limited supply of propagating material is available from the Agriculture Canada Research Station, Morden, Man., until 1996 to COPF

members for commercial production and to research institutions for test purposes. Agriculture Canada reserves the right to collect royalties from this cultivar. Herbarium specimens are on deposit at the Morden station.

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