Insect and Nematode Pests in Grapes in the Home Fruit Planting

The following descriptions of insect damage are general guidelines that can vary in severity based on a number of factors.

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Provisional action thresholds prescribe treatment when 15 percent or more of the leaves are destroyed by defoliating insects, or when 4 percent or more of the clusters are destroyed by cluster-feeding insects.

Climbing cutworms are known to feed on grapes. The larvae hide in the soil litter below the grape trellis and climb onto vines on warm nights to feed on developing primary grape buds. Only during bud swell are cutworms able to inflict serious damage to a vineyard. To examine for cutworms, search under the bark and in the soil litter beneath a vine with damaged buds, or search the vine with a flashlight after dark.

European red mites, *Panonychus ulmi* (Koch), are spider mites. They are especially severe in vineyards adjacent to apple orchards. Adult mites are small, dark red, and eight legged. Both adults and nymphs pierce the cells on the leaf undersides and extract plant juices. Heavily infested leaves take on a characteristic bronze coloration. Several generations occur in a season.

Grape berry moths, *Endopiza viteana* (Clemens), are one of the more serious insect pests affecting grapes in Pennsylvania. Two and occasionally three generations of moths hatch per season.

Overwintered pupae emerge as adult moths in late May and lay eggs among the grape clusters. The larvae are small (up to 1/3 inch long) and feed internally in grape berries. External signs of moth feeding are the silk webs that tie several berries together. The larvae cut flaps in grape leaves and pupate inside, emerging as adult moths with wingspans of 1/2 inch. Timing of sprays is best accomplished with a combination of pheromone traps and visual scouting for "stung" berries.

Grape leafhoppers overwinter under leaves and litter and enter vineyards in the spring. These overwintered adults do not cause serious damage. Depending on the length of the growing season, several generations can occur, with rapid population increases. Both the 1/8-inch adults and the nymphs feed on the underside of grape leaves by piercing the tissue and sucking out the plant juices. Damaged leaves become blotchy and yellow. A moderate infestation of grape leafhopper does not significantly affect yield and quality.

Grape phylloxera, *Daktulosphaira vitifoliae* (Fitch), are minute insects with a complex life cycle. Two forms of phylloxera occur within the same species, and several generations of each can occur in any given year. The root gall form feeds on the outside of galls or swellings on the roots. Loss due to this form can be reduced substantially by grafting it to a phylloxera-resistant rootstock. This grafting will not affect injury caused by the leaf gall form of the phylloxera. The leaf gall form lives inside galls on the underside of grape leaves. Grape varieties vary widely in their susceptibility to both forms of phylloxera. Examine foliage on a weekly basis before and after bloom. Spray when 15 percent of the shoots become infested. If new growth becomes infested, spray again in 10 to 14 days.

Grape root borers, *Vitacea polistiformes* (Harris), are clear-winged moths that strongly resemble paper wasps. At present, they occur only in southern and eastern Pennsylvania. Larvae feed on grape roots for a two-year period. Mature larvae burrow to just below the soil surface, spin a dirty-brown silk cocoon, and pupate. Adults emerge in mid- to late summer, mate, and lay eggs beneath the vines. The eggs hatch and reenter the root system. There is no registered method for controlling the subterranean stages of this insect. Careful monitoring for pupal cases on the soil surface beneath vines will reveal when pupation is occurring and, thereby, will aid in timing the application of the soil barrier.

Grape cane gallmakers, *Ampeloglypter sesostris* (LeConte), are small (1/8-inch), brown weevils that form scars in shoots, typically beyond the last grape cluster. The 3/4-inch reddish swellings are quite noticeable on green shoots. Berry size and percentage of sugar are not affected, and the scars are easily found and removed during winter pruning. In areas where this insect previously has been a problem, apply control sprays to plantings when shoots are 4 to 6 inches long.

Grape cane girdlers, *Ampeloglypter ater* (LeConte), are small (1/8-inch), black weevils that girdle grape canes by chewing two series of holes several inches apart. The girdles are generally beyond the

last grape cluster, so there usually is no loss of fruit. Control sprays should be applied at the new shoot stage to provide protection through bloom. To culturally control grape cane girdlers, cut off and burn infested parts of the canes before adults emerge from them in late summer.

Grapevine flea beetles, *Altica chalybea* (Illiger), are small (3/16-inch), bluish-black beetles that damage vines by feeding on small (1/2-inch) grape buds. In addition, their 1/4-inch larvae feed on the upper surface of the leaves. If adult beetles are present in damaging numbers in the early season, they should be controlled by the bud swell spray.

Japanese beetles, *Popillia japonica* (Newman), are 1/2 inch long and are distinguished by a metallic-green abdomen and coppery outer wings. Tufts of white hairs are arranged along the side of the body and behind the wing tips. Adults cause damage by feeding on the foliage and occasionally the berries. One generation hatches each year, with the peak of adult activity occurring in mid-summer. Vines with smooth thin leaves are most susceptible to Japanese beetle attack. Young vines should be monitored closely to prevent excessive damage.

Red-banded leaf roller, *Argyrotaenia velutinana* (Walker), larvae occasionally attack grape clusters. Their life cycle is similar to that of the grape berry moth, except that the larvae feed on the surface of the grape berry rather than internally. Early generations are rarely a problem.

Rose chafers, *Macrodactylus subspinosus* (Fabricius), are clumsy, light-brown beetles about 5/8 inch long. Damage from these insects occurs around bloom and chiefly consists of feeding damage to leaves and, to a lesser extent, to flowers. Populations usually are present for only 5 to 10 days.

Nematodes. Poor vine growth can be a result of high nematode populations feeding on the roots. Nematode feeding can result in increased winter injury. One species present in Pennsylvania soils can transmit one or more virus diseases. Refer to Chapter 2 for more information on nematodes.