



AGGP-Agroforestry

## No. SASK-5

Hybrid poplar (*Populus spp.*) trees were made available to farmers through the Government of Canada's Prairie Shelterbelt Program (PSP). Since the 1930s, hybrid poplar trees were planted in farmyards to protect infrastructure and in fields to reduce soil erosion (Figure 1). There are records of 31 different hybrid poplar tree species ordered from PSP (e.g. Walker, Assiniboine, Ketepwa, and others). Field sampling indicated that planted hybrid poplar shelterbelts varied in age (13–55 yrs.), designs (1–7 rows with 1.0–9.5 m spacing between trees within a row), and planting arrangement, combined with up to six other species. Hybrid poplar was planted together with American elm, Bur oak, caragana, green ash, Manitoba maple, willow, Scots pine, white spruce, silver maple and Colorado spruce.

### SHELTERBELT MAPPING: WHERE AND WHEN

**Where:** During the course of eight decades, greater than 5.68 million hybrid poplar trees were planted on cultivated agricultural land, which was mapped with 57% accuracy (Figure 2). This signifies the first mapping of hybrid poplar shelterbelts in Canada.

**When:** Novel, decadal time-lapse series of shelterbelt distribution maps were created to identify important historical factors that influenced planting of hybrid poplar shelterbelts in Saskatchewan (Figure 2). Hybrid poplar shelterbelt establishment was uniform up to the 1970s when tree orders reached > 200,000 yr<sup>-1</sup>. They were focused in areas immediately next to major roadways and in the 1970s and 1980s extended to some intersections, and in the 1990s and 2000s expanded to in-field locations with increased tree orders.

# HYBRID POPLAR SHELTERBELTS IN SASKATCHEWAN

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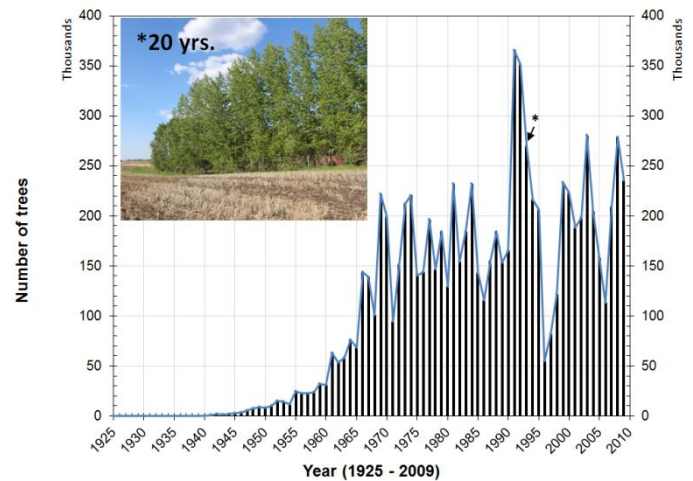


Figure 1. Historical record of the number of hybrid poplar shelterbelt trees ordered through the PSP in Indian Head, Saskatchewan (\* indicates the planting year of the shelterbelt shown in the photograph).

