

Bacterial Ring Rot of Potato

Communication Plan

Introduction

Bacterial ring rot (BRR) disease of potatoes is a regulated pest in Saskatchewan and Canada. This plan provides guidance for appointed pest control officers (PCOs), municipalities (as defined in *The Municipalities Act*, *The Cities Act*, and *The Northern Municipalities Act, 2010*), owners or occupants of land, industry stakeholders, producer groups and the public. It outlines key information on disease detection, regulatory guidelines, management practices and a response plan.

Legislative Authority

- [The Plant Health Act](#)
- [The Plant Health Regulations](#)

Overview

Bacterial ring rot (BRR) is a serious disease caused by the bacterium, *Clavibacter michiganensis* ssp. *sepedonicus* also known as *Corynebacterium sepedonicum*. Infection leads to decay of the vascular ring in potato tubers. It is a very destructive and infectious disease that can lead to significant economic losses and potential trade disruptions. BRR is subject to federal legislation on field-grown seed potatoes and provincial legislation on other potatoes grown for commercial sale. Under federal legislation, the detection of even a single infected tuber on a seed potato farm can result in the decertification of the entire crop and trigger mandatory follow-up actions. The seed potato certification system along with crop inspections in Canada has helped to limit the number of outbreaks. In Saskatchewan, the last reported case of BRR was in 2012.

Symptoms

Early symptoms of Bacterial ring rot (BRR) include stunted plant growth, light mottling of the leaves and the wilting of the lower leaves (Figure 1). The leaves from affected plants cup upwards and begin to die from the tips (Figure 2). In some cases, only one stem may show symptoms initially, but as the disease progresses, the entire plant can die.

Potato tubers infected with BRR may not always display visible symptoms, depending on the timing of infection, environmental conditions and the potato variety. When the stem end of the tuber is cut, the vascular system will show a creamy yellow soft rot decay (Figure 3). As the disease advances, the damaged tissues turn brown and dry cracks can appear on the surface of the tubers. Although BRR spreads slowly at the low temperatures used in potato storage, eventually the decay will spread to destroy the entire tuber. Soft rot bacteria entering the diseased tubers will then result in much faster decay.



Figure 1. Early infection of leaves by BRR

Photo credit: Dr. Ron Howard



Figure 2. Advanced infection of leaves by BRR

Photo credit: Dr. Ron Howard



Figure 3. Damage to vascular system by BRR

Photo credit: Dr. Ron Howard

Spread

Bacterial ring rot (BRR) is most commonly introduced to farms through infected seed potatoes. However, it can also be spread via contaminated materials such as bins, pallets, bags, trucks, and field equipment.

Once present on a farm, it spreads through direct contact between healthy and infected tubers during the seed cutting process or via contaminated planters and surfaces. The bacteria can survive for very long periods of time as a dried slime on equipment and building surfaces. Although BRR does not overwinter in the field, it can survive the winter in piles of culled potatoes, posing a continued risk of infection.

Regulatory Guidelines

Bacterial ring rot (BRR) is a regulated pest in Canada under the *Plant Protection Act* and *Plant Protection Regulations* as well as the *Seeds Act* and *Seeds Regulations*. It has also been a declared and regulated pest in Saskatchewan since 1994 and remains a regulated pest under *The Plant Health Act* (Act) and *The Plant Health Regulations* (regulations) which came into force in 2024. In Saskatchewan, only potatoes grown for commercial sale are regulated. Key provisions in the legislation and regulations include:

Authority and Enforcement

- Municipalities may appoint any person they consider qualified to serve as a pest control officer (PCO) to enforce the Act and the regulations within the municipality.
- A municipality appointed PCO can enter any land or premises (excluding dwelling houses) to investigate pest infestations, collect samples, take necessary actions and enforce the Act (with agreements and orders).
- An authorized person may conduct surveillance and sampling for pests and nuisance pests or pest control for pests with the permission of the owner or occupant.
- If the minister is satisfied that a pest or nuisance pest emergency exists, the minister may, by order, make an emergency declaration for rapid response and biosecurity measures. During the declared emergency period, authorized persons do not require permission from the owner or occupant.

Orders and Restrictions

- A municipality appointed PCO may issue an order to an owner or occupant (Section 24 of the Act) for the disposal of all potatoes that have tested positive for BRR, as well as potatoes that may have been in contact with infected potatoes.
- Orders may mandate cleaning and disinfection of storage locations, field equipment, packaging equipment and other materials. It may also restrict access and movement of equipment, crop or crop part, animal or animal part, waste material, conveyance and any other terms or conditions.
- There is a requirement to plant on land free of BRR. No owner or occupant can plant any class of potatoes on land infected with BRR within the previous two growing seasons.

