Pest e-alerts

Entomology and Plant Pathology, Oklahoma State University
127 Noble Research Center, Stillwater, OK74078
405.744.5527

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Vegetable Disease Update

John Damicone, Extension Plant Pathologist

The unexpected cool and rainy spring, and rainy early summer produced unusual conditions and interesting effects on vegetable production. Cool-season vegetables such as onions, potatoes, and lettuce generally fared very well and produced bumper crops in areas that did not receive flooding rains. In Stillwater we received 3.89" for April, 9.2" for May, and 3.18" for June. The excess moisture was favorable for disease development and some of the resulting diseases observed are listed below.

Potatoes: Wet soils caused delays in potato digging and favored the development of tuber rots. I observed Pythium leak in my garden this year for the first time. Several years ago Al Sutherland and I (yes Al was once a horticulturist!) conducted some tuber rot control trials in southwestern Oklahoma where we found three major tuber rot diseases. Unfortunately most of the books on potato diseases primarily cover northern production areas where potatoes mature when temperatures are cooling off. In Oklahoma the opposite is true. Potatoes mature here when temperatures are getting hot which leads to the appearance of problems in the field that normally occur in storage up north.

Pythium leak is an in-field rot that can quickly produce a soft mushy tuber within a few days under warm conditions. We have observed leak in both red and white potatoes although it appears to be most severe in reds. Symptoms first appear as a black, irregularly shaped, depressed area on the tuber, often around the stem (stolon) end of the tuber (Fig. 1). The external black decay advances quickly as it rots the entire tuber and produces a uniform black color (Fig. 2). Internally the decay produces a dark band which abruptly separates healthy and rotted areas (Fig. 3). In storage, the disease can quickly destroy entire lots of tubers.

Fig 1. Pythium leak of potato - early symptoms.

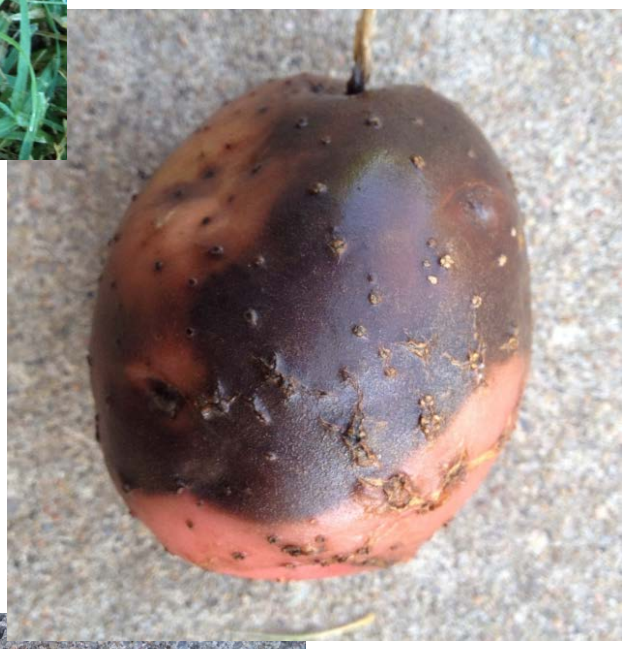

Fig 2. Pythium leak of potato - advanced symptoms.

Fig 3. Pythium leak of potato - internal soft watery rot.

The other tuber rots identified in Oklahoma include charcoal rot and Fusarium dry rot. These are also in-field rots in Oklahoma. Charcoal rot (*Macrophomina*) is similar to Pythium leak in that it can quickly decay potatoes and produce a soft watery rot when conditions are hot and wet. Externally it appears as a light-colored, soft area with a dark band at the leading edge of the decay (Fig. 4). Internally it produces a light-colored, wet and mealy rot with a light brown narrow band at leading edge of the decay (Fig. 5). Charcoal rot typically infects tubers at eyes and lenticels, particularly when they are enlarged from excessive soil moisture. Lenticels are the small bumps or pores on the surface of tubers that facilitate gas exchange. Fusarium dry rot produces small, black, and sunken spots around lenticels (Fig. 6). The rot is firm, slow to develop, and a white moldy growth eventually develops internally. Fusarium dry rot is a common storage rot in store-bought potatoes.

