

Pear Scab

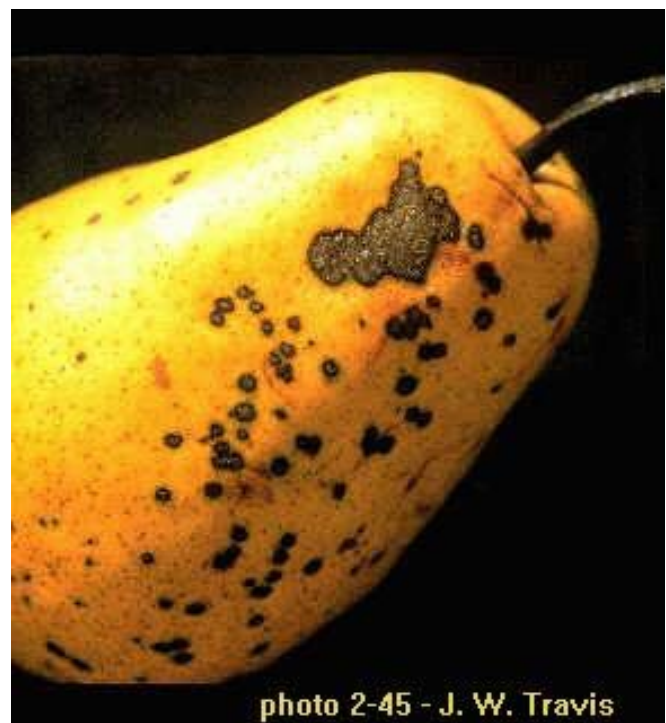
Venturia pirina

I. Introduction: Pear scab is an economically important disease throughout the world and can cause serious losses on susceptible cultivars. The disease is more of a problem in European countries than in North America, and is especially of major concern in Japan. Sometimes called black spot, pear scab resembles apple scab (*Venturia inaequalis*) in nearly all respects, and is caused by the closely related fungus, *V. pirina*. Pear cultivars differ in susceptibility to scab; however, cultivars resistant in one region of the country may not be resistant in another region.

II. Symptoms: Symptoms of pear scab are very similar to apple scab. Lesions on leaves and petioles begin as round, brownish spots that eventually become velvety in appearance. Within these lesions conidia are produced. Later in the season, small spots can be observed on the lower surface of the leaves. These are usually the result of late spring or early summer infections. Leaf infection of pear is not as common as apple scab on apple leaves.

III. Disease Cycle: Scab lesions on fruit occur on the calyx end and eventually on the sides of the fruit (photo 2-45). As these lesions enlarge, they become dark brown and form large black areas as they coalesce. Lesions on immature fruit are small, circular, velvety spots. Darker, pinpoint spots develop as the fruit matures. Infected fruit often become irregular in shape.

Unlike apple scab, twig infections are common with pear scab. Early in the growing season, lesions on young shoots appear as brown, velvety spots. Later, these lesions become corky, canker-like areas. The following spring,



pustules will develop within these overwintered lesions. These pustules produce spores (conidia) that perpetuate the spread of the disease.

The fungus overwinters in leaves on the ground and also as mycelium in infected twigs. Infection of pear foliage and fruit occurs under conditions similar to those required for infection of apple by the apple scab fungus. Ascospores are the major source of primary inoculum. Infection occurs in the spring around the green-tip stage of flower bud development. Ascospores in the overwintered leaves are released as the result of rain and are carried by air currents to young leaves and fruit. Ascospores continue to mature over a six to eight week period.

Conidia are the source of secondary inoculum and are produced in either the primary lesions initiated by ascospores or within pustules on infected twigs. Many secondary cycles may occur over a growing season. The length of the wetting period and temperature required for infection depend on the number of hours of continuous wetness and the temperature during this wetting period. The Mills chart for determining apple scab infection periods (Table 2-1) along with a leaf wetness recorder or hygrothermograph can provide the information for determining the infection periods for pear scab. Scab lesions may develop in as few as eight days after infection on young leaves and in as many as two months on older leaves. Fruit are also more susceptible when young; however, mature fruit can be infected if the length of wetting period is sufficiently long.

IV. Monitoring: No monitoring required by growers during the dormant period. Consult with regional Cooperative Extension Service personnel to determine the onset of ascospore maturity. An awareness of the scab inoculum situation in adjacent abandoned or commercial orchards may influence early-season scab control decisions.

During the prebloom period and continuing through fruit set, for both fresh and processing fruit, determine pear scab infection periods by observing duration of leaf wetness and average temperatures during the wet period (Table 2-1, chapter 2). Using this Mill's table as an indicator of time required for lesion expression, begin monitoring sample trees of earlydeveloping cultivars for first leaf symptoms. Examine the upper and lower leaf surfaces on a minimum of ten leaf clusters on each sample tree. In monitoring, walk around the perimeter of the tree and examine at least two leaf clusters at each of the four compass directions. Record the total number of clusters with scab lesions. For fresh market production, more than one infected leaf cluster per tree represents potentially damaging levels of pear scab. For processing pears, one to ten infected clusters represents a moderate risk, and more than ten infected clusters represents a high risk.

At midseason and preharvest, no monitoring is required for processing pears. For fresh market production, continue monitoring for lesions on leaves of vegetative terminal shoots and on fruit. Walk around the perimeter of each sample tree and examine at least

two terminals at each of the four compass directions and 25 fruit per tree. Record the total number of terminals and fruit with scab lesions. More than one infected fruit per tree is a potentially damaging level for the fresh market.

For both fresh and processing pears, determine the percent of leaves infected and number of lesions per infected leaf on six terminal shoots from each sample tree after harvest and before natural defoliation begins. Greater than 0.5 percent leaves infected with an average of one lesion per leaf represents significant risk of early scab infection next season.

V. Management: Fungicides that control apple scab will control pear scab, but fewer applications are needed since pear scab seldom is as severe as apple scab. Generally, spray applications should begin when green tissue emerges from buds and should continue until the supply of ascospores is depleted. The Mills Table used to evaluate temperature and wetting periods for apple scab infection is applicable to pear scab.

TEXT PREPARED BY J.W. TRAVIS, J.L. RYTTER, AND K.S. YODER

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