



AGGP-Agroforestry

No. SASK-9

Caragana (*Caragana arborescens* Lam.) shrubs were made available to farmers through the Government of Canada's Prairie Shelterbelt Program (PSP). Since the 1930s, caragana shrubs were planted around farmyards to protect infrastructure and in fields to reduce soil erosion (Figure 1). Field sampling indicated that planted caragana shelterbelts varied in age (6–80 yrs.), designs (1–11 rows with 0.5–1.8 m spacing between plants within a row), and planting arrangement, combined with up to five other species. Caragana was planted together with willow, elm, green ash, white spruce, Manitoba maple, hybrid poplar, Scots pine and Colorado spruce.

SHELTERBELT MAPPING: WHERE AND WHEN

Where: During the course of eight decades, greater than 64.5 million caragana shrubs were planted on agricultural land, which was mapped with 69% accuracy (Figure 2). This signifies the first mapping of caragana shelterbelts in Canada.

When: Novel, decadal time-lapse series of shelterbelt distribution maps were created to identify important historical factors that influenced planting of caragana shelterbelts in Saskatchewan (Figure 2). Caragana shelterbelt establishment was uniform province-wide and increased exponentially up to the 1970s, peaking at >2 million planted shrubs yr⁻¹. It continued to increase even more in the 1980s and 1990s, with nearly tripled planted shrubs in 1991, focused in areas immediately next to major roadways and in fields near larger cities. Minimal planting occurred in the 2000s; planted shrub numbers being similar to the 1960s levels.

CARAGANA SHELTERBELTS IN SASKATCHEWAN

by BEYHAN Y. AMICHEV

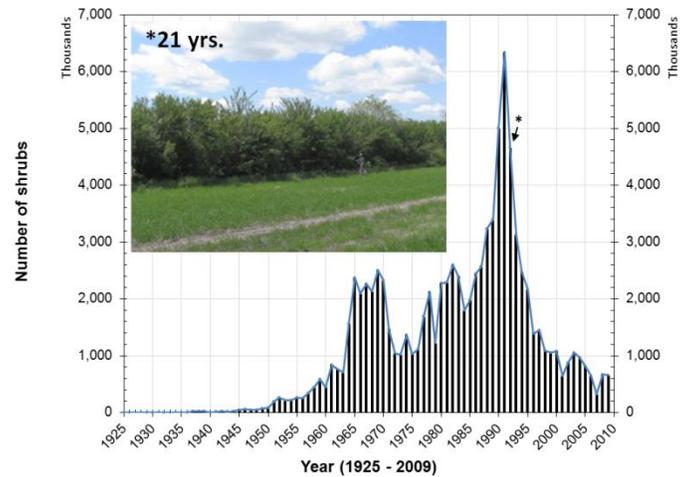


Figure 1. Historical record of the number of caragana shelterbelt shrubs ordered through the PSP in Indian Head, Saskatchewan (* indicates the planting year of the shelterbelt shown in the photograph).

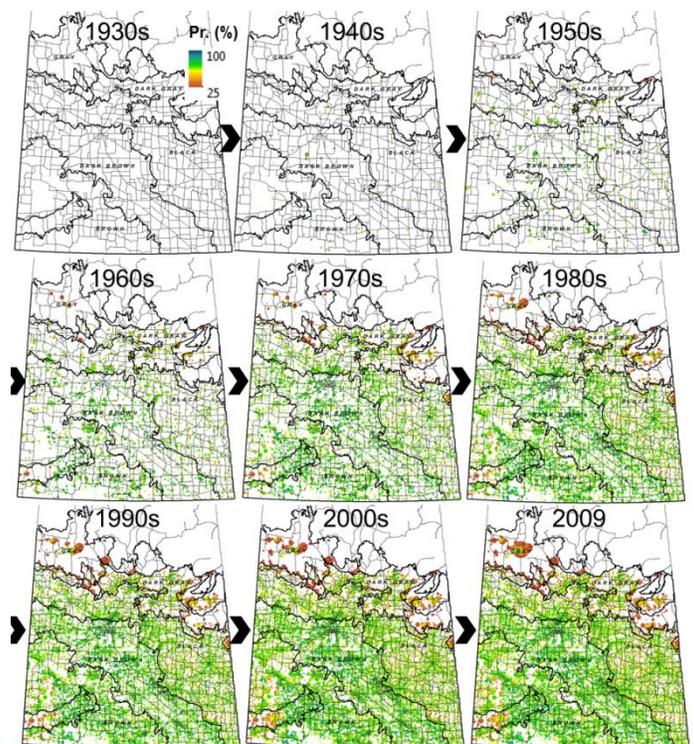


Figure 2. Decadal time-lapse (1925–2009) series of probability (%) maps of expected caragana shelterbelt establishment in Saskatchewan.



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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 caragana shelterbelts in Saskatchewan was 35,245 Km, and ranged from 46 to 26,768 Km in the Dark Brown > Brown > Black > Dark Gray > Gray soil zones, in descending order (Figure 3).
- About 96% of all caragana shelterbelts were planted in the Dark Brown (76%) and Brown (20%) soil zones, as field shelterbelts, and the remaining 4% were in the Gray, Dark Gray, and Balck soil zones.
- Caragana shrub orders declined exponentially since the 1991 peak year (Figure 1), largely due to advances in direct-seeding technology leading landowners to believe that soil erosion could be prevented without the use of shelterbelts. Caragana orders exceeded the cumulative number of all other shelterbelt tree orders, and therefore, was the driving factor for a decreasing trend of the overall shelterbelt tree orders from the PSP from 1990 to 2009.

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-16

CONTACT FOR MORE INFORMATION: SASKAGROFORESTRY.CA/

ACKNOWLEDGEMENTS & COPYRIGHT

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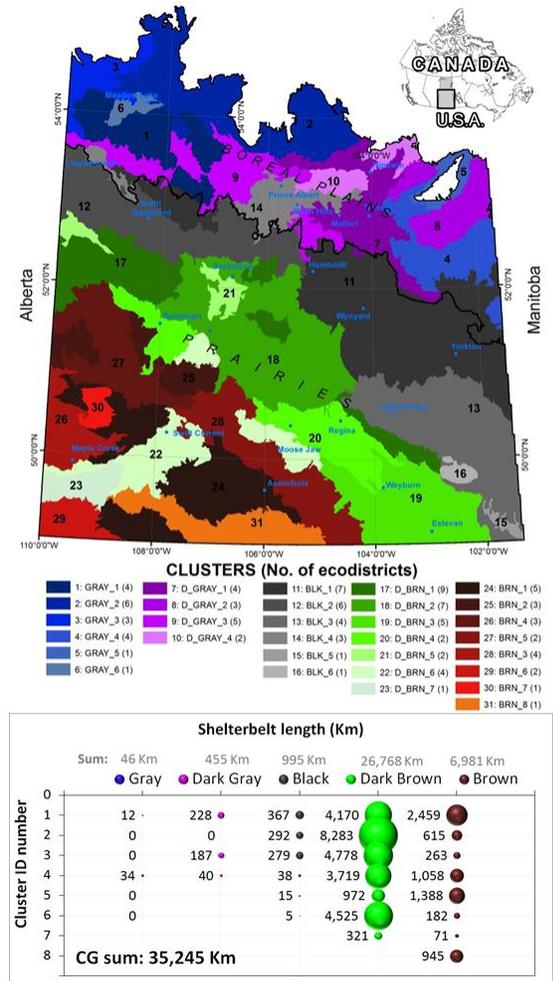


Figure 3. Location of agricultural areas in Saskatchewan with expected length of caragana shelterbelts.



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