CARP Project 2018-20

Project Title: Development of a Harmonized Clubroot Map

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Research Abstract:

Clubroot maps can serve as important tools for grower education, the selection of effective disease management strategies, and assessing disease risk in specific regions. While useful, the maps produced across the Prairie Provinces vary widely in what they show and how they show it, causing confusion and hampering comparisons between regions. This project had three main objectives: 1) to examine the feasibility of a harmonized clubroot map for the Prairies, 2) to determine what such a map will look like, and 3) to communicate findings and recommendations to stakeholders including the Clubroot Steering Committee. As a first step, we had to select the type of data used to generate the map. These data had to be representative of clubroot distribution, yet not be prohibitively expensive, labor-intensive or time-consuming to collect. The number of confirmed clubroot infestations (fields) was selected as a good basic datatype, noting that additional information (such as pathotype distribution or presence of pathogen DNA) could be added to specific variants of the map as needed. Different ways of depicting clubroot infestations were compared, including as the total number of infested fields per county/municipality and as individual points on a map. Both types of maps are valuable, but in regions where clubroot is not prevalent, there may be privacy concerns associated with the latter. Various color schemes were evaluated for depicting the total number of infestations within districts. Since distinct color categories representing different numbers of confirmed infestations exacerbated the artificial effects of political (county/municipality) borders, we developed a map that shows infestation level as a continuum, from very light yellow to red, so that a difference of one or two infested fields does not result in the movement of a county into a different color category. In addition, we explored two ways to present the clubroot map, specific to the communication format used. The first is a static format best suited to communication via factsheets, handouts, journals, and industry newspapers and magazines. The second type of format is a dynamic or animated version of the static maps, which is better suited for slide presentations and similar types of interactions. Animated maps are very useful in showing a sequence of changes over time (such as the spread of the outbreak), and can serve as important teaching and education tools. Finally, an interactive map was developed for communication via a website. While extremely informative, an interactive map may contain sensitive information that cannot be made public. It is nonetheless valuable for restricted use as a research or management tool. The availability of harmonized clubroot maps that present similar information in a similar manner will be important for proactive disease management and understanding of the nature of this disease outbreak; the maps developed in this project can serve as a template for illustrating clubroot distribution and severity on the Prairies.

Acknowledgement: