

IN THE MIDST OF CHANGE  
CHALLENGES AHEAD FOR THE CANADIAN AGRI-FOOD SECTOR  
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À LA CROISÉE DES CHEMINS:  
LES DÉFIS À VENIR POUR LE SECTEUR AGROALIMENTAIRE CANADIEN

ABSTRACT 2

**The Dependence of Corn Yields on Precipitation Levels over Time in Iowa and Ontario**

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The Dependence of Corn Yields on Precipitation Levels over Time in Iowa and Ontario

Agricultural yield, which is dependent on climate, is of economic and social importance. Globally, an increasing population, climate change, and a reduction in the rate of agricultural technological progress will require adaptations to our food systems. Thus, the dependence of yield on climate could impact future food security and politico-economic stability. Nationally, large amounts of taxpayer money go into providing crop insurance to deal with yield variations which could be better predicted given a more complete understanding of how climate affects yield.

In the past sixty years changes in seed technology and agricultural techniques allowed for large increases in expected corn yields. Due to this increase in plant mass it is reasonable to expect that water demand will increase while the supply will not since the majority of corn fields studied are rain fed. Statistical models of the dependence of yield on precipitation as a function of time were constructed in order to investigate how these changes have affected the precipitation-yield relationship using county level data from Iowa and Ontario from 1950-2012. The preliminary results for Iowa suggest an increase in demand for precipitation over time while the results for Ontario are less clear. After modelling demand, climate projections will be used to predict the potential future consequences of this effect. This research could have financial implications in areas such as crop insurance and could also be useful to producers for making land use decisions and determining the value of irrigation systems in the near future.