



SMOKY LAKE COUNTY

Title: Clubroot	Policy No.: 12-01
Section: 62	Page No.: 1 of 7

Legislation Reference:	Alberta Provincial Statutes
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Purpose:	To recognize that Clubroot is a serious problem and Smoky Lake County supports the principle to control the spread of Clubroot which is a pest under the <i>Agricultural Pests Act</i> .
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Policy Statement and Guidelines:

1. DEFINITION:

- 1.1 "Clubroot" is a disease of canola, mustard and other crops in the cabbage family (*Cruciferae*), caused by a fungus (*Plasmodiophora brassicae*) that lives in the soil and characterized by knobby or club-shaped swellings on the roots and wilting, yellowing, and stunted growth of aboveground parts.

2. BACKGROUND:

- 2.1 Clubroot can only spread through resting spores in the soil or in canola plant material containing galls. Resting spores are extremely long lived, surviving in soil for up to 20 years; and are most likely to spread via contaminated soil carried from field to field by equipment. Tillage equipment represents the greatest risk of spreading the disease as soil is frequently carried on shovels and discs from field to field.

3. OBJECTIVE:

- 3.1 To minimize the spread and build-up of Clubroot in canola, mustard and market garden fields.
- 3.2 To prevent economic loss and prevent the spreading caused by Clubroot.

4. STATEMENT:

- 4.1 The Agricultural Service Board, under the authority of the *Agricultural Pests Act*, will undertake the following measures to assist in the prevention of Clubroot (canola, mustard, and vegetable crops such as cabbage, broccoli, cauliflower, turnip, and radish).
 - 4.1.1 Perform random testing of susceptible crops and confirm suspected infestations through laboratory testing (PCR).
 - 4.1.2 Advertise Public Awareness of County's random testing program.

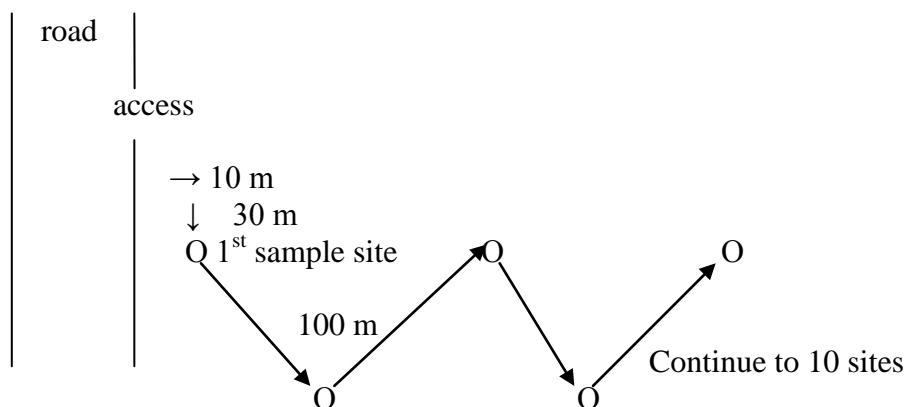
Title: Clubroot	Policy No.: 12-01
Section: 62	Page No.: 2 of 7

Policy Statement and Guidelines:

4.1.3 Implement an Action Plan based on the Provincial Clubroot Policy Guidelines and Best Management Practices developed by the Alberta Clubroot Management Committee, *as per Schedule “D”*: **Best Management Practices.**

4. SURVEY PROCEDURE:

- 4.1 Clubroot disease development is favored by wet and acidic soil conditions. The pathogen is mainly spread by movement of soil and infected plant material, as well as run-off water.
- 4.2 Symptoms: The pathogen infects the roots of susceptible hosts, causing the formation of club-shaped galls or swellings that restrict the uptake of water and nutrients by the plant. Above-ground symptoms include yellowing, stunting, premature, ripening and wilting of plants under moisture stress.
- 4.3 Equipment and Materials needed: Clipboard, Record sheets, Hand towel, Pocket knife, Paper bags, 5% bleach solution, Plastic tray or pail, Disposable boot covers, GPS Unit.
- 4.4 Clubroot Field Inspections will be conducted by the Agricultural Fieldman.
- 4.5 Smoky Lake County Agricultural Service Board Clubroot methods, reporting form and calculation of disease incidence will follow standard protocols as recommended by the Alberta Clubroot Management, *as per Schedule “A”*: **Clubroot Survey Form.** The standard methods is as follows:
Scout for clubroot by visually inspecting canola/mustard/cole crop roots for galls. As symptoms may take 6-8 weeks to develop, they are most detectable later in the summer (late July or August). Do not drive into field or access, but park on the road whenever possible.
- 4.5.1 Put on new disposable boot covers. Survey the field in a “W” **pattern**, sampling 10 plants at each of 10 equally spaced sites along the arms of the W. Begin 30 m to the right of the field access. 10 m from field edge and allow 100 m between sampling points.



