RESEARCH SUMMARY		
	Project Title: Manitoba Corn Initiative- Identification and characterization of the bacterial populations causing Goss's Wilt on corn in Manitoba.	
	Date: Feb 25, 2015	
	Project Start Date: April 1, 2014	**Project End Date:** March 31, 2018
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OBJECTIVES:

1. Collection of isolates of the bacterium CMN (Clavibacter michiganense, subsp. nebraskensis) causing corn Goss's wilt in Manitoba;

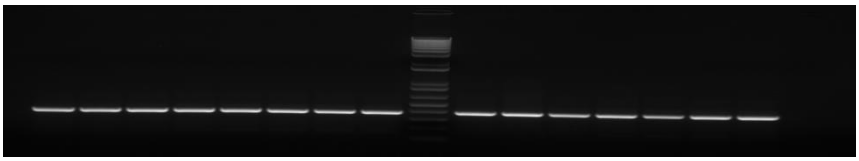
2. Assessment of the bacterial isolates' pathogenicity on commercial corn cultivars; and

3. Biochemical and molecular characterization of the strains.

SUMMARY:

This report relates to activities carried on during the period December 2014 – February 2015. As the project started later than expected, the collection of isolates relied on samples that were collected by MCGA and Holly Derksen from MAFRD. We have made isolations from five corn plant tissues suspected of having Goss's wilt. We also received ten isolates from our collaborator, Dr. James Tambong from AAFC Ottawa. We also had two isolates from Manitoba from a previous year.

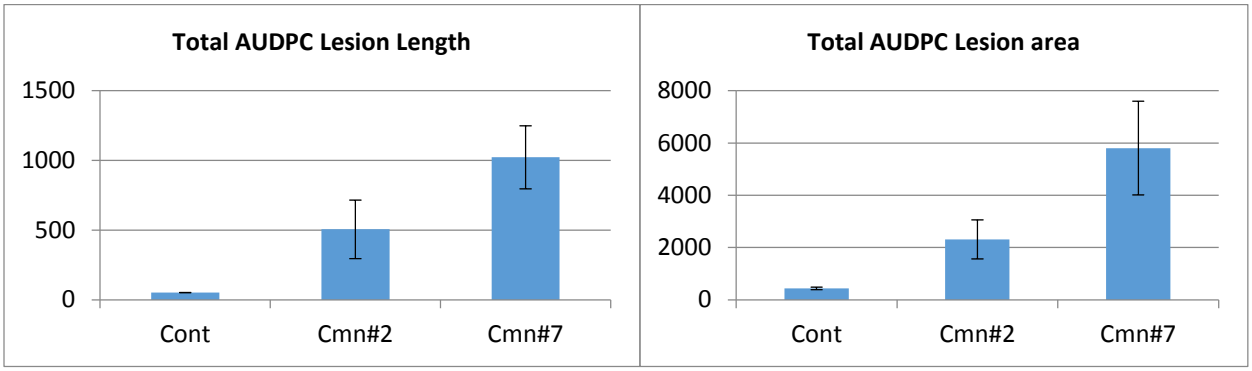
The next step was to validate the isolates we collected as the bacterium causing Goss's wilt using morphological, gram staining, and PCR analysis. The isolates were initially screened by Gram staining which showed that all 17 isolates were Gram positive, and immunostrips were used to screen for species michiganensis. Then we verified the sub-species nebraskensis using PCR with primers PSA-7/PSA-R.

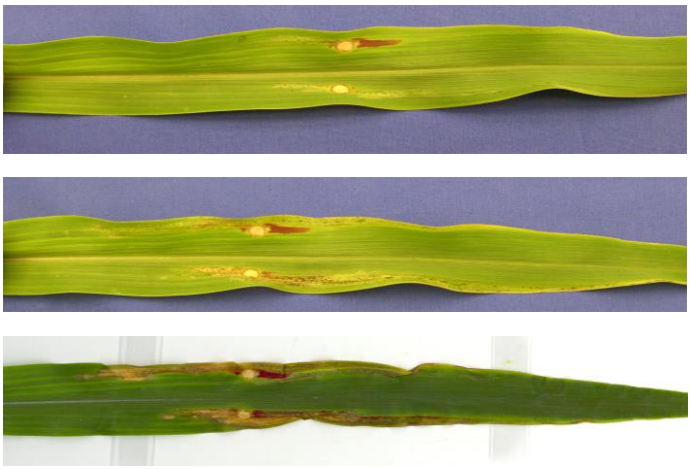


Diagnostic PCR showing 393bp product for CMN

The other area that we worked on is the improvement of the protocols used to inoculate the pathogen causing Goss's wilt in corn. There is not much literature on the subject, and the existing protocol is too intrusive and far from natural conditions. Goss's wilt usually requires a wound for the host to be infected. In order to accurately assess pathogenicity of the isolates collected, we have been developing an inoculation method where six wounding protocols have been tested so far. For the purpose of method development, we have been comparing two

isolates from the 2010 season, which showed a difference in the level of damage they caused on corn. Inoculation tests were conducted at visible collar stage V4, and inoculated plants were incubated in a misting chamber overnight. Lesion length was measured at 7, 10 and 14 dpi and lesion area was measured using Assess software. Total AUDPC was calculated after 14dpi.





Inoculation results 7, 10, and 14 days post-inoculation

BENEFITS TO CORN GROWERS:

Dealing with any plant disease requires knowledge about the pathogen causing it and the conditions under which the disease occurs. Knowing the composition of the local populations of the pathogen is a good place to start when studying a plant disease. This project is focused on the isolation and characterization of the bacterial strains causing corn Goss's wilt in Manitoba.

Recommendations to producers for them to mitigate the effects of diseases should be made on the basis of scientific information. Knowing the pathogen in terms of its diversity and how it performs on commercial lines of corn, and under different environmental conditions, will help identify points of strength and weakness in the pathogen's life cycle. Such information is sought in order to make knowledge-based information available to corn growers, with the aim to reduce the negative impact of Goss's wilt.

COMMUNICATION:

A Top Crop Manager article was assigned to this project after interviewing some of the people involved. Results from this project will be presented in Producers meetings as well as regional, national, and international conferences, as applicable.

This project was funded in part by the Canada and Manitoba governments through Growing Forward 2, a federal-provincial-territorial initiative.