

Post-Harvest Life of Organic Potatoes



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Description of Problem

- Post-harvest diseases of potatoes are numerous and have the potential to cause great economic loss.
- Many diseases, such as silver scurf, Pythium leak, Fusarium dry rot, pink rot, bacterial soft rot and late blight are known to further develop on potatoes which have been physically damaged or stored in non-optimal conditions. Other diseases such as common scab and Rhizoctonia affect the marketability of the potatoes (Fig. 1)
- Better understanding the factors and specific locations between harvest and storage which affect post-harvest disease growth will help reduce losses in organic potato production
- Control options such as treatments for organic post-harvest diseases should be assessed in order to see their potential as an additional tool in loss reduction.

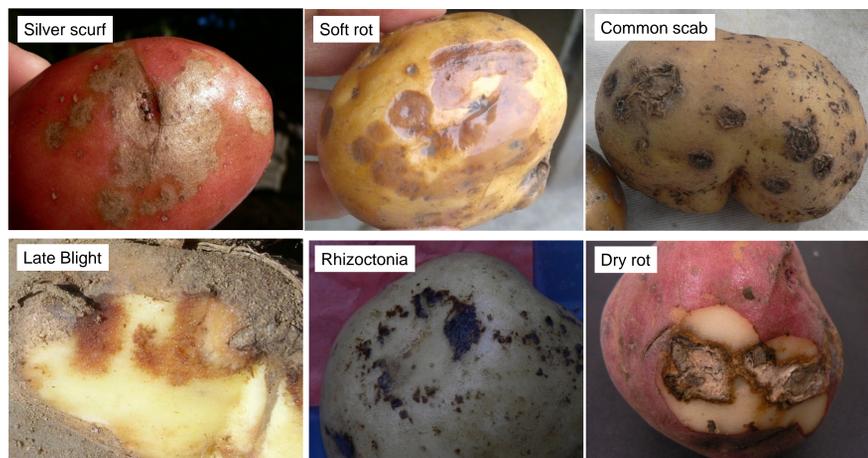


Figure 1. Post-harvest potato diseases

Study Objectives

- 1) What level of damage is caused to potatoes at harvest and what is the risk for disease development?
- 2) What pathogens are present at harvest?
- 3) How does disease develop in storage?
- 4) What is the efficacy of currently registered organically approved post-harvest treatments?

Methods

Objectives 1 and 2 - Damage and pathogens at harvest

- Replicated samples were taken at specific locations along harvesting, processing, and storing lines (5 potatoes per replicate, 8 replicates per location)
- Potatoes were stored for at least 12hrs in a hotbox and then washed before assessing
- Potatoes were assessed for various types of damage and disease present (Figs 1 and 2).
- Disease assessment was completed using a surface percentage-based scale on all hand harvested samples

Objective 3 – Disease progression in storage (in progress)

- Potatoes were stored in grower's storage facility for two months
- Disease will be assessed after the two months and disease progression will be documented

Objective 4 – Efficacy of registered post-harvest treatments (in progress)

- Potatoes displaying clear signs of silver scurf infection were selected
- Four treatments: 1) Serenade ASO 2) StorOx 3) Bio-Save 10LP and 4) Control
- Disease assessment will be done twice: 1) before treatment and 2) after two months in storage

Preliminary findings

- The main diseases found at harvest were silver scurf, common scab, Rhizoctonia, soft rot, and dry rot.
- Overall in the 9 fields assessed silver scurf was the prominent disease. Approximately 67% of potatoes had silver scurf, 49% had Rhizoctonia, 4% had soft rot, 2% had dry rot and 1% had scab.
- At harvest, 3.4% to 55% of the potatoes were damaged (including all damage types) with slight and severe bruising being the main damage observed (Fig 2).

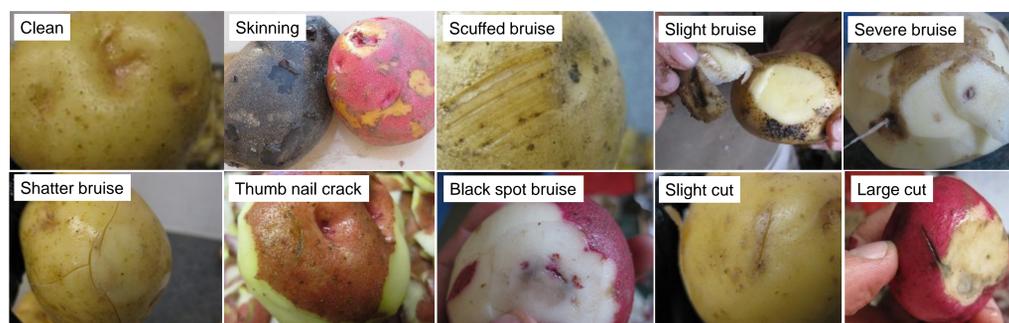


Figure 2. Type of damage caused at harvest

- Some locations appear to be critical in causing damage, such as on the harvester between the field to the drop after the primary chains, the drop from the boom to the truck, and on the bagging line when tubers are dumped from bins into the hopper (Fig 3).



Figure 3. Locations that appear to be critical in causing damage at harvest

What can you do?

On the harvester :

- Ensure field has had at least two weeks since top kill and that skins are well set.
- Ensure soil temperature is between 10-16°C at harvest.
- Adjust digging blade so as to not cut or crush tubers.
- Angle digging blade so that tubers do not run into the primary chain.
- Run conveyor speeds based on ground speed.
- Keep a steady stream of soil up the main chain.
- Minimize rollback on main chain.

Managing disease:

- Use a minimum crop rotation of 2-3 years in between potato plantings.
- Plant clean, certified seed.
- Maintain farm hygiene by regularly cleaning and sanitizing equipment.
- Control volunteers.
- Do not harvest from wet areas in fields.
- Grade tubers prior to storage.
- Store diseased tubers separately and sell as soon as possible.

Next steps

- Develop potato post-harvest assessment program to help growers limit their crop losses.