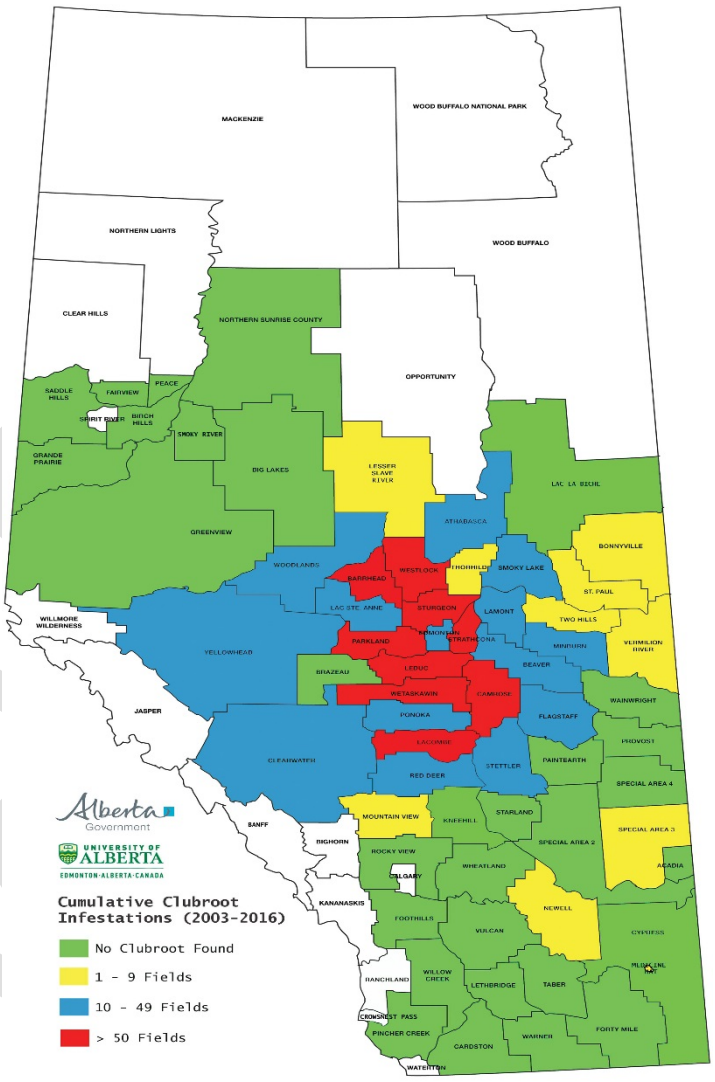
Clubroot Disease of Canola—Information Update

Clubroot Infection and Spread

• Clubroot is a soil-borne disease of cruciferous crops and weeds and is caused by *Plasmodiophora brassicae*, a protist pathogen that induces gall formation on infected roots of susceptible plants.
• Infections occur when exudates from roots of host plants trigger germination of resting spores in the soil, producing zoospores. They swim in soil water to root hairs that they infect to start the formation of the root galls.
• The disease is favoured by warm soil (20-24º C), high soil moisture and low soil pH (< 6.5) but can still develop outside these optimum conditions.
• Clubroot is mainly spread through movement of soil containing the long-lived resting spores that are released into the soil when the galls decay.
• To estimate yield loss due to clubroot, take the percentage of infected plants in a field and divide by two (recognizing that losses > 50% can occur from extreme infestations). For example, if 50% of the plants are infected, a 25% yield loss would be estimated.



Source: http://www1.agric.gov.ab.ca/%24department/deptdocs.nsf/all/prm14661

Clubroot in Western Canada

• Clubroot was first reported Alberta in a few home gardens around Edmonton in the 1970's, in market gardens in 2001 and in canola fields in the Edmonton area in 2003. Since 2003, additional canola fields in Alberta have been identified with clubroot every year.
• In 2014, 383 new cases of clubroot were found, bringing the total number of fields in Alberta with confirmed clubroot to 1,868 (Strelkov et al., 2014).
• Clubroot has now been found in all Regions of Alberta and all of the Prairie Provinces.
• Recently, confirmation of clubroot symptoms were found in multiple fields in Big Lakes County, M.D of Greenview and one in Northern Sunrise County.
What this means is that growers within the MD of Peace No. 135 need to be vigilant with their scouting program and have in place a management strategy for this disease.
• Effectively managing any plant disease requires an understanding of how it survives within fields and the conditions that allow the population to increase and spread.

Source: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8593

What Can You Do to Protect Your Crop from Clubroot?

Early Identification

• Scout canola fields regularly from late rosette through podding, being sure to examine the roots of plants.
• High risk areas for clubroot include field entrances and low-lying areas, but it could show up anywhere.
• Use proper field scouting and sanitation techniques.

Clean Your Equipment

• Cleaning equipment helps avoid the movement of soil from infested to non-infested fields.
• If you do not have clubroot on your farm, the greatest risk of infection comes from equipment that was previously used for tillage or excavation off-farm.
• If you have found clubroot in some of your fields, sanitation when leaving those fields is critical to reduce spread throughout the rest of the farm.
• Rental equipment, custom work, soil sampling and recreational use all pose risks for spreading and or introducing Clubroot. Please exercise caution when hiring, renting or purchasing equipment or services.
• Keep in mind most introductions are self introduced by the farm operations themselves.

• **KNOW WHERE YOUR EQUIPMENT HAS BEEN**

Grow Clubroot-Resistant Canola Hybrids

• Tight canola rotations do not cause clubroot but can increase the rate of spore build-up once the disease is present in a field.
• Rotate multi-race resistance varieties of canola ~~to~~ to help prevent the spore build-up of Clubroot within the County.
• This effectively reduces incidence and severity of gall formation in affected fields, protecting yield and reducing the number of resting spores re-introduced into the soil.
• Growing resistant varieties in tight rotation also increases selection pressure for breakdown of resistance deployed in infected fields. Breakdown has occurred in as little as 3 years when a tight canola rotation with resistant varieties was used.

Source: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8593

Rotate to Non-Host Crops

• Good weed management of alternate hosts like Volunteer canola, stinkweed and other mustard family weeds is essential to minimize the increase in viable spore numbers between canola crops.
• The Alberta Clubroot Management Plan suggests resistant varieties are grown when clubroot is present or is known to be present in the area and follow a four-year rotation to deter resistance breakdown.

Plan Your Strategy

• Clubroot can be managed effectively, but once it is present, it moves with soil regardless of the crop being grown.
• Manage infected patches separately to limit growth of host plants and equipment traffic, and develop a suitable rotation to maintain the effectiveness of available genetic resistance.
• Please review the Alberta Clubroot Management Plan http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/agdex11519#best

Please feel free to contact Nasar Iqbal, Manager of Ag Services, MD of Peace # 135, at 780.338.3845 with any questions, concerns or for any related policies.

Information has been adapted from multiple sources
Strelkov et al., 2013. The Occurrence of Clubroot on Canola in Alberta in 2014. Internet: www.2020seedlabs.ca Accessed: October, 2017