PennState Extension

Apple Scab in the Home Fruit Garden

Apple scab is Pennsylvania's most important apple disease, attacking wild and cultivated apple and crabapple. Early season disease management is primarily directed at controlling apple scab.

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Symptoms

The first infections often occur on the leaves surrounding flower buds. Dull, olive-green areas visible on the undersides of leaves are the first evidence of the disease. As the lesions (infected areas) become older, they assume a definite outline as olive-green or brown circular spots. Leaves are susceptible to infection for about 5 days after they unfold. Severe early leaf infection can result in dwarfed, twisted leaves, which might drop later in the season.

Early infection can occur on the calyx (blossom end of the fruit) or on the pedicel (fruit stem). Severe pedicel infection results in fruit drop. Fruit can become infected at any time in its development. Typical fruit lesions are distinct, almost circular, rough-surfaced, olive-green spots. Heavily infected fruits are usually misshapen and might crack and drop prematurely. When leaf infection is active just before harvest, the fruit might become infected. These spots do not show at harvest time, but develop slowly while the apples are in storage. This phase of apple scab disease is termed storage scab.

Disease Cycle

Apple scab is caused by the fungus *Venturia inaequalis*, which overwinters in infected leaves that have fallen to the ground. Fruiting bodies are produced within the dead leaf tissue. As spring approaches, these begin to mature and produce spores (ascospores) that are discharged into air currents and carried to developing apple buds. The fruiting bodies in the fallen leaves must be wet for the spores to discharge. The ascospores are not all discharged with the first spring rains since they mature over a 4- to 6-week period.

If the spores remain wet for a few hours after landing on wet apple buds, leaves, or fruit, they germinate and grow into the apple tissue. The time required for germination and penetration depends on the temperature and the presence of a wet surface. After the fungus has penetrated, it continues to grow beneath the cuticle. After 8 to 18 days (development occurs most rapidly at high temperatures), a visible scab lesion is produced. On its surface appear more spores (conidia), which are easily dislodged when the lesions are wet. The spores are splashed around by rain and blown by wind to new leaf and fruit surfaces within the tree. They germinate on wet surfaces, infect the tissue, and produce a new lesion. In this manner, several secondary infection cycles can occur in the course of a growing season.

Disease Management

Scab infections may be prevented by applying fungicides at regular intervals throughout the growing season. The objective is to provide a protective coating that will inactivate any spores landing on the fruit and foliage. It is critical to control scab early in the season, from bud emergence through the second spray after blossom petals fall (second cover period). If scab infection can be prevented during the time all the ascospores are discharged from the fruiting bodies in the fallen leaves, the disease cycle is broken and no further source of infection remains for the rest of the season. If the cycle is not controlled, however, and leaf and fruit infection do occur, then conidia are produced on these lesions and scab will remain a constant threat all season whenever wet weather occurs.

The proper selection of varieties can help reduce the need to control this disease. Scab-resistant apple varieties are available.