Seed and Planting Requirements

- To protect the potato industry in the province, every owner or occupant shall use only seed potatoes classified as Foundation class or higher as defined in the federal *Seeds Regulations*.
 - Equivalent certified seed from the United States may be used if approved by a recognized certification agency.
- All cull potatoes must be destroyed or disposed of by June 15 of each year.
- Potato growers must keep accurate records for at least three years of all potato plantings (seeding date, location, weight and class of certified seed used), disposed cull potatoes and bill of sale of the certified seed used in each growing season.

Reporting and Notification

- Every owner or occupant of land is required to control, prevent and report declared pests.
- BRR must be reported as soon as possible for rapid response.
 - **Seed potato farms** should report confirmed or suspected detection of BRR to the Canadian Food Inspection Agency (CFIA) (Regina at 306-780-5180, Saskatoon at 306-385-4949 or [online](#)).
 - **Commercial potato growers** must report confirmed or suspected detection of BRR to the Ministry of Agriculture (ministry) (crops@gov.sk.ca), the municipality or PCO.
- If BRR is reported to the municipality, PCO or authorized person, they must notify the ministry as soon as possible.
 - Municipalities shall submit an annual pest report to the ministry (crops@gov.sk.ca) by December 31 each year.
- Upon laboratory confirmation of BRR, the CFIA (seed potato farms) or ministry/PCO (commercial potato growers) will contact the owner or occupant of the infected land with a response plan.

Best Practices for Prevention and Management

Strong biosecurity and agronomic practices are key to reducing the risk of introducing or spreading bacterial ring rot (BRR). Regular self-monitoring is essential to maintaining a zero or low risk of this disease.

Recommended Practices

- Develop a farm biosecurity plan to prevent pest introduction, contain infestations, minimize losses etc. For guidance, refer to the *Resources* section below.
- Train all farm employees in disease identification, management, biosecurity measures and response procedures.
- Clean and disinfect all equipment thoroughly before it enters the farm.
- Inform visitors about the biosecurity risk posed by BRR and regulate visitor access to all fields and farm facilities, especially on seed potato farms.
- Purchase certified disease-free seed potatoes, foundation class or higher, from reputable suppliers.
- Plant earlier generation seed potatoes, which carry a lower risk of BRR infection.
- Plant whole seed potatoes whenever possible to avoid the risk of spreading BRR during seed cutting. If seed cutting is necessary, ensure cutters are cleaned and disinfected before use and between seed lots.
- Use cup and belt type planters instead of pick style planters, which are more likely to spread BRR. Clean and disinfect planters before use and between seed lots.
- Thoroughly clean, wash and disinfect harvest equipment, trucks, handling gear and the storage facility before harvest.
- Destroy cull piles in a non-field area by burial, discing under, freezing or by spraying the piles with a systemic herbicide to eliminate sprouting potatoes.
- Rotate with non-host crops to reduce pest pressure.

