Potato common scab in Michigan.

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Last year in Michigan the incidence and severity of common scab was worse than had been previously reported for several years. Several varieties were badly affected. In this short article some of the possible reasons for this occurrence will be described. The common scab pathogen (*Streptomyces scabies*) causes a range of symptoms on the surface of potato tubers including superficial russet lesions, pitted lesions or most commonly erumpent lesions which have a corky appearance and are raised above the surface of the tuber skin. Pitted lesions can be smooth or may also have a rough appearance. Potato scab is the most economically important disease caused by *Streptomyces* species and the fourth most problematical in potatoes.

Scab is normally introduced into fields on infected seed potatoes, however once in the soil the micro-organism is persistent and survives indefinitely. Scab can survive on soil on plant trash and is favored in fields fertilized with animal manure. It can also be distributed in soil water, wind and on farm equipment. Scab can infect root crops such as carrot, beets, turnip etc. The pathogen survives best in soils at pH 5.5 - 7.5. Short rotations between susceptible crops increases the pathogen population and severity of the disease. Potato tubers are most susceptible to infection during early tuber development. The tubers are infected through stomata and immature lenticels which have yet to form a protective barrier. Mature tubers with well developed skin are not susceptible to infection. However, infections established when the tubers are immature expand as the tubers enlarge and lesions increase in severity over the season. The disease favors warm, dry soil at the time of tuber infection. Wet, well irrigated soils inhibit scab. Sandy, well-drained coarse soils tend to favor scab and therefore it is essential that sandy soils are kept moist especially during early tuber development.

Scab-free seed should be planted in fields known not to have a history of scab. No seed treatments tested at MSU in scab-infested plots provided any significant control of scab incidence or severity on daughter tubers (Table 1), although a foliar application of Quadris 80 WDG (Zeneca) applied in 25 gal water/A when the plants were about 6" tall shortly after emergence tended to decrease infection. A 3 - 4 year rotation with non-susceptible crops such as alfalfa, soybeans, cereals can reduce the scab population. Root crops should be avoided in rotations. Some potato varieties are moderately resistant to scab e.g. Pike, Atlantic, Onaway and Superior and should be used where the risk of scab infection is high. Soil pH should be maintained around pH5.5 in fields where common scab is prevalent for example by using applications of sulfur or acidic fertilizers e.g. ammonium sulfate.

By far, the most important management technique is maintenance of soil water capacity to a minimum of 80% during early tuber development from about 10 days after full crop emergence for a further 8 weeks. Tuber initiation begins early during canopy development and continues for several weeks, therefore immature tubers are present in the soil for a long time after initial tuber set and are susceptible to infection by scab.

Table 1. Effect of fungicides applied as potato seed treatments or as an early foliar application on the incidence and severity of common scab on daughter tubers in potatoes (cv. Snowden), MSU trial 1998.

Seed Treatment and Rate of product lbs/cwt of seed or foliar application rate of product/A	Scab on daughter tubers			
	Incidence 140 dah [1] (%)		Severity 140 dah [2] (%)	
Untreated	100	a [3]	9.95	a
Maxim 0.5D 0.5 lb	100	a	9.67	a
Tops MZ 8.5D 1.0 lb	100	a	8.60	a
Tops 5 5D 0.5 lb	100	a	9.33	a
Quadris 80WDG 0.013 lb	90	a	8.00	a
Quadris 80WDG 0.063 lb	90	a	5.85	a

[1] Percent of tubers with common scab lesions, 140 days after harvest (100 tubers/replicate).

[2] Percent surface area of tubers covered by common scab lesions, 140 days after harvest (100 tubers/replicate).

[3] Numbers followed by same letter are not significantly different at p = 0.05 (Tukey).