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Potato Scab

Symptoms, Cause and Control

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Common scab of potatoes is caused by a fungus in the soil called *Streptomyces scabies*. L. O. Pratt in 1916 reported scab in the Jerome area on potatoes grown on new land cleared from sagebrush. It is difficult to say for sure that scab is present in a virgin soil but this report indicates it is. The scab disease is one of the reasons the Russet Burbank variety is currently grown in Idaho. The Idaho Rural suffered severely from scab while the Russet Burbank variety is somewhat resistant. Scab is, however, again becoming important to potato production in Idaho.

Symptoms

Common scab is generally characterized by corky areas on the surface of tubers, varying in size and shape. The color is grayish-white to dark tan. No true rot is associated with the scab injury. Common scab is sometimes confused with enlarged lenticles on Russet Burbank tubers. Figure 1 illustrates the symptoms on Russet Burbank potatoes.

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Figure 1. Common scab on Russet Burbank tubers.

Factors Affecting Scab Development

Many factors influence the development and the severity of scab. The conditions associated with scab are:

Plant residue: The presence of undecomposed plant residue when tubers are developing is favorable to a build-up of the scab organism. As soon as the plant residue is decomposed, the population decreases. In Idaho, the scab problem is sometimes multiplied by undecomposed straw or manure. In these cases the severity of scab decreases in the fields after the residue has decomposed.

Soil pH: Soil pH will have an effect on the scab population. The pH range in Idaho is favorable for scab development. Due to the buffering action of soil, it is not practical to lower the pH sufficiently to control scab. Applications of sulphur do not decrease the severity of scab in Idaho.

Soil Nutrients: Sometimes scab severity can be related to the lightening of the russet skin due to improper fertilizer balance. This could be due to applying excessive nitrogen in relation to the amount of phosphorus in the soil. Perhaps one could look at this from the standpoint of a lack of phosphorus. There is some thought the resistance of the Russet Burbank is broken by improper fertilizer balance.

Temperature and Moisture: Although scab develops in greater severity on tubers grown in soil temperatures of 70° F., it can attack tubers over the temperature range from 50° to 85° F. Scab generally develops more in relatively dry soils becoming less severe in soils of higher moisture content. Exceptions to this general statement have been pointed out by numerous investigators.

Crop Rotations: Scab may be more severe following crops that are hosts to the scab organism. Crops such as potatoes and sugar beets favor the development of scab. There is a possibility that mustard is another host that scab could build up on. Rotations involving such crops as rye and alfalfa, have been reported to reduce scab severity. The preponderance of evidence is that the length of time between potato crops is of as great or greater influence in reducing potato scab than is the particular crop grown in sequence. Rotations in which potatoes are separated by 3 to 5 years of non-susceptible crops provide rather satisfactory scab control in most areas.

Recommended Control Practices

Taking everything into account the following recommendations for scab control are made.

1. If a scab problem exists in a field, do not plant potatoes when there is likely to be undecomposed plant residue during the summer when potato tubers are developing.

2. Maintain a good nutrient balance and be careful not to apply excessive nitrogen, or potassium and have adequate phosphorus. To arrive at the proper fertilizer rates follow the University of Idaho fertilizer guide, Extension Bulletin 325.

3. Follow a crop rotation with non-susceptible crops between potato crops. These crops could be grains and legumes. The control of mustard and similar weeds in the rotation is essential. Grow potatoes once every 3 to 5 years.

4. Chemicals offer a possibility in scab control.

- a. **Soil chemicals.**—PCNB, pentachloronitrobenzene, and urea formaldehyde; have **not** been shown to be effective in the control of scab in Idaho.

- b. **Seed treatment.**—Beneficial effects in reducing scab by use of seed treatment have generally not been obtained in field trials. If one were planting in a field that is free of scab, the use of scab-free seed would be highly desirable. If such seed is not available, the precaution of planting seed treated with Semasan Bel would be advisable.

5. Varieties known to have resistance to scab are Russet Rural, Cayuga, Seneca, Ontario, Menominee, Yampa, Osage, Cherokee, Early Gen, Antiago, Onaway and Tawa. Somewhat resistant or moderate resistant varieties include Russet Burbank, Sebago, Russet Sebago, Pungo and Plymouth.