Utah State University
DigitalCommons@USU

All Archived Publications | Archived USU Extension Publications

1-1-1994

Raspberry Crown Borer and Rose Stem Girdler

Diane G. Alston
Utah State University

Jay B. Karren
Utah State University

Warning: The information in this series may be obsolete. It is presented here for historical purposes only. For the most up to date information please visit The Utah State University Cooperative Extension Office

Recommended Citation
Alston, Diane G. and Karren, Jay B., "Raspberry Crown Borer and Rose Stem Girdler" (1994). *All Archived Publications.* Paper 762.
http://digitalcommons.usu.edu/extension_histall/762

This Report is brought to you for free and open access by the Archived USU Extension Publications at DigitalCommons@USU. It has been accepted for inclusion in All Archived Publications by an authorized administrator of DigitalCommons@USU. For more information, please contact becky.thoms@usu.edu.

Extension Entomology
Department of Biology, Logan, UT 84322

Utah State University Extension
Fact Sheet No. 4
Revised September 1994

Raspberry Crown Borer and Rose Stem Girdler

Two important cane-boring insect pests of raspberries in Utah are the **raspberry crown borer** *(Pennisetia marginata)* and the **rose stem girdler** *(Agrilus aurichalceus)*. Both insects can cause wilting and death of raspberry canes which may result in the ultimate loss of a planting if controls are not enacted. Although they are different types of insects, the controls and control timings are similar for both insects.

Raspberry Crown Borer

This insect attacks rasp-berries most severely but will also damage other cane berries. The adult is a thick-bodied, clear-winged moth that resembles a wasp. The moth has a wing span of 1 to 1-1/4 inches and four bright yellow bands across the abdomen. The eggs are reddish-brown and very small in size (1/16 inch diameter). The larvae are white with a dark brown head and will reach 1 to 1-1/4 inches in length. The pupae are reddish-brown in color and about 3/4-inch long.

Injury

The first indication of injury is the wilting and dying of foliage on first-year canes in mid-April through early June. The cane tip may curl into a shepherd's crook. Damaged canes become spindly and often break off at ground level. Those not killed directly are predisposed to winter-kill.

Life Cycle

The raspberry crown borer completes its life cycle in two years. Eggs are laid singly on the underside of bramble leaves during summer and early fall. Eggs hatch, and young larvae (about 1/4 inch long) crawl down the cane to the crown where they burrow under the bark to overwinter. The following spring, larvae enter and feed in the root crown and roots. This tunneling activity can reduce plant growth and vigor throughout the summer.

The following spring, larvae bore upwards in canes forming tunnels in the pith 1-5 inches in length. Larvae then tunnel sideways through the wood and bark leaving the epidermis intact. Larval growth is completed by early in the second summer, and pupation occurs in the hollowed out area of the cane.

Adult moths emerge during summer and fall leaving pupal skins attached to the emergence holes in canes. The females release a sex pheromone to attract males. Mated females lay eggs during the daylight hours before noon.

Scouting for Damage and Control

Periodically during mid to late-summer, cane beds should be examined for wilted or dead canes that are hollowed out at the base. Injured canes can also be pulled up and cut open to reveal tunnels near the base. Look for live larvae or pupae (see descriptions above). Although damage occurs too far down the cane for pruning to help, removing and burning wilted canes in June and July can help prevent future problems in healthy plants.

Chemical control efforts should be directed at killing first-year larvae in the fall (mid-October) as they crawl down the canes to overwinter in crowns or in the following spring when they become active (April to May; at first signs of bud break). Diazinon should be applied at this time as a crown drench or heavy spray around the base of plants. An irrigation or rainfall should follow treatment to move the insecticide into the root zone where larvae feed. This treatment does not control second-year larvae, so it is necessary to apply control measures for two or more consecutive years.

Rose Stem Girdler

The rose stem girdler is a small flat-headed borer in the family of beetles called Buprestidae. This insect has been called other common names such as raspberry cane borer, spiral cane borer, raspberry cane girdler, and bronze cane borer. It was introduced from Europe into the U.S. in the early 1900's and was first reported in Utah in 1955. It attacks a variety of plants including rose, blackberry, red and black raspberry, dewberry, and related plants. It appears to be most damaging in Utah to red raspberry where it can dramatically reduce cane populations and even kill out a planting.