Title: Clubroot	Policy No.: 12-01
Section: 62	Page No.: 3 of 7

Policy Statement and Guidelines:	
<p>4.5.2 At each sample site, dig up roots from 10 plants and shake off excess soil. Examine roots for presence of galls. Record sample site GPS location and findings on form; at fields where infection is found or suspected, collect 5 – 10 root specimens, by cutting off stems and placing roots in a paper bag labeled with field location. Retain sample for submission to lab for confirmation (if needed), or to Dr. Strelkov for pathotype identification (if requested).</p> <p>4.5.3 Prior to leaving potentially infested field, discard disposable boot covers into garbage bag and incinerate later. If boot covers were not used, remove lumps of soil from boots, and then wash in plastic tray with 5% bleach solution (in order to prevent disease spread). Disinfect sampling tools with bleach solution.</p>	
5. NOTIFICATION PROCESS:	
<p>5.1 When land is verified positive for Clubroot, the landowner will be notified in writing, <i>as per Schedule “B”: <u>Notification To Landowner Of Clubroot</u></i> with a legal notice in accordance with the Province of Alberta <i>Agricultural Pest Act</i>, <i>as per Schedule “C”: <u>Legal Notice To Control Pests.</u></i></p>	
<p>5.2 Fields that have a low incidence of Clubroot disease (1 positive site out of 10 samples sites in field), the occupant shall not plant canola or other susceptible crops in the three (3) following years. Proper cleaning of field equipment prior to transport from infested fields is required.</p> <p>Fields that have a moderate to high incidence of Clubroot disease (2 or more positive sites out of 10 sample sites in field), the occupant shall not plant canola or other susceptible crops for five (5) subsequent years. Proper cleaning is mandatory and of highest priority.</p>	
<p>5.3 If a host crop is sown on land that has Clubroot and a notice has been issued on this property restricting the growth of host crops, the host crop shall be destroyed.</p>	

	Date	Resolution Number
Approved	June 11, 2009	# 556-10 - Page # 8996
Amended		
Amended		



SCHEDULE "A"

AGRICULTURAL SERVICE BOARD CLUBROOT SURVEY FORM

Surveyor name: _____

Municipality: _____

E-Mail: _____ Telephone: _____

Field location: (Legal Property): _____
Section Quarter Township range Median

Name of producer farming that field: _____

Date surveyed: _____

Crop Cultivar: _____

Previous crops: 2007 _____
 2006 _____
 2005 _____

Field soil pH from previous soil tests, *if available*: _____

Article 1. Survey results
 Strictly according to protocol (sample 10 plants at each of 10 sites using W pattern).

Sample Site	GPS Coordinates	Number of Infested Plants
1 (nearest access)		
2		
3		
4		
5		
6		
7		
8		
9		
10		

of positive sites / 10: _____

Lab Test Confirmation: _____

Additional Comments: _____

Optional: Draw map of field and landmarks with sampling points (on the back of page).

_____ Date: _____

Scott Franchuk, Agricultural Fieldman



SCHEDULE "B"

NOTIFICATION TO LANDOWNER OF CLUBROOT

DATED THIS _____ day of _____, 20__.

Name: _____

MAILING ADDRESS: _____
Box City or Town Postal Code

Dear: _____:

This letter is to serve as notification that Clubroot, which has been declared a "Pest" under the *Agricultural Pests Act*, has been found on the Property: _____.

As a result, Smoky Lake County has issued a notice against this property restricting the growth of canola or any other host crop *as per Agricultural Pest Act, Pest and Nuisance Control Regulation*.

Please be aware that the Clubroot is a very serious crop disease and all landowners within our municipality must be very diligent in their management practices to keep this disease at bay.

I have included a copy of **Smoky Lake County's Clubroot Policy** and a copy of the **Provincial Plan: Best Management Practices** for your review.

If you have any questions, please do not hesitate to call me at 780-656-3730.

