

Disease Name

Fusarium dry rot

Disease Organism

Fusarium species

Host Plants

Potato

Integrated Pest Management of Fusarium Dry Rot in Potato

Description

Fusarium dry rot affects tubers in storage and seed tubers (whole or cut) after planting. The disease is caused by several species within the fungal genus *Fusarium*. On the tuber surface, external symptoms may first appear as nondescript flecks and expand to wrinkled lesions that may appear dark brown to black (Figure 1). Internally, hollow cavities with dry rotted tissue of various shades of brown to gray develop within tuber tissue, with tufts of fungal growth of white or various colors often visible within cavities and associated with lesions on the tuber surface (Figure 2). Disease can progress in storage until only mummified tubers remain. Cut seed can also develop symptoms prior to planting (Figure 3). Infected seed can completely decay after planting.

Biology

The pathogens that cause dry rot are ubiquitous and are present on tuber surfaces and in soil. Wounds are required for infection



Figure 1. Fusarium dry rot symptoms visible on an external tuber surface.

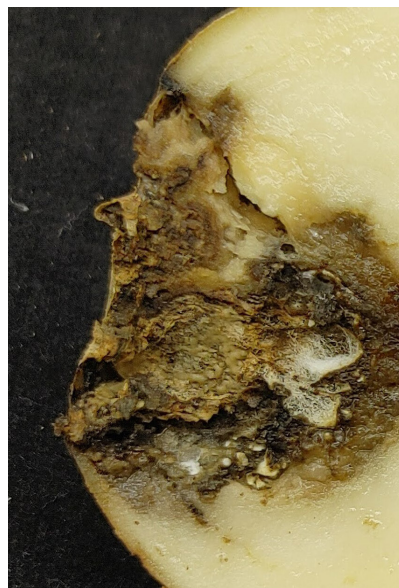


Figure 2. Internal Fusarium dry rot symptoms.



Figure 3. Cut seed with symptoms of Fusarium dry rot, prior to planting.

Authors

Kasia Duellman, Assistant Professor and Extension Specialist in seed potato, University of Idaho Extension

to occur; the pathogens cannot breach intact periderm, healed (suberized) wounds or cut surfaces, or natural openings like lenticels. The species most predominant in Idaho (*F. sambucinum*) grows and infects best at temperatures between 68°F and 77°F (20°C–25°C), but disease can still develop at the lowest temperatures used for potato storage. Common practices associated with potato harvest, handling, and seed cutting induce wounds that provide the opportunity for infection. The pathogens can survive in soil for several years or from one season to another in infected tubers or as inoculum on tuber surfaces. Inoculum can be moved any time tubers are handled.

Damage

- Lesions expand to hollow cavities, often with tufts of fungal growth visible within and on the outside of tubers
- Yield losses of 6%–25% have been reported in storage
- Soft rot bacteria readily invade infected tubers in storage or those that have been planted, especially if condensation occurs on tuber surfaces or relative humidity is high
- Infected seed pieces can lead to uneven emergence, poor stands, and weakened plants

Management

Primary Management Tactics

Minimizing wounds and promoting wound healing (suberization) are the most important tools to manage Fusarium dry rot.

Cultural

(changes the way the crop is grown to make it less suitable for the pest or to enhance its ability to withstand pest attack)

- Allow skin to fully set (mature) on tubers before harvest.

- Adjust harvesting equipment to minimize impacts.
- Promote wound healing after harvest or after handling, transporting or cutting seed by holding tubers at 50°F–55°F (10°C–13°C) with good aeration and high relative humidity (at least 95%) for 2–3 weeks.
- Warm seed to 50°F–55°F (10°C–13°C) for one week prior to cutting and planting to promote sprout growth and wound healing. The preconditioned seed tubers also bruise less readily during the cutting process, thus further reducing the risk of developing Fusarium dry rot and other types of seed decay.
- Plant in soils that promote rapid emergence, typically with temperatures at or above 45°F (7°C) with soil moisture capacity at 60%–80% (avoid planting seed in cold, excessively wet soils).

Chemical

- At harvest, fungicides are available for tubers going into storage, but be aware of restrictions regarding maximum residue levels imposed by trade partners or for tubers destined for seed
- Treat seed (whether cut or kept whole) with a fungicide seed treatment applied directly to the seed with good coverage prior to planting, especially if soil conditions favor disease development or if the seed lot shows excessive bruising or Fusarium dry rot symptoms
- Thiabendazole and related fungicides (benzimidazoles) are not recommended in the Pacific Northwest since resistance to this group of fungicides is widespread in the predominant Fusarium dry rot pathogen (*F. sambucinum*) in the region
- Recommendations for pesticides to use in the management of Fusarium can be found on the [PNW Pest Management Handbooks website](#)

Caution: Read Pesticide Labels

Pesticide labels override other recommendations.

ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI webpage do not substitute for instructions on the label. Pesticide laws and labels change frequently and may have changed since this publication was written. Some pesticides may have been withdrawn or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless the specific plant, animal, or other application site is specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Trade Names — To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

Groundwater — To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.