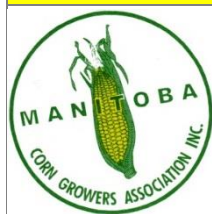


## RESEARCH SUMMARY



<b>Project Title:</b> Corn Agronomy Project	
<b>Date:</b> Feb 28, 2015	
<b>Project Start Date:</b> April 1, 2014	<b>Project End Date:</b> March 31, 2018
<b>Principal Researcher:</b> Dr. Yvonne Lawley	
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### OBJECTIVE:

To develop agronomic best management practices and improve agrometeorological tools for successful corn production in Manitoba.

### SUMMARY:

#### Project Area 1: Crop Rotation

##### **Objective 1: Identify the best crops to grow prior to corn in the rotation**

Experiments were established during the 2014 growing season near Carman (U of M Research Farm) and St. Agathe (Kelburn Farm) to grow the first year of rotational treatment crops (wheat, canola, soybean, corn). A research technician, Eric Wallace, was hired to work in part on this project. In 2015 the corn test crop will be grown after the 2014 treatment crops and a second experiment with the first year rotational crops will be established at the same two locations. Experiments for this objective are on schedule.

##### **Objective 2: Evaluate fertilization strategies for corn grown after canola**

Experiments were established in the summer of 2014 near Ste. Agathe (Kelburn), Carman (U of M Research Station) and Stephenfield (on-farm). The preceding crops of canola and soybean were established at three sites. A corn test crop will be planted in the summer of 2015. An MSc student, Magdalena Rogalsky, was recruited to begin working on this project in September 2014. Experiments for this objective are on schedule.

##### **Objective 3: Economic Analysis of optimal crop rotations involving corn**

Project work was initiated by conducting a literature review on crop rotation, identifying data sources, and developing an economic model framework for the project. An MSc student, Hazel Sakulanda, was recruited to begin working on this project.

#### Project Area 2: Residue Management

##### **Objective 4: Identify optimum corn residue management strategies**

One on-farm experiment was established in the fall of 2014 near Winkler. Four fall tillage treatments were applied to corn residue (conventional tillage with a disc, strip tillage, vertical tillage with low surface residue, and vertical tillage with high surface residue) in long strip plots. These treatments were randomized and replicated four times throughout the field. Two additional farms (one near MacGregor and one near Plumas) were lined up but the late corn harvest prevented the establishment of the experiments prior to soil freeze up. The proposal indicated that 4-5 sites would be established, thus experiments for this objective are behind schedule. Two limiting factors included the weather and a limited number of farmers that were willing to participate in this on farm trial. Solutions to this delay in progress include changing the fall tillage treatments to spring tillage treatments for the two sites that had agreed to participate in fall 2014. Additional sites for spring and fall 2015 trials will be recruited with the assistance of MCGA staff and through interaction with farmers at winter meetings (ex. Crop Connect Conference). An MSc student, Patrick Waltner, was recruited to begin working on this project in January 2015.

#### **Objective 5: Evaluate fertilization strategies for alternative tillage systems for corn production**

Experiments were established in the fall of 2014 near Carman (U of M Research Station) and Portage La Prairie (Canada Manitoba Crop Diversification Center). Fall tillage treatments (strip till, conventional tillage) and fall banded fertilizer treatments (0, 30, 60 kg/ha P<sub>2</sub>O<sub>5</sub> applied as MAP) were applied to wheat residue plots. Side banding fertilizer treatments (0, 30, 60 kg/ha P<sub>2</sub>O<sub>5</sub> applied as MAP) will be applied to additional plots within this experiment this coming spring. This project will be part of Magdalena Rogalsky MSc thesis research. Experiments for this objective are on schedule.

#### **Project Area 3: Corn Heat Unit Evaluation**

##### **Objective 6: Evaluation of corn heat unit system for Manitoba**

Experiments are scheduled to begin for this trial in 2015. This experiment will be co-located along with the yield trials run by Dr. Lana Reid. Three inbred varieties (short, long, intermediate CHU) have been identified and will be used in both the variety trials and the phenology plots for CHU evaluation at each study site. Nine experimental sites (7 in Manitoba, 2 in Alberta) have been confirmed to participate in 2015. Negotiations are underway for an additional two sites in Saskatchewan. Weather stations and cameras have been purchased and tested for deployment during the 2015 growing season. An MSc student, Justice Zhanda, has been recruited to begin working on this project in April 2015. Activities for this objective are on schedule.

#### **Project Area 4: Corn Row Spacing**

Objective 7: Evaluate corn row spacing to optimize corn yield and fall dry down

Experiments are scheduled to begin for this trial in 2015. A new planter with variable row spacing was purchased through a Western Economic Diversification equipment project in 2014. Activities for this objective are on schedule.

## **BENEFITS TO CORN GROWERS:**

The experiments in this project are designed to develop best management practices and agronomic recommendations for corn production in Manitoba. This project will benefit corn growers by providing agronomic and economic recommendations to optimize crop rotation, residue management, corn fertility, and corn row spacing. This project will also provide needed information to evaluate the Corn Heat unit system and provide potential recommendations on how it could be improved for use in Manitoba. This has the potential to impact every corn grower in Manitoba as Corn Heat Units are used to compare maturity when selecting corn hybrids.

## **COMMUNICATION:**

### Extension activities:

Derek Brewin was interviewed by Lyndsey Smith with Real Agriculture.com on Feb 2, 2015 about the research project and upcoming project presentation at Crop Connect. The audio for this interview is available on the Real Agriculture website at: [www.realagriculture.com/2015/02/corn-rotation-learn-manitoba-specific-agronomics-cropconnect-15/](http://www.realagriculture.com/2015/02/corn-rotation-learn-manitoba-specific-agronomics-cropconnect-15/)

Don Flaten gave a presentation on the project to growers and industry on February 17, 2015 at Crop Connect. The presentation was titled "An Intro to MCGA's Corn Agronomy Project." The presentation slides were provided to MCGA to post on their website.

### Equipment Purchased:

Equipment purchases for this project are on schedule. A corn grain sheller was purchased to be used at the University of Manitoba to thresh grain samples. Weather stations and cameras have been purchased for the Corn Heat Unit Evaluation study. Soil temperature, soil moisture sensors, and data loggers were purchased for use in the corn residue management project.

An equipment project with Western Economic Diversification will be providing additional equipment that is essential to the success of this research project. This equipment includes planters, combines, and a strip tillage unit with the ability to apply fertilizer.

### Acknowledgements:

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- The administrative support of Karin Rose with MCGA.
- The technical field support of Iris Vaisman, Eric Wallace, and Greg Bartley.