
CONSIDERATIONS FOR HYBRID POPLAR PRODUCTION

Introduction

Hybrid poplars have been planted in prairie shelterbelts for many years. They have primarily been planted into farmstead shelterbelts but have been used in wildlife and field shelterbelts as well. Their popularity has traditionally been the result of fast growth and easy care, but the future for poplar may be even brighter.

Growing poplars as a short rotation woody crop involves intensive management more similar to agriculture than forestry and is a long term commitment with significant investment and limited economic return for a number of years. However, hybrid poplars can be an attractive crop for landowners, especially in the northern agricultural zone where there is growing demand for poplar wood.

Poplars also have important environmental benefits, specifically greenhouse gas mitigation (carbon storage), riparian zone protection and wastewater management. Many of the factors to consider in hybrid poplar production are outlined in this factsheet



15-year-old Walker poplar.

Soil, Landscape and Climate Considerations

A suitability map, as illustrated in this factsheet, was developed by the Saskatchewan Land Resource Centre using soil, climate and poplar growth data. The climatic data included growing season precipitation, annual precipitation and annual moisture deficit. Soil and landscape criteria included soil texture and salinity. The poplar growth data was collected from 1996 to 1998 by the PFRA Shelterbelt Centre. The criteria were applied to the Soil Landscapes of Canada database (1 to 1 million scale). The project was funded by the Canada - Saskatchewan Agri-Food Innovation Fund.

The map was based on land qualities which affect poplar growth including biophysical features of soil, topography and climate. The classification of land suitability outlined here applies to hybrid poplar, particularly the hybrid *P. x 'Walker'*. As with any crop, it is important to also consider market, social and economic factors before making any decisions. This map does not consider socio-economic or marketing factors or take into account hazards such as fire, pests or diseases. A detailed site study taking into account all factors should be completed prior to any final decisions are made to grow hybrid poplars.



Precipitation - Areas with less than 400 mm annual precipitation will have significantly restricted poplar growth and are not suitable for hybrid poplar production unless supplemental moisture is available through irrigation or tree roots are able to access the watertable. Availability of groundwater (within 1 to 5 meters) can reduce the reliance on precipitation. Heavier textured soils require less precipitation than light textured sandy soils to maintain optimum growth.



Agricultural site for a hybrid poplar plantation.

Soil Texture - The best soil textures for poplar growth are loams. Excessively coarse, fine, or organic soils are generally unsuitable.

Soil Drainage and Flooding - Water logging or extended flooding (> 1 week) is detrimental to the growth of poplars. The presence of mottles or gleying in the soil profile are indications of poor drainage and sites that should be avoided.

Rooting Conditions - Effective root depth is the maximum depth of soil that can be exploited by a tree. Effective root depth is impacted by the presence of bedrock, hard pan layers, high water table, gravel or massive clay layers. The best sites will have rooting depths greater than 100 cm.

Nutrient Availability - In agricultural soils, nutrient availability is seldom a problem. However, proper fertility management can significantly increase poplar growth rates.

Soil pH - The optimum soil pH for hybrid poplar ranges from 5.5 to 8. Nutrient availability can be affected by pH. For example, although iron is an abundant trace element in the soil, poplars may have difficulty in absorbing sufficient quantities in high pH, calcareous soils.

Slope - Slope affects accessibility, drainage and susceptibility to erosion. The best sites are level or with gradually undulating topography. Steep, short slopes limit accessibility and often result in poor growth because of low water retention (knolls) or flooding (depressions).

Salinity - Poplars do not tolerate saline soils. Conductivity greater than 2.0 ms/cm are likely to be limiting and values in excess of 4.0 ms/cm will result in reduced growth and severe dieback.

Site Considerations

Field Access - Access to fields is required for site preparation, planting, tending and harvesting. The presence of all season roads that require minimum upkeep is desirable.

Proximity to Markets - The cost of transportation is related to the distance from the field to the market. Wood processors are mainly located in the forest fringe areas of the province.

Access to Labor - Hybrid poplar production is not overly labor intensive, however a local source of labor is beneficial to minimize transportation costs and monitor plantations.

Field Shape - Field shape is usually determined by existing physical features, however rectangular or square fields are preferred.

Other Considerations - The location of overhead power lines, presence of underground utilities and adjacent land features or uses should be considered.

Individual Considerations

Long Term Commitment - The growing of hybrid poplar is a long term commitment with high initial costs and the possibility of no economic return for many years.

Skill Requirement - Growing hybrid poplars is considerably different from growing traditional field crops. There is limited experience with growing hybrid poplar in the prairies so there is limited opportunity to learn from experiences of other growers.

Equipment Requirements - Most maintenance requirements can be met with standard agricultural equipment. Due to the row spacing, smaller sized equipment than normally used in traditional agriculture will be required. Some specialized equipment such as sprayers may need to be purchased.

