Silver Scurf Management: The Latest Information.

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Silver scurf of potatoes is a problem that seems to be steadily increasing in potato-producing areas all across the US. Losses associated with the disease can be substantial. Information from a University of Idaho survey of fresh packers indicated that this disease cost the Idaho industry over 8.5 million dollars in the 92-93 season, with some 2 million cwt. rejected for fresh pack use. A more recent survey puts the tab for 1994-95 at somewhere between 3 and 4 million. One major difficulty with silver scurf is that the disease is usually not visible until the crop has been stored for several months and, by the time the problem is seen, the spread of the disease can pretty extensive.

All segments of the potato industry are effected by this disease. Seed growers are concerned because the source of primary inoculum for the new disease cycle is seed-borne. Fresh packers may not be able to make grade because of the unattractive lesions on the surface of washed potatoes. Even processors can be effected by silver scurf because thick, tough scurf lesions can difficult to remove during peeling which leads to reduced recovery rates.

Symptoms.

The disease is caused by a fungus called Helminthosporium solani. The fungus infects and spreads in the periderm (skin) of the potato where it produces irregular silvery patches on the skin of the tuber that vary from pinhead size up to patches that cover most of the tuber surface. These lesions usually remain superficial with no internal damage to the tuber. However, severe symptoms, where the infected cells of the periderm and underlying cortex collapse and allow moisture loss, occur regularly. The fungus has traditionally been reported to be strictly seed-borne but researchers have recently determined that it may be able to survive for at least a limited time in the soil.

The scurf fungus moves from infected seed pieces to daughter tubers while the potatoes are still in the soil. Exactly when these infections take place is unknown but daughter tubers have shown evidence of the disease as early as 6 weeks after planting. Other work indicates that the disease spreads greatly during periderm maturation, just prior to digging.

This stage of the disease which occurs on tubers while they are still in the ground is referred to as the "primary infection" which results in "primary lesions." These lesions are the fairly thick and prominent patches that are usually more severe on the stem end of the tuber. Field infections where there are no visible symptoms also occur regularly.

The primary lesions and other field infections provide inoculum, in the form of fungal spores, for secondary spread of the fungus from infected to healthy potatoes within the storage facility. This cycle of infection leads to "secondary lesions" which are, individually, less severe than the primary lesions but may force a particular lot of potatoes out of grade by the weight of sheer numbers. The speed with which silver scurf spreads
and establishes inside the storage can be greatly influenced by storage management practices, including both curing and holding conditions.

Recent research indicates that the silver scurf fungus may be able to survive from the end of one storage season to the beginning of the next on materials such as wood, sheet metal, insulation (polyurethane) and even in soil from the cellar floor.

**Recommended Control Measures.**

1) Because it is believed that seed can be a significant source of silver scurf inoculum, it is important to plant certified seed. Careful attention to seed production practices can help reduce the potential for scurf development in the seed crop. Storing early generation seed lots separately from older generations can reduce the amount of spread from older into younger generation materials. Planting seed that does not have obvious signs of silver scurf may turn out to be an important method of disease reduction but remember that the disease may be present and not visible.

2) Do not plant potatoes immediately into fields that had silver scurf the previous year. We do not know for certain how long the fungus can survive in soil, but recent reports indicate that it may be able to survive on the debris of cereals and alfalfa. What effect this new finding will have on crop rotation recommendations is not known at this time.

3) The longer tubers remain in the soil after maturation, the more likely they are to become infected if the disease organism is present. Harvest tubers as soon after maturation as possible to limit the time the tubers may be exposed to the pathogen. If potatoes have visible signs of silver scurf, they may need to be utilized early before the disease has a chance to progress further.

4) In storage, avoid conditions that may lead to condensation or free moisture inside the storage. Before loading, storages should be cleaned and disinfected thoroughly. Provide adequate time for disinfecting, make sure to wet the storage surfaces well and close the storage doors for a day or two. Then open and dry out the storage before loading potatoes.

5) Monitor your stored crop frequently to see if a scurf problem is developing. Early marketing, while not the most desirable alternative, may at least allow the producer to get a decent price for his crop.

Research efforts are ongoing to obtain a more thorough understanding of silver scurf and how it can be more effectively managed. The recommendations contained in this article reflect the current state of knowledge regarding silver scurf but remember that there are still a number of details surrounding this disease that remain in doubt or are outright unknown. There are some seed piece treatments and perhaps even post-harvest fungicides that may be available in the near future. These could be very helpful in our ongoing battle with the silver scurf fungus.