

# Superficial growth on potatoes

by Nora Olsen, Phillip Wharton, and Philip Nolte

Potato growers, storage operators, and shippers put forth great effort to ensure minimal disease infection in the harvested, stored, and transported potato crop. Management practices used in the field and in storage minimize tuber infection by pathogens and the development of diseases that can cause mild to severe losses in potato quality. Identification and management guidelines for the primary fungal and bacterial diseases of potato tubers are available in the University of Idaho Extension publication *Diagnosis and Management of Potato Storage Diseases*, which can be found along with additional potato information at <http://www.kimberly.uidaho.edu/potatoes/>.

In some situations non-pathogenic fungi and bacteria can grow on the surface of the potato (figures 1–3). These saprophytic organisms are non-pathogenic, meaning they do not attack or

infect the tuber, and they cause no decay. These organisms merely reside on the surface of the skin.

The visual signs indicating growth of these organisms are patches of black, white, yellow, orange, or brown on the surface of the tuber. This growth is the mycelium, hyphae, or spores of the organism. Common non-pathogenic organisms present on potato tubers are *Aspergillus*, *Penicillium*, and *Pseudomonas*. The presence of this colored growth can detract from the overall quality of the potato, although it can be easily washed off.

## Factors that may promote superficial growth

Non-pathogenic organisms are ubiquitous in the soils where potatoes are grown. Therefore, they



Figure 1. White and yellow non-pathogenic growth on the surface of a potato tuber.



Figure 2. Superficial growth developing on the surface of a potato.



Figure 3. Black, white, and orange non-pathogenic growth on the surface of potatoes bulk piled in storage.

can be present on the surface of a potato after harvest. Typical storage conditions that may promote this non-pathogenic growth are the presence of free moisture, warm temperatures, and/or potatoes with small cuts, bruises, or skinned areas. These conditions are usually more prevalent at harvest or within the first month of storage than during the later holding period.

Cut or skinned areas provide moisture for growth to occur prior to suberization or wound healing. The bulk pile of freshly harvested and stacked potatoes also has the most variation in pulp temperatures during the storage filling process, and this may lead to areas of high moisture and temperature that promote superficial growth. Condensation observed periodically during the storage season can also promote superficial growth. Superficial growth often develops on tubers exposed to warmer, humid air such as at the top of a bulk pile. Potatoes deeper in the pile may not exhibit any superficial growth.

### Management practices to reduce the potential for superficial growth

- Avoid high pulp temperatures at harvest.
- Minimize the amount of soil adhering to the skin of the potato.
- Minimize skinning, bruising, or cutting tubers at harvest.
- Provide good airflow to recently harvested and stored potatoes.
- Avoid free moisture and condensation in storage and transit.
- Dry recently washed potatoes as soon as possible.

## Common organisms affecting potatoes

### Pathogenic organisms and diseases

Bacterial soft rot (caused primarily by *Pectobacterium carotovorum*)

Black dot (caused by *Colletotrichum coccodes*)

Fusarium dry rot (most commonly caused by *Fusarium sambucinum* and *F. coeruleum*)

Early blight (caused by *Alternaria solani*)

Late blight (caused by *Phytophthora infestans*)

Pink rot (caused by *Phytophthora erythroseptica*)

Pythium leak (most commonly caused by *Pythium ultimum*)

Rhizoctonia black scurf (caused by *Rhizoctonia solani*)

Silver scurf (caused by *Helminthosporium solani*)

### Non-pathogenic organisms

*Aspergillus*

*Penicillium*

*Pseudomonas*

**The authors**—Nora Olsen, Extension Potato Specialist, Kimberly Research & Extension Center, University of Idaho; Phillip Wharton, Potato Pathologist, Aberdeen Research & Extension Center, University of Idaho; Philip Nolte, Extension Seed Potato Specialist, Idaho Falls Research & Extension Center, University of Idaho