



AGGP-Agroforestry

No. SASK-6

Manitoba maple (*Acer negundo* L.) trees were made available to farmers through the Government of Canada's Prairie Shelterbelt Program (PSP). Since the 1930s, Manitoba maple trees were planted in farmyards to protect infrastructure and in fields to reduce soil erosion (Figure 1). Field sampling indicated that Manitoba maple shelterbelts varied in age (5–100 yrs.), designs (1–9 rows with 1.0–4.5 m spacing between trees within a row), and planting arrangement, combined with up to seven other species. Manitoba maple was planted together with green ash, hybrid poplar, caragana, cottonwood, chokecherry, lilac, Colorado spruce, Siberian elm, tree willow, Bur oak, Scots pine, and white spruce.

SHELTERBELT MAPPING: WHERE AND WHEN

Where: During the course of eight decades, greater than 3.23 million Manitoba maple trees were planted on cultivated agricultural land, which was mapped with 69% accuracy (Figure 2). This signifies the first mapping of Manitoba maple shelterbelts in Canada.

When: Novel, decadal time-lapse series of shelterbelt distribution maps were created to identify important historical factors that influenced planting of Manitoba maple shelterbelts in Saskatchewan (Figure 2). Manitoba maple shelterbelt establishment was uniform since the 1950s throughout the 2000s, and expanded from adjacent to roadways to in-field locations. Beginning in the 1960s, tree orders reached $>100,000 \text{ yr}^{-1}$, with peak planting period in 1980–86, focused in the Boreal transition zone and near larger cities.

MANITOBA MAPLE SHELTERBELTS IN SASKATCHEWAN

by BEYHAN Y. AMICHEV

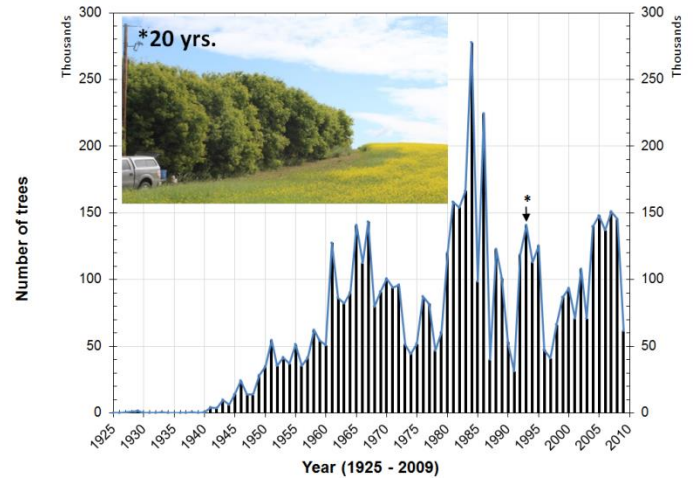


Figure 1. Historical record of the number of Manitoba maple shelterbelt trees ordered through the PSP in Indian Head, Saskatchewan (* indicates the planting year of the shelterbelt shown in the photograph).