Marketing - Because of the long period between deciding to plant hybrid poplar and harvesting a marketable product, there can be considerable changes in market demand for the wood resulting in a certain level of risk. Alternative marketing options such as contract growing with a wood processing company may need to be considered.

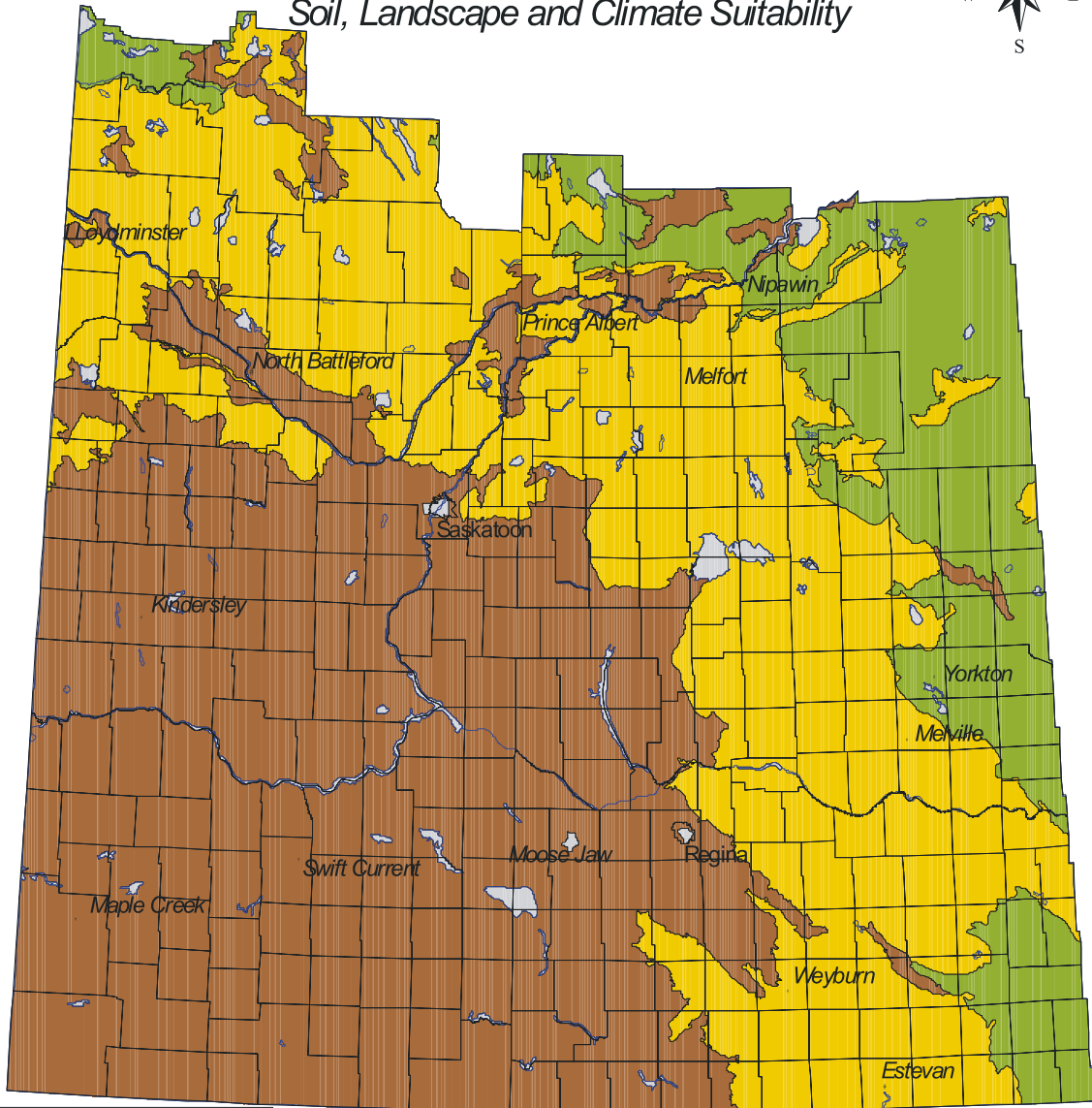
Financial Considerations - There is a lengthy delay (15 to 20 years) between planting hybrid poplar and harvest. Initial costs are high with establishment costs ranging from \$450 to \$500 per hectare plus the cost of plant material which ranges from \$0.35 to \$1.00 per rooted cutting. Depending on the marketing arrangement with the wood processor, growers may be required to manage overhead and expenses until marketing occurs.

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Hybrid Poplar Suitability

Soil, Landscape and Climate Suitability



Hybrid-Poplar Suitability

Hybrid-Poplar Suitability	
■	Excellent
■	Good
■	Poor
■	Undersified

Funding Provided By:

**Canada - Saskatchewan
Agri-Food Innovation Fund**

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October 1999



Financial assistance to conduct these studies and print this factsheet was provided by the Canada-Saskatchewan Agri-Food Innovation Fund.