Pest e-alerts

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Grape Rootworm Reappears

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While abnormal amounts of rain have been falling in most of Oklahoma, another oddity has emerged in the vineyard at the Cimarron Valley Research Station in Perkins, OK. Late last week, grape rootworm, *Fidia viticida* (Walsh), was found in large numbers feeding on grape leaves. This insect pest had not been seen in the Perkins vineyard since June 2008, and the sheer number of adult beetles encountered was alarming. Grape rootworm is a species of leaf beetle (Family: Chrysomelidae) that is native to North America, occurring from the East Coast west to North Dakota and south to Texas.

Figure 1. Adult grape rootworm (Photo credit: Chris Joll)

Description

Adults measure approximately 6 mm long and are grayish-brown or chestnut colored with a fine layer of yellowish hairs, or pubescence, covering the body (Figure 1). Larvae are creamy white and possess a dark brown head capsule (Figure 2).

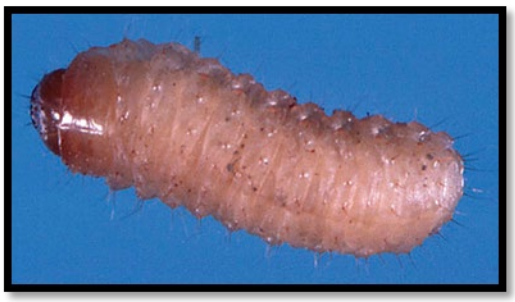

Figure 2. Grape rootworm larva (Photo credit: Michigan State University)

Life Cycle

Egg clusters of 20-30 eggs are deposited by adult females on grapevines under loose bark. Females can produce a lifetime average of 100 eggs. Eggs hatch in 1-2 weeks following oviposition, and newly emerged larvae drop to the soil and feed on grape roots through the fall. Larvae develop through five instars and overwinter within the root zone at depths ranging from 1 to more than 50 cm (~ 20 inches) below the soil line. In spring, feeding on roots resumes until larvae pupate near the soil surface, coinciding with grape bloom. Adults begin to appear about 2 weeks later. Interestingly, a small proportion of larvae may not reach fifth instar prior to overwintering. These "two-year larvae" will continue development for a second season and not emerge as adults until the following spring. There is only one generation produced per year.

Hosts

In addition to grape (*Vitis* spp.), grape rootworm will feed on Virginia creeper (*Parthenocissus quinquefolia*) and redbud (*Cercis canadensis*).

Damage

Adults feed on leaves for a month or more, causing a characteristic chain-like pattern of feeding injury (Figure 3). This injury is similar to that caused by larvae of grape flea beetle, *Altica chalybea* Illiger. While injury to the foliage is most notable, root feeding by grape rootworm larvae causes the most economic damage to commercial vineyards. Affected vines become weakened and fruit yield is reduced as a result of root feeding. Vine death may occur in cases of continuous high infestation levels.

Figure 3. Feeding injury by adult grape rootworm. Note the characteristic chain-like pattern of defoliation. (Photo credit: Virginia Tech)

Control

Up until adult emergence in late May or early June, intensive shallow cultivation of soil may destroy pupae. This is the only cultural management strategy for grape rootworm, and there are no known natural enemies that attack this pest. There isn't much information about insecticide efficacy for grape rootworm control, presumably due to the infrequent occurrence of this pest in most growing areas. However, standard recommendations include application of carbaryl (e.g., Sevin), targeting adults as soon as they are observed. Other broad-spectrum insecticides directed against grape berry moth may provide control of grape rootworm adults. Active ingredients include phosmet, fenpropathrin, cyfluthrin, beta-cyfluthrin, bifenthrin, methomyl, or diazinon. Growers should inspect vines weekly following insecticide application, and a second application should be made if adults are observed. As always, read the pesticide label carefully to ensure safe and effective use of the material.

References

Pfeiffer D. G. 2012. Japanese Beetle and Other Coleoptera Feeding on Grapevines in Eastern North America. In: Bostanian N., Vincent C., Isaacs R. (eds.), Arthropod Management in Vineyards. Springer, Dordrecht

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