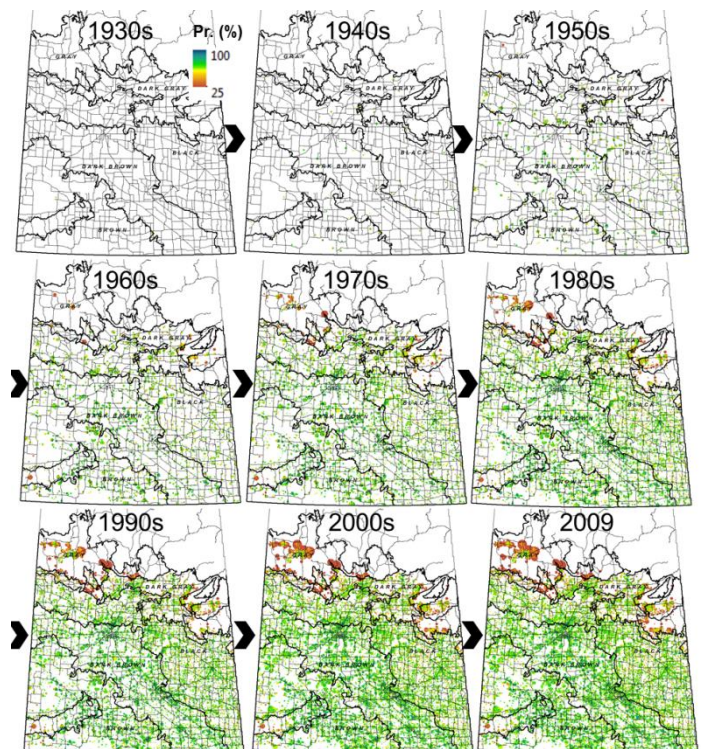


Figure 2. Decadal time-lapse (1925–2009) series of probability (%) maps of expected Manitoba maple shelterbelt establishment in Saskatchewan.



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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 Manitoba maple shelterbelts in Saskatchewan was 2,646 Km, and ranged from 20 to 2,283 Km in the Dark Brown > Brown > Dark Gray > Black > Gray soil zones, in descending order (Figure 3).
- About 86% of all Manitoba maple shelterbelts were planted in the Dark Brown soil zone. Mapped shelterbelt 'hot spots' within the Dark Brown soil zone were farms near four larger cities – Saskatoon, Regina, Moose Jaw, and Weyburn.
- Several alternating peak- and low-order periods exist for Manitoba maple trees (Figure 1). Peak years were likely in response to localized drought events in the preceding years, and increased shelterbelt planting 'know-how' by farmers. The recent increasing trend of Manitoba maple tree orders since 1997 (Figure 1) contrasts a decreasing trend of overall shelterbelt tree orders from the PSP from 1990 to 2009.

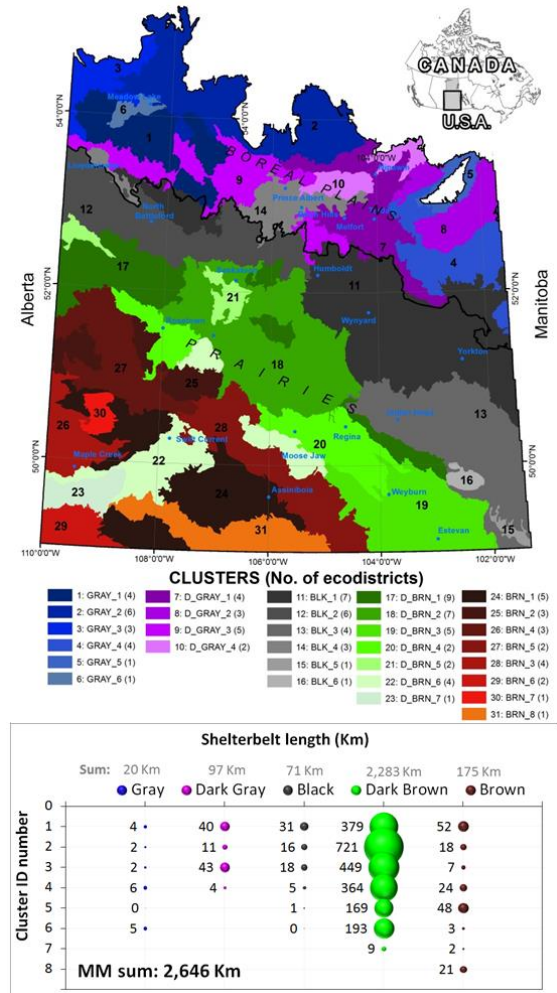


Figure 3. Location of agricultural areas in Saskatchewan with expected length of Manitoba maple shelterbelts.

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-13

CONTACT FOR MORE INFORMATION: SASKAGROFORESTRY.CA/

ACKNOWLEDGEMENTS & COPYRIGHT

This research was done by a team of collaborators from the University of Saskatchewan, University of Regina, and Agriculture and Agri-Food Canada (AAFC), under the leadership of Dr. Ken Van Rees of the University of Saskatchewan. Funding was provided by Agriculture and Agri-Food Canada (AAFC)'s Agricultural Greenhouse Gases Program (AGGP). We thank the AAFC Agroforestry Development Centre at Indian Head, SK for providing the shelterbelt tree data. This fact sheet was completed in May 2016.

