



Best Management Practices for Potatoes

Diseases of Potato: Fusarium Dry Rot

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INTRODUCTION

Fusarium dry rot of potato tubers is caused by several species of *Fusarium*, the most important of which is *F. sambucinum*. These fungi are residents of most potato growing soils in Michigan and, once established in the soils, persist indefinitely. Tubers rarely become infected during the growing season because the tuber skin provides natural protection against entry of dry rot organisms. However, during harvest and handling operations, wounds can occur in tuber skins which allow the fungi to enter the tuber. Potatoes which may appear perfectly normal going into storage may develop disease symptoms after a few weeks. Severe infections make table stock and processing potatoes unusable and can cause poor stands if used as seed stock.

SYMPTOMS

The most typical symptom of this disease is a dry rot which can become visible externally on the tuber after about a month in storage and becomes increasingly severe with time (Figure 1). Surfaces of infected tubers may appear wrinkled or have sunken areas. Internal tissue has sharply defined tan to brown rotting areas (Figure 2)¹. Internal cavities may develop in the tubers which may become lined with white, pink, blue, or yellow mold growth. Under conditions of high humidity, soft rot bacteria may secondarily invade infected tissues and cause a soft, wet rot. Fusarium dry rot disease generally does not spread from tuber to tuber in storage unless soft rot bacteria are present.

¹Photos courtesy of Dr. Randall Rowe, Ohio Agricultural Research and Development Center, Wooster, Ohio.



Figure 1. External tuber symptoms of Fusarium dry rot.



Figure 2. Internal tuber decay caused by *Fusarium Sambucinum*.

CONTROL

The following measures help control this disease if followed carefully:

1. Clean and disinfect all storages and equipment used in harvesting and handling operations before beginning the harvest season.

2. Make sure all vines are completely dead and that skins are mature before beginning harvest.
3. Harvest when soil temperatures are above 45° F to help minimize bruising. Handle the tubers as gently as possible during harvest, paying close attention to chain speeds and not allowing tubers to drop more than a few inches in any part of the operation. Plastic hammocks or foam padding in trucks or wagons prevent much bruising.
4. Use the catechol bruise test to assess the amount of damage that occurs during harvest and handling (see Extension Bulletin E-2074) and make adjustments in harvesting practices, if necessary, to minimize bruising.
5. Do not wash tubers before placing them in storage; this can increase infections and rot. Treating tubers with a mist of the fungicide thiabendazole, as they go into storage, may be effective. However, some *Fusarium* isolates are known to be resistant to this fungicide, so this treatment is not as reliable as it once was.
6. Hold newly harvested tubers at 55-65° F for one or two weeks after harvest to promote healing of any wounds that occurred during harvest, then

gradually reduce temperatures about 0.5° F per day until temperatures reach the desired storage temperature (37-40° F for seed and table stock, 45-55° F for processing stock, depending on cultivar and type of processing). *Fusarium* cannot develop at temperatures below 40° F, but continues to develop above 40° F. With processing stocks stored at a higher temperature, it becomes especially important to minimize wounds and promote wound healing because *Fusarium* continues to develop during storage.

7. Handle tubers carefully as they are taken out of storage. If tubers are to be used as seed, allow them to warm to about 55° F just before cutting. Disinfect cutting equipment before cutting each seed lot. After cutting, treat seed with a labeled fungicide and hold for a few days at about 55° F to allow cut surfaces to heal. Do not store cut seed more than two pallet boxes high, and leave room between boxes for air circulation.

8. Plant seed in well prepared moist soil at temperatures of 50-60° F; do not plant into cold, overly wet or overly dry soils.

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