



Potato Scab or Common Scab: *Streptomyces scabies*

Introduction

Potato scab is caused by a soil-borne organism that is worldwide in distribution. The same organism also attacks many other root crops as well as the fleshy roots of weeds. It has been reported on beet, mangel, turnip, rutabaga, radish, carrot, salsify, and parsnip. Beets are especially susceptible when soil conditions are favorable for the disease.

Symptoms and Signs

Scab spots are more or less circular brown, roughened areas, with irregular margins. Sometimes the ridged portions are in broken concentric rings. The spots may be raised or warty in appearance, level with the surface, or somewhat sunken. Superficial russetting to deep pitting may occur. Many forms of animal life are attracted to this affected tissue so that scab spots may be further enlarged or deepened by white grubs, wireworms, millipedes, scab gnats, etc.

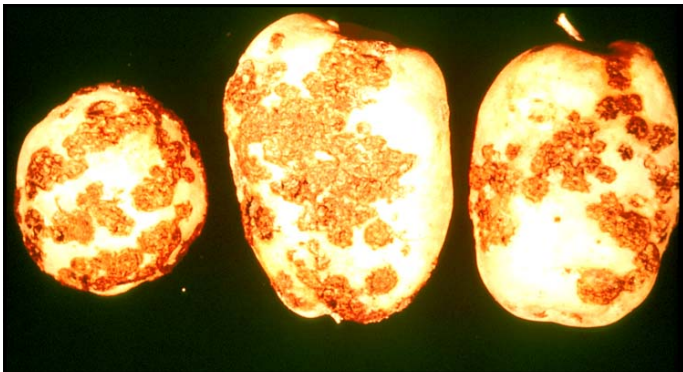


Figure 1: Symptoms of common scab on tubers.

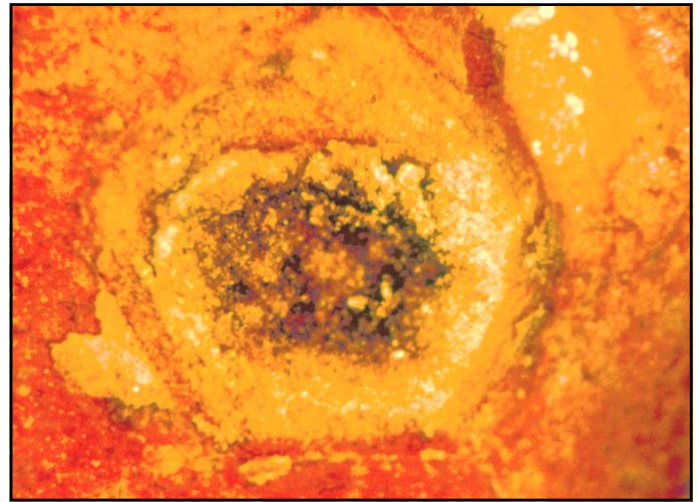


Figure 2: A close-up view of the scab

Disease Cycle

Scab begins when tubers start forming. Initially the spots may be so small that they are not noticed. As the tuber continues to grow, the areas of these reddish-brown spots also enlarge. An older tuber has too thick a protective layer on its surface to be invaded readily. In any thimbleful of soil there may occur thousands, or even millions, of individuals belonging to the genus *Streptomyces*. These are actinomycetes which have characteristics placing them between bacteria and fungi. Not all of the *Streptomyces* organisms recovered from the soil can cause scab on potatoes, but many of them can. Collectively these usually are grouped under the name *Streptomyces scabies*.

Streptomyces scabies can live on decomposing material in the soil and does not require a potato or root crop to remain alive. However, it does become more aggressive on any given crop, such as potatoes,

if the same crop is grown year after year without rotation. The organism infects the tuber by means of a tiny thread that pushes directly through the tender skin of the forming potato. It slowly continues to grow until the crop is harvested. The infected areas on the potato respond at once by laying down a corky layer. As each layer is invaded by the scab organism, new cork formation takes place until a mature scab spot is produced. Scab does not develop further after the potatoes are dug, but the organism remains alive all winter in storage.

Management Strategies

Management in the vegetable garden involves correcting the conditions that are favorable for the scab organism. Some of the important points to be considered are given below:

1. Rotations with other than root crops should be employed as the size of the garden permits. This way the buildup of aggressive scab strains can be avoided
2. Purchase certified potato seed pieces. Do not save tubers from the garden for use as seed. Seed treatment may help to prevent the introduction of the organism into relatively scab free soils, but it is not a replacement for using clean seed. There are no home garden pesticide products labeled for seed piece treatment against scab in New York. Consider purchasing pre-treated seed potatoes if scab has been a problem at your site.
3. Plant resistant varieties. If scab has been a problem before, test one of the following varieties under local conditions to determine whether it is suitable: 'Belchip', 'Centennial Russet', 'Keuka Gold'*,

'Norchip', 'Norgold Russet', 'Norland', 'Onaway', 'Pike'*, 'Russet Burbank', 'Salem', or 'Superior'.

4. In a garden where irrigation is available, scab can be reduced by keeping the soil reasonably wet for several weeks while the young tubers are beginning to form.

5. Great care should be taken to avoid the application of fertilizer or other materials that tend to make the soil highly alkaline. At the head of the list are lime, ashes, and fresh barnyard manure. Poultry manure is especially bad. The fertilizer should not contain nitrate of soda, calcium cyanamide, or other alkaline producing chemicals.

6. One of the best methods for combating scab is the use of acid producing fertilizers, especially those that contain liberal amounts of sulfate of ammonia. If this practice is repeated for three or four successive years, the soil will finally become acid enough (pH 5.2) to keep the scab organism from developing. The danger is that the soil may become too acid for other crops in the rotation or even for potatoes. If an annual test is made of the soil acidity, this danger can be avoided.

Alternatively, test the pH of the soil and apply elemental sulfur to lower the soil pH to 5.2. Sulfur is usually slow in action so it may be more effective if it is applied a year ahead of the potato crop. Continue testing soil pH each year, particularly if acidifying fertilizers are also being used.

*May have internal necrosis when grown in susceptible production areas.

Created, KLS, 8/99; Updated, SLJ 1/15

READ THE LABEL BEFORE APPLYING ANY PESTICIDE! Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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