

Scab of Apple and Flowering Crabapple



Figure 1. Apple scab on leaves.



Figure 2. Apple scab on fruit.

Disease

Scab is one of the most common and serious diseases of apple and flowering crabapple in Kansas (and around the world). The disease causes premature defoliation and a reduction in the number and quality of flowers the year following defoliation, and can predispose trees to winter injury and other diseases. Scab first appears in early spring as roughly circular, velvety, olive-green spots on both the upper and lower surfaces of leaves. The spots eventually turn dark-green to brown and develop a rough texture. Some leaf distortion may accompany infection of expanding foliage. Numerous leaf or petiole infections will cause leaf yellowing and premature defoliation.

The fungus also may attack the fruit at any stage of development. Early infection results in blossom blight and dropping of young fruit. Later infections produce dark-green to black, circular lesions on the fruit. These rough, scaly spots cause surface blemishes to the fruit, but do not extend deeply into the flesh.

Cause

The scab fungus (*Venturia inaequalis*) overwinters as immature fruiting structures in partially decayed leaves on the orchard floor. During winter, the black fruiting structures of the fungus mature and begin to release spores (ascospores) in the spring.

In Kansas, primary spore release usually begins in early to mid-April and continues for a period of five to nine weeks. Windblown spores are deposited on expanding leaves where they germinate and penetrate the leaf surface. Germination and infection of the plant tissues require that the leaf surface remains wet for a period of time, the length of which varies according to the ambient temperature. Symptoms normally develop 9 to 17 days after infection; at this time the fungus begins to produce secondary spores (conidia) which can re-infect apple leaves or fruit throughout the summer during favorable weather.

Control

1) Resistant varieties (cultivars)

The best means of avoiding scab is to plant resistant cultivars. Several cultivars of flowering crab are available with good resistance to scab as well as fireblight, and cedar-apple rust. Disease resistance, aesthetic quality, and adaptability to Kansas conditions should all be considered before choosing a flowering crab for planting. A long list of flowering crabapple varieties with information on their disease susceptibility is available here:

<http://www.ksre.ksu.edu/library/hort2/mf875.pdf>

Most fruiting apple cultivars are moderately to highly susceptible to scab. Recently, several new

apple cultivars have been released with excellent resistance to scab and to some other diseases, and should be considered before planting to reduce the number of pesticide applications. The following websites provide lists of varietal susceptibility to apple scab and other diseases:

“Midwest Tree Fruit Pest Management Handbook”:

http://www.ca.uky.edu/agc/pubs/id/id93/ch_1.pdf

(see table 2)

And, “Controlling Diseases and Insects in Home Fruit Plantings”: (Ohio State Bulletin 780) see Table 9 here:

<http://ohioline.osu.edu/b780/pdf/Table9.pdf>

and Table 10 here:

<http://ohioline.osu.edu/b780/pdf/Table10.pdf>

2) Sanitation

Since the fungus overwinters in fallen leaves, raking and removing leaf debris in the fall may partially control the disease. This will not give complete control, since even a few leaves missed during sanitation can start the infection process in the spring. Obviously this is most practical in a home planting with very few trees to deal with.

3) Fungicides

Fungicides are available for both flowering crabapples and fruiting apples. Keep in mind that products labeled for flowering crabs may not be labeled for fruiting apples, and vice-versa. If fungicides are used, it is important to use appropriate timing. The most critical spray period is in the spring when primary spores are being released from leaf debris. If this initial infection process is prevented, fewer sprays will be needed in late spring or early summer. In most cases, the first spray should be applied just before bloom. One to two additional applications are usually necessary for adequate control during most springs. For fruiting apples (compared to flowering crabs) a slightly longer period of protection may be needed to protect the developing fruit. Read the labels for information on timing.

Commercial fruit growers should consult the annually-revised *Midwest Tree Fruit Spray Guide* for more information on fungicides. Contact your local K-State Research and Extension office or the K-State Plant Disease Clinic (email clinic@ksu.edu) for ordering information. Or, access the guide at the following website:

<http://www.extension.iastate.edu/Publications/PM1282.pdf>