Apple Scab of Flowering Crabapples

Flowering crabapples add color and beauty to many home landscapes in Indiana. However, each year numerous flowering crabapples become diseased, resulting in yellow leaves and defoliation by early summer. The cause of this problem is a fungus disease known as apple scab. The same disease is also a common problem on eating apples, refer to BP-1 (Apple Scab in the Home Fruit Planting). With the use of resistant cultivars, or with a combination of cultural and chemical controls, apple scab can be minimized, providing a tree that continues to add beauty to the home landscape through summer and fall.

Symptoms

Brown to olive-green, roughly circular, fuzzy spots often originate along the veins of the leaves. In time, spots become black and velvety and develop fringed margins. Finally, leaves yellow and drop. Very susceptible cultivars may show a very rapid blackening and curling of leaf tissue. In a "bad" scab year it is not unusual for trees to suffer near complete defoliation by the end of June. Small, round, dark areas that become corky frequently appear on fruits.

Figure 1 - The final stage–leaf yellowing.

Cause

Apple scab is caused by the fungus *Venturia inaequalis*. The fungus lives through the winter within infected leaves. In early spring, spores of the fungus are shot into the air when leaves become wet; spores are then carried by wind to the newly developing apple leaves and cause leaf and/or fruit infection. Once infection has occurred, a different kind of spore is produced; these "summer" spores are capable of causing further infections throughout summer and early fall. This cycle repeats itself annually.

Remedies for Apple Scab

Resistance:

Resistance is the best, and most fool-proof, means of managing scab of flowering crabapples. Many desirable cultivars of resistant flowering crabapples are available; see Table 1 for a listing of cultivars and their scab susceptibility. Cultivars are grouped into classes to help nurserymen and homeowners choose those crabapples that are less prone to apple scab. Cultivars in Class III are not recommended for future planting because of their extreme susceptibility to apple scab. Cultivars in both Classes I and II have sufficient resistance to be recommended for future planting. Resistance to Japanese beetle should also be considered when selecting crabapple cultivars; refer to ID-217 (Crabapples Resistant to Apple Scab and Japanese Beetle in Indiana).

Cultural Practices:

Since fallen leaves harbor the scab fungus, rake and destroy them before they become brittle and break into tiny fragments that are difficult, if not impossible, to rake. Prune crabapples in late winter to maintain an "open" tree. A well-pruned tree allows better air circulation, faster drying conditions, and provides for better penetration of spray materials.

Chemical Practices:

Crabapples that are susceptible to apple scab need to be sprayed each year on a regular schedule to prevent infection. The most critical time to apply fungicides is spring (April and May). Generally a minimum of 3 to 4 sprays are required for adequate control of apple scab.

"The secret to good scab control is the timely application of fungicides during April and May."

Table 1. Classes of crabapple cultivars based on their resistance to apple scab.

Class I (High Resistance)	**Class II** (Moderate Resistance)	**Class III** (High Susceptibility)
Ann E.	Canary	Adams
Basakatong	Candymint Sargent	Brandywine
Bob White	Centurion	Candied Apple
Jack	David	Indian Magic
Japanese Flowering	Donald Wyman	Indian Summer
Louisa	Doubloons	Profusion
Ormiston Roy	Harvest Gold	Robinson
Prairie Maid	Jewelberry	Snowdrift
Prairifire	Liset	Velvet Pillar
Redbud	Madonna*	White Candle
Red Jewel	Mary Potter	White Cascade
Sargent	Molten Lava	
Silver Moon*	Selkirk	
Sinai Fire	Sentinel	
Sugar Tyme	Silver Drift	
Tea		
White Angel		

** Not recommended for planting because of susceptibility to fire blight.*

Figure 2 - Apple scab fruit symptoms.

Crabapples should be sprayed on a regular schedule starting just as flower buds begin to show pink - BEFORE BLOOM ! Continue spraying on a 7-to-10 day schedule (7 days during wet weather, 10 days if dry) until dry weather prevails.

NOTE: Fungicides act as a protective coat of "paint" on the leaf surface; where possible, apply fungicides just before a prolonged wet period occurs, not after.

Fungicides effective in controlling apple scab include: **captan**, sold as Captan and as primary fungicide in many general-purpose garden pesticides; **chlorothalonil**, sold as Daconil 2787, Fung-onil., etc.; **thiophanate-methyl**, sold as Halt, Cleary's 3336, Domain, Fungo, etc.; **myclobutanil**, sold as Immunox; **propiconazole**, sold as Banner MAXX; and **fenarimol**, sold as Rubigan. Not all of these chemicals will be readily available to homeowners; some are primarily for use by commercial nursery growers and landscape professionals. Fungicides vary in their formulation and percent active ingredient. Follow all label directions regarding amounts of pesticide to use, methods of application, and safety warnings. Fungicides are not harmful to honeybees and may be applied during bloom.

There are also a number of specially formulated, general purpose garden pesticides that contain the above listed fungicides and one or more insecticides, such as Captan Garden Spray, Fruit Guard, Liquid Fruit Tree Spray, etc. Check the label of such products to be sure they contain one of the recommended fungicides; also, if you use a general purpose pesticide containing an insecticide, DO NOT spray during bloom; insecticides are toxic to honeybees.

References to products in this publication are not intended to be an endorsement to the exclusion of others which may be similar. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

Figure 3 - Early leaf symptoms. Olive green, circular, fuzzy spots appear in early spring.

The first and most important step before managing a tree disease is to accurately diagnose the problem. With an inaccurate diagnosis, more harm than good could be done, not to mention the wasting of both time and money.

This publication is just one of several available online from Purdue Extension that addresses diseases found on landscape trees in Indiana. If your tree does not have symptoms similar to those described in this publication, please check the others.

Also, for more detailed photographs of disease symptoms, consider purchasing Common Tree Diseases of Indiana (BP-63). It presents information about the six most common tree diseases seen in Indiana. It is available from the Purdue Extension Media Distribution Center. The publication is $5 and can be ordered by calling 1-888-EXT-INFO.

If you are still in doubt as to the cause of the problem, consult a professional such as the Extension Educators at your local Purdue University Cooperative Extension Service office or Purdue University's Plant Pest and Diagnostic Laboratory (P&PDL).

To submit a plant sample to the P&PDL for diagnosis, obtain a sample submission form from your local Purdue Extension office, from the P&PDL office (1-888-EXT-INFO), or from the P&PDL Web page www.ppdl.purdue.edu/. Detailed instructions for submitting most types of samples are included on the back of the forms.

Submit a sample that is representative of the problem and shows the varying degrees of symptoms. Send several branches (even large ones) showing the symptoms and a detailed description of the problem and other useful information about the site, the age of the tree or shrub, and the date of planting. Photographs are very helpful.

Send the sample and submission form by first-class or overnight mail early in the week to:

Plant & Pest Diagnostic Laboratory
Purdue University
1155 LSPS
West Lafayette, IN 47907-1155

REVISED 3/02

1-888-EXT-INFO