Sincerely,

Scott Franchuk
Agricultural Fieldman

c.c. Renter/Leasee (if different from the Landowner)



SCHEDULE "C"

LEGAL NOTICE TO CONTROL PESTS

**Agricultural Pests Act
Section 6(1) - Form 2**

PEST AND NUISANCE CONTROL REGULATION

To: Name: _____

MAILING ADDRESS: _____
Box City or Town Postal Code

You are hereby notified that the _____ quarter of section _____ township _____ range _____ west of the 4th meridian, Alberta, as indicated on the diagram below, contains Clubroot, which has been declared a pest by the *Pest and Nuisance Control Regulation* made under the *Agricultural Pests Act*, and you are directed to take the following measures:

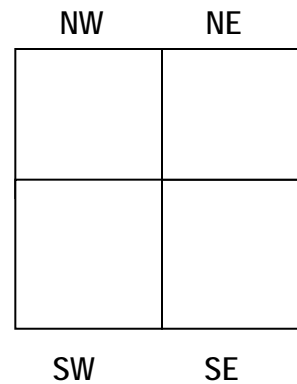
1. Do not plant canola on _____
Legal Property
 until _____.
Year

2. Keep _____
Legal Property
 free of volunteer canola, wild mustard and shepherds purse or any other host vegetation.

3. Use direct seeding and any soil conservation practices to minimize soil movement.

4. Clean soil and crop debris from field equipment before entering or leaving all fields.

5. Avoid the use of straw, hay, greenfeed, silage or manure from the _____.
Legal Property



IMMEDIATE CORRECTIVE ACTIONS: _____.

TO BE COMPLETED BY: _____.

All of the above measures must be completed within _____ years from the date of issue of this notice, failing this action may be taken in accordance with the legislation referred to above.

This notice is issued under Section 12(1) of the *Agricultural Pests Act*. An appeal against this notice may be served on the municipal secretary, accompanied by a deposit of \$100.00, before the expiry of the time stated above or the period of 10 days from service of the notice, whichever expiry date occurs first and otherwise made in accordance with the *Agricultural Pests Act*.

Date of Issue

Inspector – Smoky Lake County
 Telephone Number: 780-656-3730

c.c. Renter/Leasee (if different from the Landowner)

**SCHEDULE "D"****BEST MANAGEMENT PRACTICES****ALBERTA CLUBROOT MANAGEMENT PLAN****BEST MANAGEMENT PRACTICES**

1. Use long rotation breaks between canola crops. Although crop rotation will not prevent the introduction of clubroot to clean fields, it will restrict disease development within the field and probably avert a severe infestation of clubroot and other diseases such as blackleg. Canola growers in high risk situations (confirmed clubroot in the area) should follow traditional canola rotation recommendations (one canola crop every four years). Under very light infestations, a three-year rotation break from canola will keep the clubroot level very low. Under moderate to high infestations, the rotation break needs to be five years or more to reduce clubroot to low levels.
2. Volunteer canola and cruciferous weeds must be controlled on infested fields to prevent more than three weeks of growth to avoid the production of new resting spores.
3. Practice good sanitation to restrict the movement of potentially contaminated soil (this approach will also help reduce the spread of other diseases, insects and weed seeds). The resting spores are most likely to spread via contaminated soil. Moderate to high infestations will leave high spore concentrations in soil on field machinery – thus sanitation is very important in these situations. All producers should follow the practice of cleaning soil and crop debris from field equipment before transport from all fields. Cleaning equipment involves knocking or scraping off soil lumps and sweeping off loose soil.
 - For risk averse producers or for fields with heavy infestations, additional cleaning steps will slightly decrease the risk of spread, but these steps involve considerably more work and expense:
 - After removal of soil lumps, wash equipment with a power washer, preferably with hot water or steam.
 - Finish by misting equipment with weak disinfectant (1 – 2% active ingredient bleach solution). The use of a disinfectant without first removing soil is not recommended as soil inactivates most disinfectants.
 - Seed an area to grass near the field exit to clean off equipment more effectively.
4. Use direct seeding and other soil conservation practices to reduce erosion. Resting spores can also readily move in soil transported by wind or water erosion. Reducing the amount of tillage on any given field will reduce the spread of the organism within the field and to other fields.
5. Minimize traffic to and from fields.
6. In situations where fields are lightly infested only near the current access, create a new exit at another distant edge of the field if possible.
7. Scout canola fields regularly and carefully. Identify causes of wilting, stunting, yellowing and premature ripening – do not assume anything!
8. Avoid the use of straw, hay or greenfeed, silage and manure from infested or suspicious areas. Clubroot spores may survive through the digestive tracts of livestock.
9. Avoid common untreated seed (including canola, cereals, and pulses). Earth-tag on seed from infested fields could introduce resting spores to clean fields. The effect of current seed treatment fungicides on resting spore viability on seed needs research.