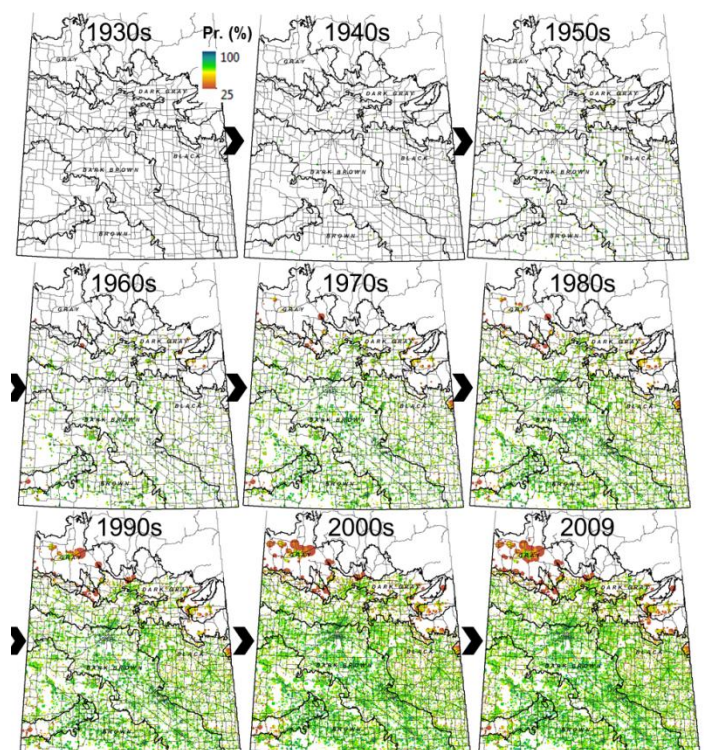


Figure 2. Decadal time-lapse (1925–2009) series of probability (%) maps of expected hybrid poplar shelterbelt establishment in Saskatchewan.



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## SHELTERBELT LENGTH AND DISTRIBUTION

- A unique land clustering approach spanning five soil zones was designed and utilized (Figure 3).
- The total length of hybrid poplar shelterbelts in Saskatchewan was 4,144 Km, and ranged from 18 to 3,555 Km in the Dark Brown > Brown > Black = Dark Gray > Gray soil zones, in descending order (Figure 3).
- Nearly 94% of all hybrid poplar shelterbelts were planted in the Dark Brown (86%) and Brown (8%) soil zones, and the remaining 6% were in the Gray, Dark Gray, and Black soil zones (Figure 3). The majority of all shelterbelts were located mainly in farms in the region stretching from Saskatoon to Estevan.
- Except for several isolated low-order years (1996–8, and 2005–6), an uniform trend of hybrid poplar tree orders (Figure 1) contrasts a decreasing trend of the overall shelterbelt tree orders from the PSP from 1990 to 2009, mainly due to the larger selection of hybrid poplar tree species being planted, and their fast establishment in both farmyard and field shelterbelts.

### FURTHER READING

Amichev, B.Y., et al. 2015. Mapping and quantification of planted tree and shrub shelterbelts in Saskatchewan, Canada. *Agroforestry Systems* 89(1):49–65

AGGP Fact Sheet(s): SASK–1 through SASK–3, SASK–12

CONTACT FOR MORE INFORMATION: [SASKAGROFORESTRY.CA/](http://SASKAGROFORESTRY.CA/)

### ACKNOWLEDGEMENTS & COPYRIGHT

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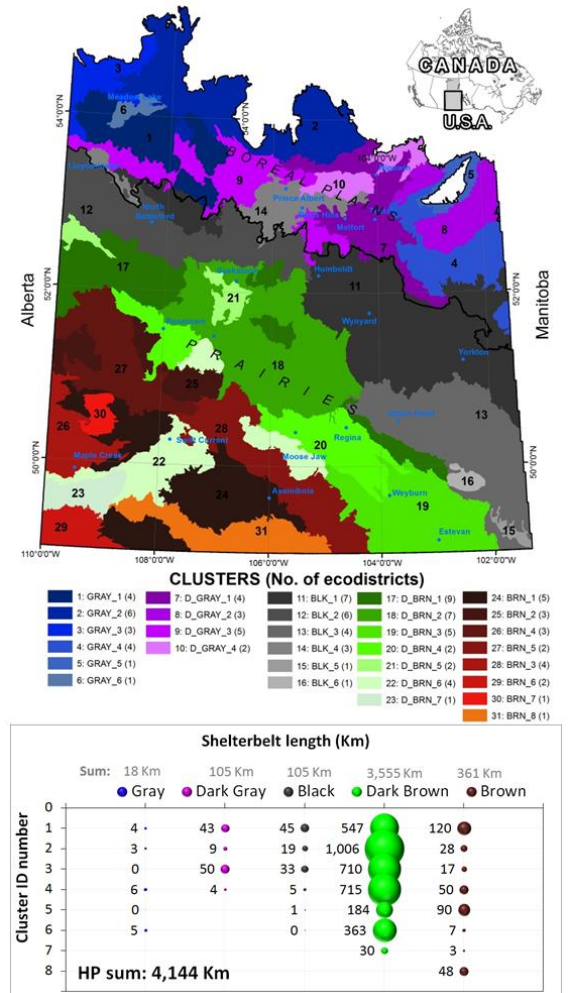


Figure 3. Location of agricultural areas in Saskatchewan with expected length of hybrid poplar shelterbelts.