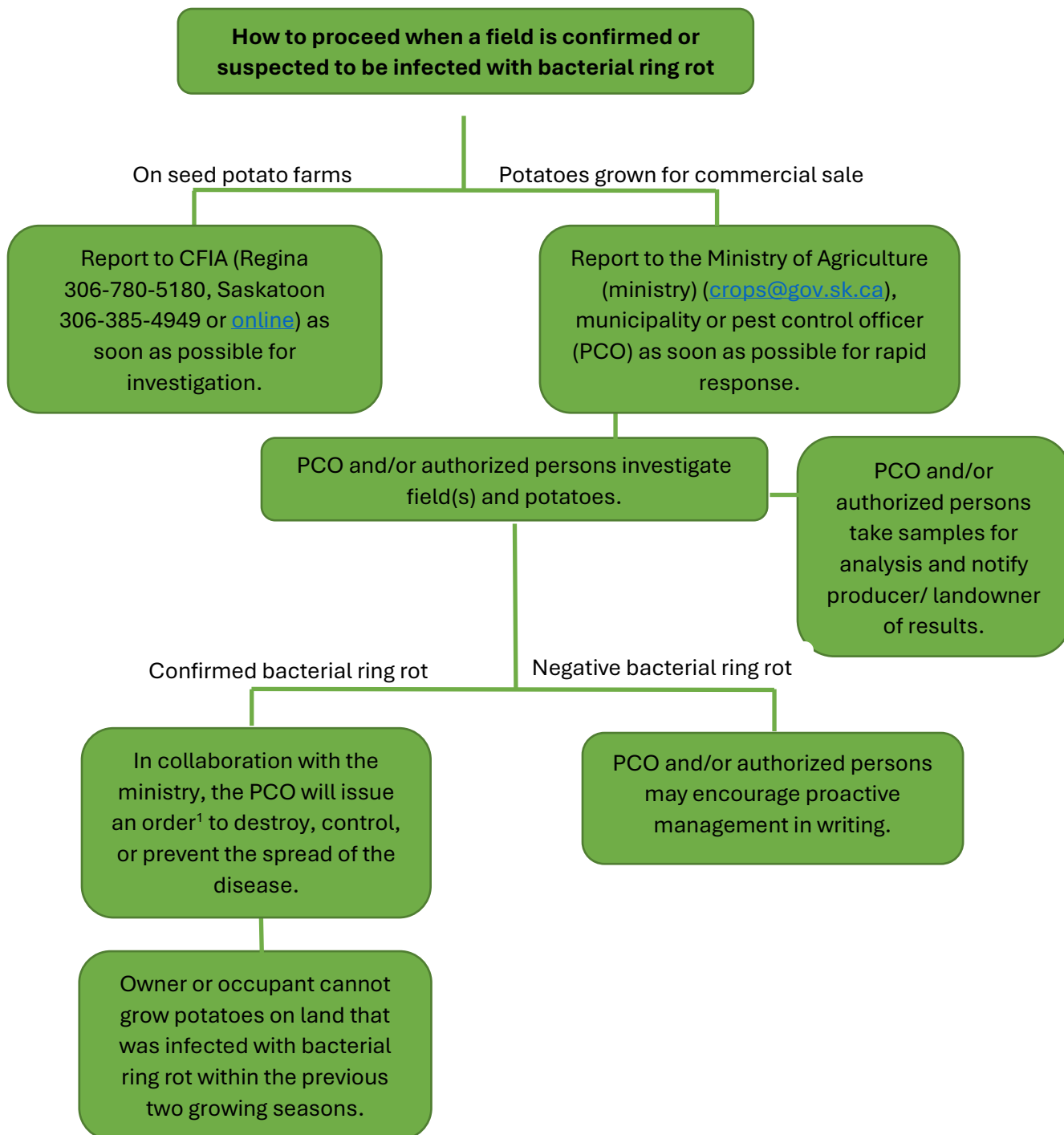
- Control potato volunteers as well as other solanaceous volunteers, such as tomatoes, eggplant and weeds such as hairy nightshade that may host the pathogen. Sugarbeet (*Beta vulgaris* var. *saccharifera*) has also been described as a natural symptomless host.

Surveillance and Testing

- Conduct regular scouting throughout the growing season. The best time to monitor fields for BRR is late August prior to senescence or top killing, because it is difficult to identify at low infection levels in the field.
- Maintain detailed surveillance records to support traceability and inform future management decisions.
- Inspect all potato seed lots prior to purchase to ensure they are free of BRR and meet certification standards.
- Perform soil sampling and tuber inspection as part of routine disease monitoring.
- Communicate proactively with anyone who has recently visited your farm, has access to your facilities or has purchased potatoes from your operation. This is required to raise awareness and prevent further spread if BRR is suspected or confirmed.

Response Plan

A response plan is designed to enable rapid and effective action when a pest outbreak occurs. The following steps outline the recommended procedures to follow when bacterial ring rot (BRR) is either confirmed or suspected on a farm.



¹ An order pursuant to section 24 of *The Plant Health Act* and part 3 of *The Plant Health Regulation*

When BRR is suspected or confirmed **in potatoes grown for commercial sale**, an investigation is conducted by a PCO and/or authorized persons. The purpose is to:

- Identify the source of infection (e.g., seed source or farm origin).
- Assess the extent of damage.
- Implement measures to prevent introductions and further spread.

Investigation Process

The investigation may include:

- An interview with the owner or occupant of land to gather details about farm type, location (e.g., topography, water sources), disinfection practices, biosecurity protocols, farm history and to inspect seed documentation and crop records.
- Sampling of potato tubers or vegetative material, for laboratory testing and bioassays.
 - For normal sampling, the sampling size for potato tubers will depend on the size of the field (crop/lot) (Table 1). A lot is a field or fields from the same parent source or certificate number.
 - If BRR has been detected, an intensified sampling (minimum of 1,000 stems or tubers per crop or lot) will be done on fields bigger than one hectare for the next three years.
- Rapid testing of collected samples with an approved laboratory to test for BRR.

