# Apple Scab *Venturia inaequalis*

## Introduction

Apple scab is a serious disease of apples and crabapples. Repeated spring and summer defoliation results in fewer flowers the next spring and overall weakening of the tree. For apple trees, apple scab can greatly reduce yield through repeated defoliation and unsalable fruit.

## Host Plants

- Apple
- Crabapple
- Hawthorn
- Mountain ash

## Pathogen and Disease Cycle

Apple scab is caused by the fungus *Venturia inaequalis*. There are two stages of this disease cycle: the primary infection and the secondary infection.

**Primary infection**

The fungus overwinters on fallen infected leaves. In the spring during the rainy season, fungal spores are released from the infected leaves that remain from the previous year and are carried by the wind to newly emerging leaves and fruits of healthy trees.

**Secondary infection**

Once primary infection occurs, secondary spores (conidia) are formed, allowing a tree to continually reinfect itself or neighboring trees as long as environmental conditions are favorable. The disease progresses rapidly and causes severe infections if plants remain continuously wet for at least a six-hour period with temperatures around 65 to 75 degrees F. The warmer the temperature, the less time the leaf must remain wet continuously for infection to occur.

## Monitoring

Watch for initial leaf symptoms during the pre-bloom period. Examine the upper and lower leaf surfaces, in particular leaf veins, as this area will retain moisture longer, meeting the moisture requirements for spore germination faster than other areas of the leaf. Be sure to note durations of wet periods and average temperatures when fungal spores are produced in early spring and compare to charts for spore germination (see UK PPA-24) to anticipate infection periods.

# Symptoms

**Leaves**

Infection first appears as olive green spots with fuzzy margins on both sides of infected leaves. As the disease progresses, the spots develop a more prominent outline and become black and velvety. Leaves will ultimately turn yellow and drop prematurely.

**Fruit**

Fruit infection symptoms are similar to those of leaves. Lesions on fruit turn dark brown to black. As the fruit develops, lesions will have a "scabby" appearance and will crack as fruit grows larger. Severe infections while fruit is small can cause deformity from uneven growth.

# Integrated Pest Management

**Cultural Control**

Plant resistant apple cultivars such as Enterprise, Freedom, Gold Rush, Jonafree, Liberty, Macfree, Nova Easy, Prima, Priscilla, Redfree, Sir Prize and William's Pride. Plant resistant crabapple cultivars (see J. Hartman publication PPA-24 below). Prune trees to allow better air penetration, which will help keep plants from staying moist continuously. Dispose of fallen leaves in autumn.

**Chemical Control**

Please refer to http://eppserver.ag.utk.edu/redbook/sections/trees_flowers.htm for the most up-to-date recommendations.

# Resources


Photo credits: Steve Bost and Alan Windham, University of Tennessee

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