

# Clubroot Management Agreement: Irrigated land

Compared to dry crop production, agronomic practices associated with crop production under irrigation may increase a producer's risk of introducing or moving clubroot-infested soil. Also, adequate moisture conditions throughout the growing season may result in increased disease severity of clubroot if the pathogen is present in a field. Additional clubroot management strategies should be considered under irrigation to minimize clubroot spread and introduction and to minimize the impact of the disease if the pathogen is present.

This Clubroot Management Agreement template can be used when developing a clubroot management plan for clubroot-infested fields under irrigation. A proactive management plan will help to reduce or keep pathogen levels low and minimize yield losses due to clubroot.'

For each section below, please check the box for all management strategies that will be used. The management strategies identified as **Req** are **minimum requirements** that need to be included. Additional management strategies are listed and should be considered whenever possible. Some strategies listed below would be beneficial in reducing risk associated with crop production under irrigation. These are identified by **SR** and are **strongly recommended** for clubroot management under irrigation.

For more information on clubroot control strategies, please refer to [The Saskatchewan Clubroot Management Plan](#) on the Saskatchewan Ministry of Agriculture's [website](#).

## Field Location and Information:

Date:				
Landowner's name:				
Renter's name (if different from above):				
Agrologist's name:				
Legal land location of clubroot infested fields that will be managed according to this plan:	Symptoms visible?		DNA-based soil test confirmed pathogen?	
	Yes	No	Yes	No

## Part 1: Crop Rotation

Crop rotation will reduce pathogen (spore) levels and selection pressure on the clubroot pathogen population to overcome resistance in the canola variety. Longer rotations are encouraged in fields with high disease severity.

Indicate which crop rotation interval will be followed from the list below.

Three-year rotation (two-year break) – **Req**

Four-year rotation (three-year break)

Longer than a four-year rotation

Perennial forage crop for more than two years

Other (please indicate: \_\_\_\_\_)

## Part 2: Variety Selection, Weed Control and Small Patch Management

Please select all strategies that will be used:

Use of only clubroot-resistant varieties in fields with clubroot symptoms or where the clubroot pathogen has been detected – **Req**

Use of clubroot-resistant varieties in all canola fields

Control of volunteer crops including: canola, camelina, mustard or other clubroot hosts – **Req**

Control of cruciferous weeds throughout the rotations – **Req**

- Weed species to be controlled include but are not limited to: stinkweed, shepherd's purse, wild mustard, flixweed and tansy mustard.

Uprooting, removing and safe disposal of all clubroot-infected plants (small patch)

Liming of soil in clubroot-infested area to increase pH to 7.5 (small patch)

Use of DNA-based soil testing to monitor spore levels prior to seeding a susceptible host crop

If you are seeding potatoes, source potatoes from a non-clubroot infested area (**SR**)

- Potatoes or other tubers can contain a larger amount of earth tag and can be a direct means of introducing clubroot infested soil into a field

## Part 3: Reducing Soil Movement

Crops grown under irrigation, such as potatoes and, to a lesser extent, dry beans, require several tillage events to prepare the soil for seeding. Fall tillage and high soil disturbance associated with the harvest of potato tubers will leave ground bare and susceptible to soil erosion. Another difference between irrigation and dry land crop production is moisture levels. Under irrigation, soil will remain slightly moist or wet at times. Under wet conditions, an increased volume of soil can be moved on equipment when working in the field.

Please indicate how you will minimize the spread of clubroot and movement of clubroot-infested soil (**Req**).

Select the strategies that will be used from the following list:

Grass the field entry to reduce spore levels or as an area for cleaning equipment (**SR**)

Create a separate field exit away from existing field entrance and/or known clubroot-infested areas

Equipment cleaning and sanitation practices (select from the following list):

- Remove large clumps of soil before leaving the field (**SR**)
- Remove as much soil as possible using a brush or compressed air before leaving the field
- Visit clubroot-infested fields last and fully clean equipment afterward
- Wash and sanitize equipment with bleach when possible
- Require others working on the clubroot-infested land to implement a biosecurity protocol (protocols can include vehicle cleaning, use of disposable boot covers etc.)

Use of soil conservation practices to reduce soil spread –**Req**

- Zero tillage
- When tillage is used, seed a sod-forming grass around the border of your field to minimize soil spread to neighboring fields (**SR**)
- Other (please describe: \_\_\_\_\_)
  - Example: reduced tillage – spring tillage only when needed for specific crop

#### Part 4: Disclosure of Clubroot Infestation and Biosecurity Management

Notification to all occupants, renters and easement holders who have access to the land (including when the field approach is shared with another renter/landowner) – **Req**

Notification and disclosure to contracted and/or other parties who have access to the land that clubroot is present – **Req**

- (Example: Custom sprayers, utility companies, agronomists, etc.)

Disclosure that clubroot is present when the land is sold or rented to other parties– **Req**

I agree that the RM may disclose to adjacent landowners that clubroot has been found in this field(s). I am willing to provide my consent through a signed letter.

#### Part 5 – Clubroot Scouting and Monitoring

Continued scouting and soil testing in fields where clubroot or the clubroot pathogen has been detected to monitor pathogen (spore) levels and visible symptoms on plants.

Continued scouting in all other fields rented or owned by the renter/landowner.

Renter's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Landowner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Agrologist's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Pest Control Officer's Signature: \_\_\_\_\_ Date: \_\_\_\_\_