The adults are slender, flattened, metallic beetles approximately 1/5 inch long. The beetles are more slender than most species of flat-headed borers. Males are smaller and have a metallic green "face". The small eggs are laid singly on canes and cemented in place with a material that gives them a lemon color. Larvae are milky white, with the first segment behind the head slightly yellow and the mouthparts brown to black. Larvae are slightly flattened with body segments separated by distinct constrictions. There are two short, brown, toothed projections on the tail end.

Injury

Adult Feeding -- Adult feeding on the edges of leaves causes them to appear ragged but is generally insignificant to the growth of plants.

Girdling -- Larval feeding during June causes two to five spiral grooves in the cambium which girdles the cane and causes it to wilt and die.

Damage to First-Year or Vegetative Canes -- Girdling in first-year canes produces a gall-like swelling. In everbearing raspberries and varieties that produce extremely succulent first year growth, a high percentage of first-year canes are attacked. Successive, heavy

infestations can kill these varieties in two to three years.

Damage to Second-Year or Fruiting Canes -- Raspberry varieties with a more restricted vegetative growth are attacked primarily in the second year. Gall-like swelling is minimal in second year canes. Attacks to second-year canes impacts fruit production more than overall health of the planting.

Life Cycle

The rose stem girdler has a single generation per year in Utah. The winter is spent as a fourth-instar larva within the pith of canes. Pupation occurs in the spring, and adult beetles emerge from infested canes in May. Adult activity continues for a two to three-week period. The adults rest on plant foliage at night and during early morning hours becoming active around 10-11:00 am. Eggs hatch in 4-14 days, and young larvae chew directly into the cambium through the bottom of the eggs.

During June, the first two larval instars feed in a spiral fashion within the cambium tissue. In late June to early July, the third larval instar tunnels upwards in the canes, eventually entering the pith. After this upward movement, the larvae do not require living tissue and will complete their development even if infested canes break off or are removed. By the middle of August, larvae are full size (approx. 1/2 inch long) and activity ceases. These fourth instar larvae pass the winter in the pith.

Scouting and Control

Infested canes are obvious due to their wilted top growth during June and July. Infested first-year canes can be identified by the gall-like swellings upon peeling back bark at base of wilted growth. Beetle larvae can be observed by slicing open canes in the galled region. Pruning can be very helpful to reduce infestations.

It is best to remove canes as soon as infestation is noticed or by early April of the following year prior to adult emergence. Infested first-year canes can be pruned below point of insect boring activity or entire canes can be removed. Second-year canes generally wilt before harvest and should be removed at that time. Infested canes should be destroyed by burning, composting, or burying in soil at least 2 inches deep to prevent adults from emerging.

If infestation is substantial, pruning should be supplemented with chemical control. Insecticide applications are ineffective against larvae because the chemicals can't reach them inside the canes. Applications should be timed with adult emergence in an attempt to prevent eggs from being deposited on canes. Product selection for the homeowner includes diazinon, carbaryl (Sevin), malathion, and rotenone.

Materials should be applied as full cover sprays to entire canes. Because of the relatively short residual activity of these products, applications should be made every 7-10 days from the first week of May or immediately before bloom, through the first week of June.

If applications are made during bloom, do not apply the materials until late in the evening when bee activity has ceased for the day. Check individual products for recommended rates. Follow all label directions and especially note the preharvest interval (time required between last application and harvest) of products used.

Insecticides for Rose Stem Girdler Control

Diazinon EC, L, or WP, Sevin L, WP, or Dust Malathion L or Dust Rotenone Dust	Apply materials as a full cover spray or dusting to entire canes every 7 - 10 days from the first of May through the first of June

References

Davis, D. W. and N. N. Raghuvir. 1964. The biology of the rose stem girdler, *Agrilus rubicola communis,* on raspberries in Utah (Coleoptera: Buprestidae). Annals of the Ent. Soc. of Am. 57: 154-159.

Horton, D., P. Bertrand, and G. Krewer. 1989. Small fruit pest management and culture. University of Georgia Cooperative Extension Service. Bull. No. 1022.

Precautionary Statement

All pesticides have both benefits and risks. Benefits can be maximized and risks minimized by reading and following the label. Pay close attention to the directions for use and the precautionary statements. The information on pesticide labels contains both instructions and limitations. Pesticide labels are legal documents, and it is a violation of federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for its proper use. Always read and follow the label.

Diane G. Alston and Jay B Karren
Extension Entomologists