Field (crop/lot) size (hectares)	Field (crop/lot) size (acres)	Sample size
40 ha or more	98.842 ac or more	800 stems or tubers
4 ha to less than 40 ha	9,884 ac to less than 98.842 ac	400 stems or tubers
1 ha to less than 4 ha	2.471 ac to less than 9.884 ac	200 stems or tubers
0.025 ha to less than 1 ha	0.062 to less than 2.471 ac	100 stems or tubers
Less than 0.025 ha	Less than 0.062 ac	1%, minimum 5, maximum 50 tubers

Table 1. Sample sizes for BRR testing (Source- CFIA Directive D-97-12)

Procedures may follow **CFIA Directives D-97-12 and D-95-18** as guidelines.

Ministry Contacts for Investigation

Ministry staff who may be initially involved include:

- Provincial Specialist, Vegetable Crops, 306-535-0987
- Provincial Specialist, Pest Regulatory, 306-787-7474
- Provincial Specialist, Plant Disease, 306-787-4671
- Manager, Crop Protection Laboratory, 306-798-0100

Following the implementation of phytosanitary measures and restrictions, an inspection will be conducted by the PCO and/or ministry staff.

Emergency Response Coordination

In a plant health emergency:

- For seed potato farms, response is coordinated by plant health partners with the CFIA as the lead agency.
- For commercially grown potatoes, the ministry leads the response, in collaboration with municipalities and other plant health partners.

Responsibilities

Saskatchewan Ministry of Agriculture

- Administer legislation and regulations related to bacterial ring rot (BRR) as a declared pest.
- Compile and distribute the BRR communication plan.
- Support and stay informed on current research of BRR.
- Provide education and outreach to the vegetable industry on BRR.
- Investigate reports of suspected or confirmed BRR cases and ensure samples are submitted for laboratory confirmation.
- Report confirmed or suspected BRR cases to the CFIA for seed potato farms and share confirmed cases from commercial growers with CFIA, producer groups (RM level) and others as needed.
- Inspect facilities following cleanup activities to ensure compliance with orders.
- Communicate confirmed cases of BRR to producer groups and other stakeholders as needed.

Municipalities and Pest Control Officers

- Municipalities may appoint a PCO to investigate and take appropriate measures with respect to declared pests like BRR.
- Collaborate with the ministry on any necessary investigation and the implementation of appropriate management actions.
- A municipality appointed PCO can enforce *The Plant Health Act*, including issuing orders or entering agreements with owners or occupants of land to control, destroy and prevent the spread of declared pests like BRR.

Producers

- Implement best management practices and a biosecurity plan in alignment with the BRR communication plan.
- Report any suspected or confirmed BRR cases to the ministry (crops@gov.sk.ca), municipality and appointed PCO.
- Take necessary actions to control, destroy and prevent the spread of BRR on any land or premises owned or occupied by them. This includes the destruction of any crop, vegetation that may spread the pest and propagation materials like seeds and roots.
- Comply with any orders issued by a PCO to control, destroy and prevent the spread of BRR.

Producer Groups - Saskatchewan Seed Potato Growers Association and Saskatchewan Vegetable Growers Association

- Promote best management practices and biosecurity plans in alignment with the BRR communication plan.
- Raise awareness among members and stakeholders of the risks of BRR and the importance of timely reporting.
- Share reports of suspected or confirmed BRR cases with the ministry (crops@gov.sk.ca), municipality and appointed PCO.
- Collaborate with governments agencies to support coordinated response efforts when needed.

Contacts

For questions about BRR and management practices, contact:

- Provincial Specialist, Vegetable Crops – 306-535-0987

For questions on legislation and regulatory guidelines, contact:

- Provincial Specialist, Pest Regulatory – 306-787-7474

Resources

[Potatoes | Horticultural Crops | Government of Saskatchewan](#)

[Potatoes: Guidance documents - inspection.canada.ca](#)

[Crop Biosecurity Guidelines](#)

[Farm Biosecurity Guide for Saskatchewan Vegetable Crop Producers](#)

References

Note: The websites cited within the following references were accessed in August 2025

1. D-95-18: Seed Potato Certification Program- Investigation Procedure after *Clavibacter michiganensis* subsp. (subspecies) *sepedonicus* Has Been Detected on a Seed Potato Farming Unit. Website: [Link](#)
2. D-97-12: Seed Potato Certification Program- Bacterial Ring Rot Testing Program for Field Grown Seed Potatoes. Website: [Link](#)
3. National Potato Wart Response Plan. Website: [Link](#)