

## **APPLE SCAB ON CRABAPPLES**

Apple scab is one of the more serious diseases of ornamental crabapples. It is caused by the fungus *Venturia inaequalis*. Apple scab mainly affects members of the rose family, including nearly all commercial cultivars of apple (*Malus* spp.), crabapple (*Malus* spp.), hawthorn (*Crataegus* spp.), mountain-ash (*Sorbus* spp.), cotoneaster (*Cotoneaster* spp.), firethorn (*Pyracantha* spp.), and common pear (*Pyrus* spp.).

### **SYMPTOMS**

Apple scab can be observed on leaves, blossoms, fruit, and, less frequently, on young succulent shoots. The most obvious symptoms occur on leaves and fruit in the spring and summer, and look like small velvety brown to olive-green spots that enlarge and darken to become more or less circular. Lesions are superficial with feathery, indistinct margins. When infections are numerous, young leaves become curled and distorted. Severely infected leaves and fruit fall prematurely. Scab lesions on remaining fruit and twigs become corky, cracked, and rough. Symptoms on mountain-ash and other hosts are similar to those on crabapple, with emphasis on foliar lesions and premature leaf fall.

### **CONDITIONS FAVORING DISEASE**

Apple scab is most severe during spring and early summer when the humidity is high and the temperature is moderate. Overwintering fungal spores (ascospores) are produced in the diseased leaves on the ground. In most years, the first fungal spores (primary inoculum) mature and are capable of causing infections in the spring at about the time of budbreak (leaf expansion). Fungal spores are expelled into the air following rainfall and continue to be discharged over a period of 1-3 months. The peak period of spore dispersal often occurs near the end of bloom (pink to full-bloom stages). Whether infection occurs or not depends on the period of wetness and the temperature. Fewer hours of wetness are required for infection at high temperatures than at low. For example, at 43° F, a 25-hour period of wetness is required for infection; whereas only a 9-hour wetness period is needed between 61° and 75° F. The severity of disease increases with the duration of wetting. According to Mill's Chart (W.D. Mills, Cornell University), 9-14 hours of wetness are needed for initial infection to occur in the typical northern Illinois spring temperature range of 50-60° F.

Once the fungus has become established on the host, it produces secondary spores (conidia) which help to re-infect new leaves throughout the summer. Conidia are disseminated by splashing rain or irrigation and wind to new leaf or fruit surfaces, and give rise to new lesions. Several "secondary" cycles may occur during the growing season if wet weather prevails during the summer.

## CONTROL

**Plant Resistance** The best way to prevent apple scab is to plant resistant crabapples. Many species, cultivars, and varieties of *Malus* are resistant to the scab fungus. Some crabapples especially resistant to apple scab include:

*M.* 'Adirondack' *M.* 'Molazam' (Molten Lava) *M. baccata* 'Jackii' *M.* 'Prairifire' *M.* 'Beverly' *M.* 'Red Jewel' *M.* 'Dolgo' *M.* 'Sutyram' (Sugar Tyme) *M.* 'Donald Wyman' *M.* 'White Angel' *M.* 'Mary Potter' *M.* 'Zumi Wooster'

The Morton Arboretum publication *Crabapples for the Home Landscape* provides information on selecting crabapples.

## Cultural

The apple scab fungus overwinters on fallen leaves and infected twigs so collecting and removing or composting these leaves and twigs will reduce the source of infection. Sanitation practices, such as leaf litter removal and pruning, should be done in the fall or winter before bud break occurs. Earthworms and litterdecomposing microorganisms degrade fallen leaves and help reduce the overwintering population of the scab fungus. Natural leaf decomposition can be accelerated by composting leaves (piles must be mixed regularly and reach temperatures of at least 120o F throughout) and applying nitrogen fertilizer (e.g., urea) to the leaves in the fall.

## Chemical

Fungicide control programs for scab should be integrated with sanitation and other cultural management practices. Apple scab can be effectively managed with fungicides by controlling primary infections. It is important that sprays are applied according to plant development, with the first spray at bud swell and additional sprays at 10-to-14-day intervals. The number of fungicide spray applications required varies with many factors, including weather conditions (rainfall), the susceptibility of the plant, the rate of plant growth development, the fungicide used, and the amount of fungal inoculum present.

READ LABEL INSTRUCTIONS ON CONTAINER FOR DILUTION RATES AND METHODS OF APPLICATION

- Chlorothalonil (Daconil)
- Mancozeb (many products)
- Thiophanate-methyl (many products)

Refer to the Illinois Urban Pest Management Handbook (University of Illinois Cooperative Extension Service) for a complete listing of chemical recommendations. Use pesticides safely and wisely; read and follow label directions

The pesticide information presented in this publication is current with federal and state regulations. The user is responsible for determining that the intended use is consistent with the label of the product being used. The information given here is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement made by The Morton Arboretum.