Apple Scab in the Home Fruit Planting

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The most common and damaging disease of apple trees in Indiana is apple scab. Most apple varieties are susceptible to this disease, including flowering crabapples (see BP-2-16). Apple trees severely infected with scab can be completely defoliated and the fruits reduced to distorted, blemished "nubbins." Through the proper use of resistant varieties, cultural control and/or chemical control, apple scab can be prevented, insuring you of a healthy, vigorous tree with fresh, bountiful fruit.

Symptoms

Leaves: Apple scab first appears on young leaves in early spring. Spores of the fungus infect leaves, causing scab lesions or dark lesions with feathery margins are typical leaf symptoms of scab.

Fruit infected by apple scab show circular, dark lesions and are often quite deformed.
spots to form. The scab lesions are often roughly circular in shape, or radiate outward from and along leaf veins. They might be as small as a pin head or up to 1/2 inch in diameter. The lesions are initially light olive-green in color but will eventually turn quite dark, with a velvety appearance. The margins of the spots are not sharply defined; rather they have a fuzzy or feathery appearance and radiate outward into healthy leaf tissue. The lesions will first appear on the underside of the leaves since this is the side which is initially exposed. Later the lesions will occur on both the underside and top surface of the leaf, often being in proximity to the leaf veins. Leaves severely infected will eventually yellow and fall prematurely.

Fruit: As the name apple scab implies, fruit lesions are scabby in appearance. The lesions become dark and resemble those on the leaves. Often they have cracks running through or from them. The fruit itself is often quite deformed and small.

Cause and Disease Cycle

Apple scab is caused by the fungus Venturia inaequalis. This fungus is widespread throughout Indiana and surrounding states. For infection to occur, water is required. Thus, apple scab is most severe in those years with heavy spring rainfall. The time required for infection to take place varies with the air temperature. Optimum temperatures for scab infection are 59 to 76 degrees F; at this temperature range and with continuous wet foliage, primary infection can occur in 9 hours. At 54 to 58 degrees F infection time is extended to 12 hours. At low temperatures (32 to 40 degrees F) 48 hours of continuous leaf wetness are required before infection results. If the weather is dry throughout spring and early summer, there is little scab.

The fungus lives throughout the winter inside infected leaves lying on the ground. In early spring millions of spores are produced within the apple leaves. These tiny spores are shot into the air when leaves become wet, carried aloft by wind to newly developing apple leaves, and penetrate the leaf cuticle resulting in infection. Once infection has occurred, a different kind of spore is produced; these "secondary" or "summer" spores are capable of causing further infections throughout summer and early fall. This cycle repeats itself annually.

Control

1. Resistance: The best and easiest way to control apple scab is to purchase resistant apple varieties. This will eliminate the need for cultural or chemical control of apple scab. Two new apple varieties have recently been released that are scab-resistant and produce excellent quality fruit. Named "Prima" and "Priscilla," they are ideal for the backyard fruit planting; we highly recommend them.

If you desire other apple varieties, remember that McIntosh, Cortland, Red Delicious and Rome are the worst scabbers; Turley, Yellow Transparent and Duchess less so; and Grimes, Golden Delicious and Jonathan least susceptible. However, all varieties can be severely damaged (except Prima and Priscilla) during extreme scab years.

2. Cultural Control: As noted, the fungus lives through the winter within infected leaves on the ground. It is therefore helpful to rake and destroy all fallen leaves. Thoroughly clean-up leaves in the fall before they become brittle and break up into tiny fragments that are difficult, if not impossible, to rake. It would also be helpful to suggest (as tactfully as possible) to neighbors that they, too, dispose of their fallen apple or crabapple leaves. Fences do not stop apple scab spores from being blown into your yard and tree.
3. Chemical Control: Fungicides, if applied at the proper time, in the proper amount and in the proper way, will prevent apple scab infection (see BP-3-1). The most critical time for application of fungicidal sprays is in early spring when rainy weather occurs. Apply the first spray when green tissue first appears from the opening leaf and flower buds, and continue to spray on a 7 to 14-day schedule (7 days during rainy weather, 14 days if little rain) until dry weather persists. Timely spraying of fungicides during April, May and June will greatly lessen the degree of apple scab infection. Further sprays are required in mid to late-summer if rainy weather occurs. Fungicides effective in controlling apple scab are listed below.

a) Benomyl (sold as Benlate 50% WP (WP = wettable powder) etc.): a new systemic fungicide, rather expensive per pound but can be used at low rate. Very effective against apple scab and powdery mildew. Does not control rust diseases.

b) Captan (sold as Orthocide 50W, Captan 50W, etc.): an effective and reliable fungicide. Good against apple scab and summer leaf and fruit spotting diseases.

c) Dione (sold as Cyprex 65W): gives very good control against apple scab.

d) Mancozeb (sold as Dikar, Dithane M-45, Manzate 200, etc.): gives control of apple scab, rust diseases and summer leaf and fruit spotting diseases.

e) Maneb (sold as Manzate, Dithane M-22, etc.): provides control for same diseases as Mancozeb but not as effective.

f) General purpose garden sprays (sold under various trade names): general purpose formulations, which contain any one of the above materials, may also be used.

READ THE CONTAINER LABEL FULLY AND FOLLOW ALL DIRECTIONS AND PRECAUTIONS

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