



AGGP-Agroforestry

No. SASK-4

The Prairie Shelterbelt Program (PSP), a Government of Canada’s farm assistance program, made White spruce (*Picea glauca* Monch Voss.) trees available to farmers. Since the 1930s, white spruce trees were planted around farmyards to protect infrastructure and in fields to reduce soil erosion (Figure 1). Field sampling indicated that white spruce shelterbelts varied in age (6–76 yrs.), designs (1–10 rows with 1–5 m spacing between trees within a row), and planting arrangement, combined with up to four other species. White spruce was planted together with hybrid poplar, American elm, Bur oak, caragana, green ash, Manitoba maple, quaking aspen, chokecherry, Scots pine, and Colorado spruce.

SHELTERBELT MAPPING: WHERE AND WHEN

Where: During the course of eight decades, greater than 1.54 million white spruce trees were planted on cultivated agricultural land, which was mapped with 74% accuracy (Figure 2). This signifies the first mapping of white spruce shelterbelts in Canada.

When: Novel, decadal time-lapse series of shelterbelt distribution maps were created to identify important historical factors that influenced planting of white spruce shelterbelts in Saskatchewan (Figure 2).

White spruce shelterbelt establishment was minimal up to the mid-1970s and was focused in areas immediately next to major roadways. An increased shelterbelt planting occurred in the late 1990s and 2000s mainly within the Boreal transition zone (Gray and Dark Gray soil zones) and in proximity to larger cities.

WHITE SPRUCE SHELTERBELTS IN SASKATCHEWAN by BEYHAN Y. AMICHEV

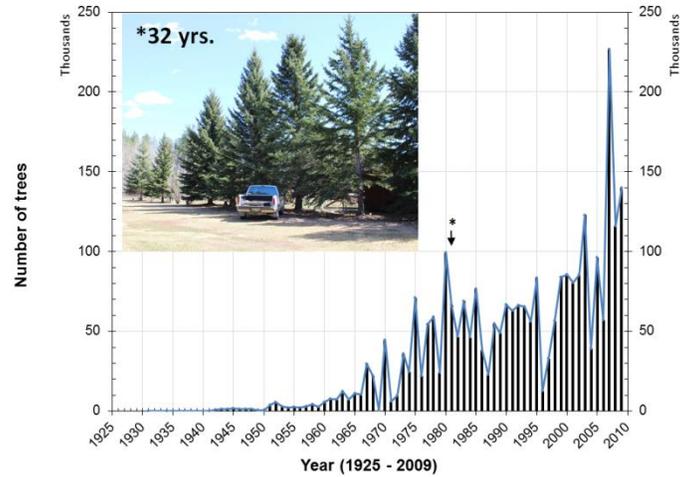


Figure 1. Historical record of the number of white spruce shelterbelt trees ordered through the PSP in Indian Head, Saskatchewan (* indicates the planting year of the shelterbelt shown in the photograph).

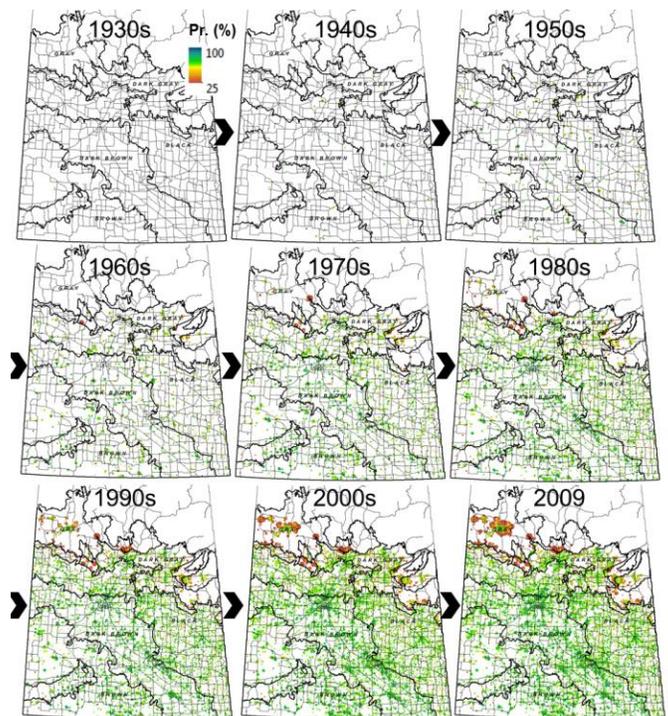


Figure 2. Decadal time-lapse (1925–2009) series of probability (%) maps of expected white spruce shelterbelt establishment in Saskatchewan.



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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 white spruce shelterbelts in Saskatchewan was 991 Km, and ranged from 15 to 826 Km in the Dark Brown > Dark Gray > Brown > Black > Gray soil zones, in descending order (Figure 3).
- About 83% of all white spruce shelterbelts were planted in the Dark Brown soil zone (Figure 3), mainly in farms near three shelterbelt ‘hot spots’, which are the cities of Saskatoon, Regina, and Weyburn.
- An increasing trend of recent white spruce tree orders (Figure 1) contrasts a decreasing trend of the overall shelterbelt tree orders from the PSP from 1990 to 2009, largely due to white spruce trees being planted preferentially in farmyard shelterbelts, as opposed to field shelterbelts.

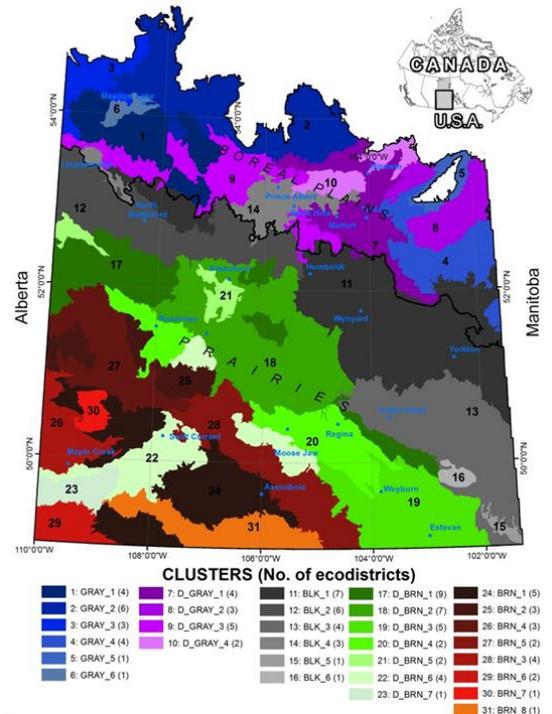


Figure 3. Location of agricultural areas in Saskatchewan with expected length of white spruce shelterbelts.

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-11

CONTACT FOR MORE INFORMATION: SASKAGROFORESTRY.CA/

ACKNOWLEDGEMENTS & COPYRIGHT

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