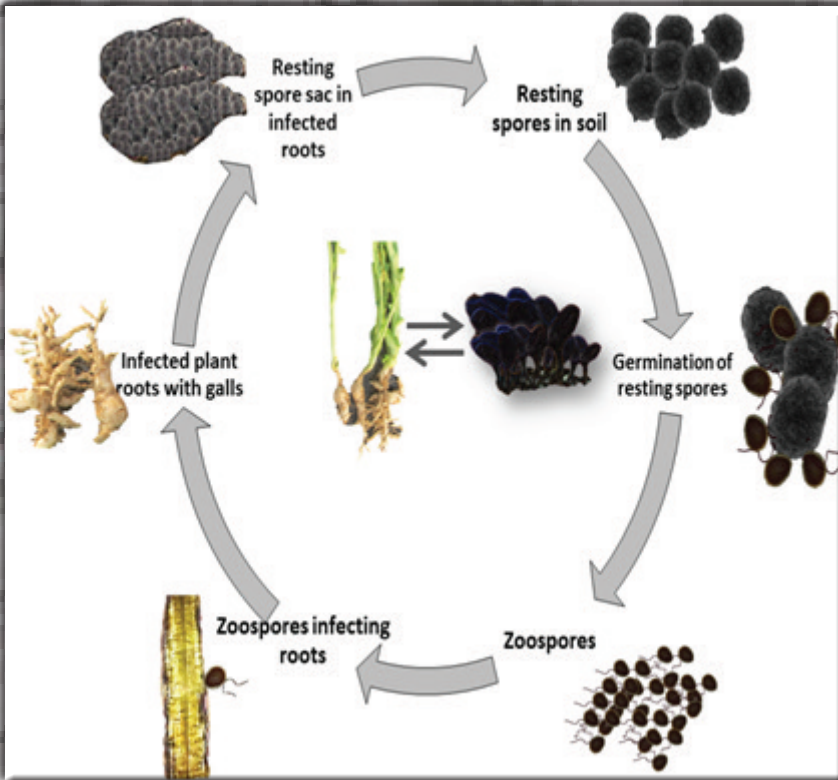




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# Battle River Implements Ltd. December 2015 Newsletter

Wishing you and your loved ones a  
Merry Christmas all the best in the New Year!



Life cycle of the Clubroot Spore  
(picture courtesy of InTech Science)



Infected canola plant ([www.albertafarmexpress.ca](http://www.albertafarmexpress.ca))

This month, I thought I would share the latest information available regarding clubroot. Most of this information comes courtesy of Dan Orchard, the regional agronomist for the Canola Council of Canada.

There are 32 new confirmed fields in central Alberta in 2015. What is the research telling us?

- Soil spore loads matter. Spore loads in the Edmonton area sometimes exceed 1 million spores per GRAM of soil. Spore loads of about 100,000 spores per gram of soil are required for consistent infection of host plants.
- Much of what we assume about clubroot is derived from the European experience, where clubroot is mainly a problem in fall seeded crops in a milder climate. Under these conditions, the half-life of clubroot spores is 4 years.
- New research in western Canada seems to indicate that under our cropping system and climate, 90% of the spores are no longer viable after 24 months.
- New strains of the pathogen are already breaking down existing resistance. Resistance to the new "5X" race of clubroot has been found but is likely 3 years away from commercialization.
- In 2015 NINE new pathotypes were discovered in 16 fields, many of which were geographically isolated. The disease continues to evolve and cannot be dealt with solely with resistant varieties.
- Boron can impede the disease. Unfortunately, the levels of boron required are toxic to the canola varieties we grow. More B tolerant genotypes are available in the germplasm, but no B tolerant variety is currently registered. It is only a matter of time before somebody suggests B to you as a way of controlling clubroot – the research does not back up this usage with present canola varieties available to us.
- Spores migrate through the soil profile. A field that has been infected for several years will have a large pool of spores well down in the B horizon of the soil.
- Spores survive in manure. Some fields that have heavy spore loads have been converted to hayfields. Dirt leaving these fields carries spores which travel through a ruminant digestive system intact. The manure then spread back on fields has the ability to infect canola plants in fields spread with infected manure.

## CLUBROOT PLAN GOING FORWARD

The key to controlling clubroot lays in continuing to stick to a good rotation. The most impactful thing that came out of the latest research isn't that the disease will gain tolerance to the genetic resistance we are breeding into our varieties – this is a common reaction in nature to any attempt to manipulate the environment. The best news was that the breakdown of clubroot spores is much more rapid than we previously thought. If 90% of the spores are gone in 2 years, the goal becomes not to eliminate clubroot (it isn't happening), the goal becomes to keep the soil spore load below the critical level of 100,000 spores per gram of soil. This is a much more practical goal than the elimination of the spores and can be accomplished by keeping a few guidelines in mind.

- 1) Maintain a minimum of a 3 year rotation, with no less than 2 years out of canola. Obviously a 4 year rotation is even better.
- 2) Use resistant varieties. Yes, resistance can occur, but not all spores in the soil will be resistant, so these varieties will allow fewer spores to prosper than non-resistant varieties.
- 3) Control alternate hosts. Ensure that in the years you are not growing canola, that the volunteer canola and other members of the brassica family that can act as hosts are aggressively controlled.
- 4) Practice sanitation. According to Dan Orchard, agronomist for the Canola Council of Canada, this does not mean spraying down the equipment with bleach or pressure washing equipment between fields. This means knocking off clumps of dirt when leaving a field and avoiding picking up mud at or near the approach, which is the most likely place to find clubroot.

If you follow these simple steps, you should be able to avoid building the spore levels to the point where clubroot becomes an issue. In those fields where the spore level exceeds 100,000 per gram of soil, the problem becomes more complex. Once you reach the levels they see around Leduc and Fort Saskatchewan, it will take many years to bring the levels down to the point that canola is a viable crop option again.