

Clubroot Risk Mitigation Initiative
Clubroot Summit Meeting Notes
Nisku, Ab
April 29, 2009

The tremendous interest in clubroot research was shown by the participation of 45 people from a wide range of groups including grower organizations, public sector researchers, canola variety developers, grain handlers, provincial governments, petroleum industry, county fieldmen and the sanitation industry.

The group spent the morning reviewing reports from provincial surveys, ongoing research and breeding program results. The afternoon was spent reviewing and discussing proposed projects, identifying priorities and any gaps in the research direction. The presentations on ongoing research and research proposals will soon be available on www.clubroot.ca.

Discussion groups were asked to rank the focus areas, top priority projects overall and then discuss projects within one of the focus areas. Participants were also asked to identify and issues or gaps in the focus areas or projects. Overall comments from the group indicated that the area of pathology needed to be the highest priority area followed by breeding and disease management. Several comments were made that all of these areas are intertwined and that there were several important projects in each area. Each priority area was discussed by two table during the round table discussion and further group discussion occurred when the groups reported back.

The top priority projects identified were (in rough order of ranking):

1. Finding new sources of resistance which was included in a couple of the breeding projects like “Development of molecular markers for resistance genes derived from *B. napus* and other species (Rahman)”, “Identification of new sources of clubroot resistance in Brassica germplasm (McVetty)” and “Genomics assisted Introgression of Clubroot Resistance (Selveraj)”.
2. Clubroot Resistance Stewardship (Strelkov)
3. Canadian Clubroot Differential System (Strelkov)
4. Infrastructure for clubroot including nurseries, dedicated sites and dedicates equipment such as outlined in “A Consortium Clubroot Field Nursery (Strelkov)
5. Management of Clubroot in Canola Cropping Systems (Hwang)
6. Clubroot Dispersal Model (Hwang)
7. Role of Differentially Expressed Proteins (Strelkov)
8. Yield Loss Model for Canola (Hwang)
9. Understanding the Genetic Relationships Between Resistant Genes from Different Sources (Rahman)
10. Biofungicides such as those outlined in Developing Biocontrol Technologies for Clubroot Management (Peng) and Development of Biocontrol Formulation and Delivery Technologies (Hynes)

When asked to discuss projects within a certain area the following priorities were established for:

Pathology

1. Clubroot Resistance Stewardship (Strelkov)
2. Canadian Clubroot Differential System (Strelkov)
3. Biology of *P. Brassicae* strains and Factors Affecting Spore Survival (Gossen)
4. Clubroot Dispersal Model (Hwang)
5. Expanded Surveillance in MB and SK (Kutcher)

Within the pathology section a couple of opportunities were identified such as including sites outside of Alberta such as Ontario or the lower mainland region of BC and the need to standardize surveillance protocols in order to get better data. There was also a comment on the need to make surveillance a priority in areas that are not currently affected.

Breeding

The highest priority projects were ones associated with new sources of resistance and molecular markers including:

1. Development of molecular markers for resistance genes derived from *B. napus* and other species (Rahman)
2. Identification of new sources of clubroot resistance in Brassica germplasm (McVetty)
3. Genomics assisted Introgression of Clubroot Resistance (Selveraj)
4. Understanding the Genetic Relationships Between Resistant Genes from Different Sources (Rahman)
5. Development of marker populations in the Brassica oilseed species (McVetty)

There were several issues/gaps mentioned with regard to breeding priorities, particularly about the need to incorporate private and public breeding effort to ensure products developed in the public sector would get deployed to producers. This partnership would also help to ensure “freedom to operate”, smooth commercialization of markers and resistance genes and ensure better sharing of best practices. There were some mentions that breeding projects should include private company participation either through direct funding or shared germplasm etc to ensure buy-in from commercial breeding organizations. This could be accomplished through a Canadian or International breeding consortium.

The comment was also made that the focus needs to be on Canadian pathotypes or clubroot when searching for sources of resistance and/or markers.

Disease Management

The following priorities were identified within disease management:

1. Consortium Clubroot Field Nursery (Hwang)
2. Management of Clubroot in Canola Cropping Systems (Hwang)
3. Interactions of Climate, Soil and Pathogen Biology on Management of Clubroot of Canola (Gossen)

4. Development of Effective Sanitation Methods and Spore Viability Assays (Howard)
5. Utilizing Plant Nutrients, Soil Chemistry for Integrated Management of Clubroot on Canola (Gossen)

One area for additional thought was the need to develop better diagnostic tools such as lateral flow test strips (dipsticks) for detecting clubroot. There were also comments on needing to better understand the critical mass of infestation required to cause infection and understand the how clubroot spreads both within a field and between regions.

Other general comments for improving the Clubroot Risk Mitigation Initiative fell into three areas:

1. The need to have better communication, particularly to farmers, from credible third party.
2. the need to establish a mechanism for sharing milestones and results from the research undertaken through the Initiative
3. The need to incorporate more consideration of economics or practicality in the studies to ensure tools developed would be usable by farmers.

This feedback should be used to continue to refine the Clubroot Risk Mitigation Initiative and improve the specific projects identified in the initiative document. It can also be used as a reference point for determining funding priorities and future progress of research on clubroot.