



AGGP-Agroforestry

# PREDICTING THE FUTURE GROWTH OF GREEN ASH ACROSS SOUTHERN SASKATCHEWAN

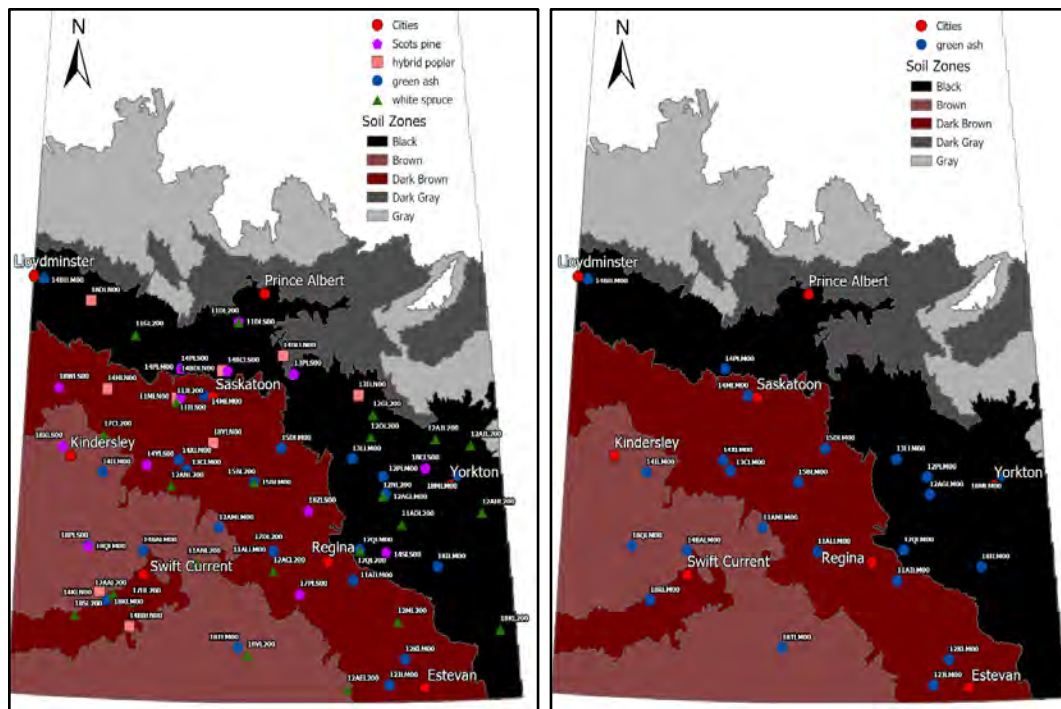
## No. SASK-48

by BROOKE HOWAT

We wanted to predict how shelterbelt trees will grow in the future under different climate scenarios. To do so, we sampled tree cores from four different shelterbelt species across 68 sites in the Brown, Dark Brown, and Black soil zones of Saskatchewan (Figure 1). The four shelterbelt species we sampled in this study were green ash, hybrid poplar, white spruce, and Scots pine.

### All Tree Species

### Green Ash Species



**Figure 1.** Locations where all four tree species were sampled, and the locations where all the green ash species were sampled across southern Saskatchewan.

### Predicted the Future Growth of Green Ash

Green ash growth is predicted to increase or stay at the same level of growth across most of south-central Saskatchewan, excluding areas in the more westerly regions of the province (Figure 2). The reason for this increase is mainly attributed to the predicted future increases in spring and June precipitation. Green ash is considered relatively drought tolerant and is adapted to southern Canada, which helps explain its tolerance to climate change-induced arid conditions in Saskatchewan under future climate models. However, rising spring and summer temperatures in Saskatchewan's more westerly areas will likely cause temperature-induced drought in green ash, resulting in predicted decreases in green ash growth in these areas. Despite this expected decrease in the west, green ash is still relatively resilient to climate change in Saskatchewan because of its drought tolerance and could be a good choice for many landowners in southern Saskatchewan. Landowners should be careful when choosing green ash because the Emerald Ash Borer (EAB) poses a serious threat to green ash shelterbelt stands. The EAB has not currently been found in Saskatchewan but it has the potential to spread to Saskatchewan and devastate green ash shelterbelts in the province.



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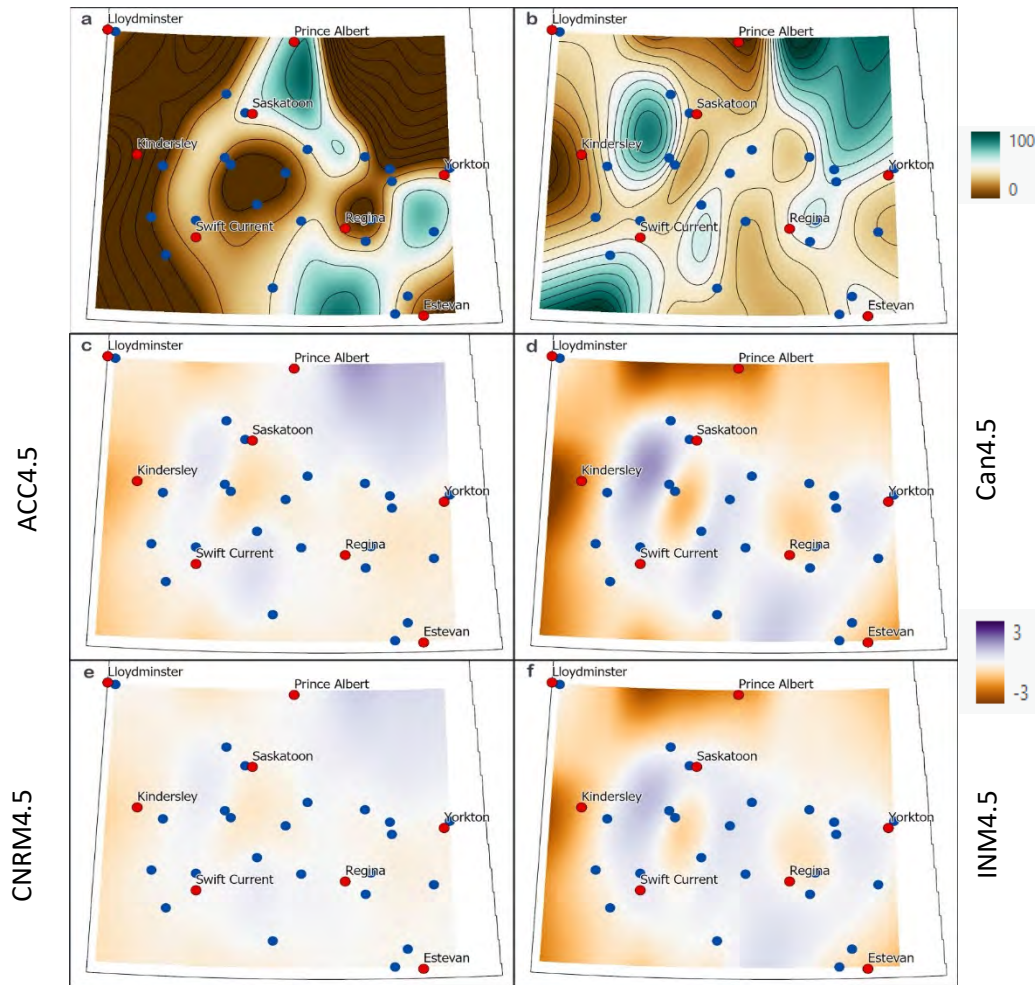




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### Spring Precipitation

### Summer Precipitation



**Figure 2.** Maps showing the areas where spring and summer temperature have the highest influence on green ash radial growth (maps a and b). In maps a and b the blue indicates areas that the specific climate variable has a high influence on radial growth. Maps c, d, e, f illustrate predicted changes in green ash radial growth for climate models CanESM2 and INMCM4 under the mid-emission scenario (RCP 4.5) in the southern half of Saskatchewan. In maps c, d, e, f, the blue indicates that green ash radial growth is predicted to increase in these areas.

### FURTHER READING

<https://harvest.usask.ca/handle/10388/13164>

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

### ACKNOWLEDGEMENTS & COPYRIGHT

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