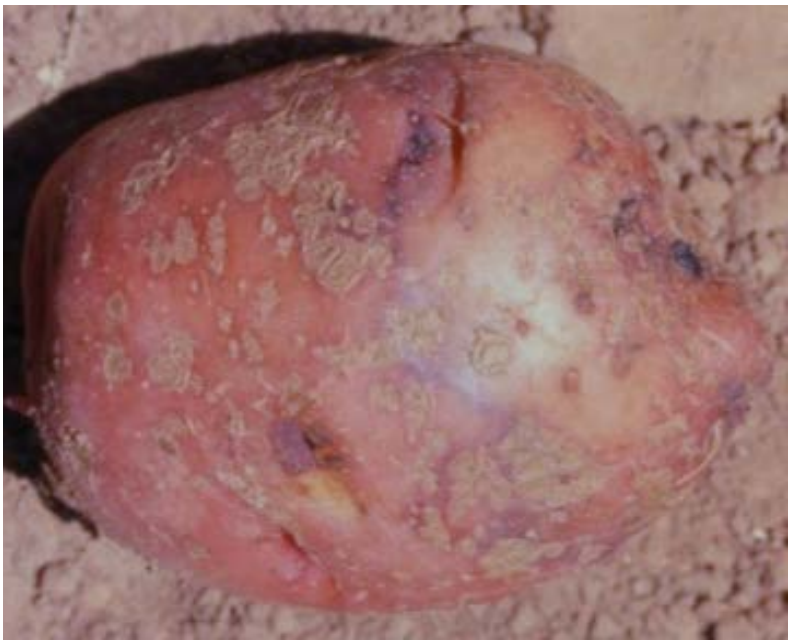

Fig 4. Charcoal rot of potato - light colored soft area on the upper left of the tuber.

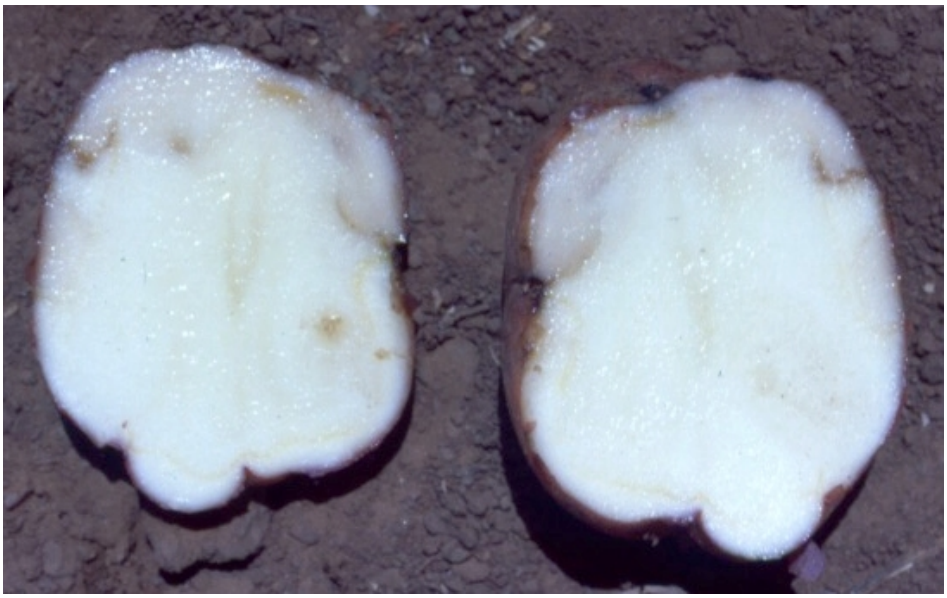

Fig 5. Charcoal rot of potato - internal soft watery rot.

Fig 6. Fusarium dry rot - small black circular spots around lenticels.

Control strategies for Pythium leak and other tuber decay diseases are limited. Most of the literature stresses reduced bruising during harvest, but since these diseases develop in field here, this recommendation is of little value. Management recommendations include planting early-maturing varieties and harvesting before soil temperatures get hot. Avoid delayed harvest once tubers are mature. If tubers must be washed, thoroughly dry them before storage. Storing potatoes in a cool location and in a container or bag with some ventilation will help.

Tomatoes: Aside from the typical foliar tomato diseases, anthracnose (*Colletotrichum* spp.) has been unusually severe this year. I typically see anthracnose develop on fruit left to ripen on old, mostly defoliated plants in late season. This year I have culled a significant number of tomatoes because of anthracnose. Anthracnose, also known as ripe rot, typically develops on ripening fruit from latent (symptomless) infections that occur during wet periods when the fruit is still green. Anthracnose causes circular, sunken spots on fruit (Fig. 7). A ring of black survival structures of the fungus (microsclerotia) usually develops in the center of the spots. Microsclerotia survive in the soil and they, or the spores produced by them, are splashed up on fruit during wet rainy weather or from overhead irrigation. Staking plants to keep them upright, mulching with organic matter to reduce soil splash onto fruit, and removing diseased fruit from the field helps reduce anthracnose. A fungicide spray program is also recommended to retain healthy foliage and to prevent fruit infection. Consult the OSU Extension Agent's Handbook for fungicides recommended to control anthracnose.

Fig 7. Anthracnose (ripe rot) of tomato.

Dr. Richard Grantham - Director, Plant Disease and Insect Diagnostic Laboratory

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