Clubroot and the Importance of Canola in Canada
Outline

1. Introduction
2. Canadian Canola Production
3. The Economics of Canola
4. Clubroot and Canola Industry
5. Conclusion
Introduction
Canadian Canola Production

Canola production and acreage
Economics of Canola

Exports of canola products

- Canola Seed
- Canola Oil
- Canola Meal

Calendar year: 2003 to 2012

Tonnes of product (1000's)
Economics of Canola

Exports of canola seed

1000's of Tonnes

- U.A.E.
- China
- U.S.A.
- Mexico
- Japan

Economics of Canola
For the treatment of existing cardiovascular disease, canola oil has been recommended for achieving daily omega-3 fat requirements of 1 g/day.

In 2006, the U.S. FDA authorized the following qualified health claim for canola oil: “Limited and not conclusive scientific evidence suggests that eating about 1 tablespoon (19 grams) of canola oil daily may reduce the risk of coronary heart disease due to the unsaturated fat content in canola oil. To achieve this possible benefit, canola oil is to replace a similar amount of saturated fat and not increase the total number of calories you eat in a day.”
Economics of Canola

Total Annual Economic Impact of Canola Industry Sectors in Canada (average 2007-2008 in Canadian dollars)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Farming</th>
<th>Seed Handling (elevator to port)</th>
<th>Transport</th>
<th>Crushing</th>
<th>Refining</th>
<th>End Uses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Impact</td>
<td>$10.5 billion</td>
<td>$893 million</td>
<td>$826 million</td>
<td>$983 million</td>
<td>$420 million</td>
<td>$1.6 billion</td>
<td>$15.4 billion</td>
</tr>
<tr>
<td>Canadian Jobs</td>
<td>194,000</td>
<td>2,270</td>
<td>2,470</td>
<td>1,830</td>
<td>620</td>
<td>26,550</td>
<td>228,000*</td>
</tr>
</tbody>
</table>

*Includes both direct and indirect economic benefits. Includes 1,140 jobs in the general supply sector.
Economics of Canola

Farm Cash Receipts

Millions of dollars

- 2008
- 2009
- 2010
- 2011
- 2012

Total Farm Cash
Total Crops
Canola
Wheat
Clubroot and Canola Industry
Resting spore (in soil) → Zoospore (biflagellate) → Zoospores encyst on root hairs → Secondary infection → Plasmodium invades cells, becomes multinucleate, and causes gall formation → Infected crucifer → Clubbed roots disintegrate releasing resting spores → Young seedling
Clubroot and Canola Industry

Challenges for canola growers:
1. Once established, cannot be eradicated
2. Prevention strategies are very expensive
3. Regulation of the disease is inconsistent and may actually stimulate pathogen spread
4. Relying mainly on clubroot resistance in canola varieties – which may not be a durable solution
Clubroot and Canola Industry

Opportunities that canola growers have now:

1. Clubroot resistance
2. Technologies to identify the disease
3. Better understanding
   > How disease is spread
   > What current practices actually work
   > What environmental conditions stimulate the disease
   > What agronomic practices stimulate the disease
Clubroot, the CCC and the Canola Industry

The 4-step clubroot control plan:
1. Prevent clubroot from establishing
2. Identify clubroot early
3. Develop a clubroot management plan
4. Work with your municipality
Successes

Clubroot Risk Mitigation Initiative has been a huge success:

- collaborative research model has work very well.
- the body of research has helped canola growers immensely.

Future looks brighter.

- new research on resistance, host-pathogen interactions, chemical controls, and pathogen eradication are exciting