PESTS fact sheet
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Rose Stem Girdler
[*Agrilus cuprescens*]

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Quick Facts

- Rose stem girdler is a common cane-boring beetle of raspberry and blackberry in central and northern Utah.
- Larval feeding in the cambium under the cane bark causes spiral grooves and gall-like swellings; injured canes may wilt and break off.
- Severe infestations in ever-bearing and first-year canes of vigorous summer-bearing cultivars can kill out plant stands.
- Avoid planting raspberries and blackberries near infested roses (wild and cultivated), prune and destroy infested canes, use proper fertility and water management to minimize stress to berry plantings, and apply insecticides during adult beetle activity in May and June.

Fig. 1. The rose stem girdler adult is a small, metallic-copper flatheaded beetle. Note the chewing injury to edges of the raspberry leaf[1].

Fig. 2. A raspberry cane with damage from tunneling by a rose stem girdler larva. The cane broke at the girdling site[2].

The rose stem girdler is a small flat-headed, metallic beetle (*Coleoptera*) in the Family *Buprestidae* (Fig. 1). It was first introduced into the eastern U.S. from Europe in the early 1900s in infested roses. It was first reported in Utah in American Fork in 1955. Today, it is a common cane-boring pest of raspberry, blackberry, and wild rose in central and northern regions of the state. It has been observed in Rich, Cache, Box Elder, Weber, Davis, Salt Lake, Utah, Wasatch, and Sanpete counties. Larvae tunnel in the canes causing gall-like swellings and cane breakage (Fig. 2). The rose stem girdler can dramatically reduce stands of red raspberry canes, and even kill out a planting.

HOST PLANTS

Raspberry (red and black), blackberry, related brambles (*Rubus* spp.), and wild and cultivated roses (*Rosa* spp.) are host plants.

LIFE HISTORY

The rose stem girdler has a single generation per year in Utah. The winter is spent as a 4th instar (4th molt) larva within the pith of canes (Fig. 3). Pupation occurs in the spring when daytime temperatures average 55°F, and adult beetles emerge from infested canes in May to June. Adults rest on plant foliage at night and become active during mid-morning hours as temperatures warm. Eggs

hatch in 4-14 days, depending on temperatures, and young larvae chew directly into the cambium through the bottom of the eggs. The tunneling larva forms spiral grooves in the cambium of the mid-section of the cane, just under the bark (Fig. 4). In June and July, the 3rd instar larva tunnels upward in the cane, entering the pith. The cane is swollen at the girdling site, and often breaks revealing a hollow pith (Fig. 2). By this point the larva no longer requires living tissue to complete its development. It can survive in the pith of the broken upper cane. By August, larvae are fully mature 4th instars; they remain in the cane pith through the winter.

Mature Larva: Overwintering Stage

- About ½ inch (12-15 mm) long and 1/16 inch (2 mm) wide, cylindrical, and creamy white body.
- Body is slightly flattened with segments separated by distinct constrictions; first segment behind the head is enlarged and covers most of the head; brown to black chewing mouthparts are evident (Fig. 3).
- There are two short, tooth-like projections on the tail end.

Pupa

- Slightly less than ¼ inch (4-5 mm) long, shiny white, and turning light brown with age.
- Well-developed wing pads and other adult characters (antennae, legs) evident.

Adult: Reproductive and Dispersal Stage

- Slender, flattened, metallic beetles slightly less than ¼ inch (4-5 mm) long (Fig. 1).
- Copper-colored wing covers (elytra); males have a metallic green "face."

Egg

- Small (1/16 inch or 1.5 mm diameter), round and flattened.
- Laid singly on canes and cemented in place with a viscous substance that turns lemon yellow and becomes brittle giving the appearance of an insect scale.

Larva: Damaging Stage

- Instars 1-3 are milky white with the first segment behind the head slightly yellow and mouthparts brown to black; ¼ - 3/8 inch (6-10 mm) long.

CROP INJURY

Adult feeding. Adults chew on the edges of leaves causing a ragged appearance (Fig. 1), but it is generally insignificant to the growth and health of host plants.

Girdling. Larval feeding and tunneling causes spiral grooves in the cambium which girdles the cane and causes it to wilt and die (Figs. 2 and 4).

Damage to first-year or vegetative canes. Girdling in first-year canes produces a gall-like swelling. In ever-bearing raspberries and cultivars that produce highly succulent first-year growth (e.g., 'Canby'), a high percentage of first-year canes can be attacked. Successive, heavy infestation can kill plants in 2 to 3 years.

Damage to second-year or fruiting canes. Raspberry cultivars with a more restricted vegetative growth tend to be attacked in the second year (e.g., 'Latham'). Gall-like swelling is minimal in second year canes. Attacks to second-year canes primarily reduce fruit production more so than overall health of the planting.

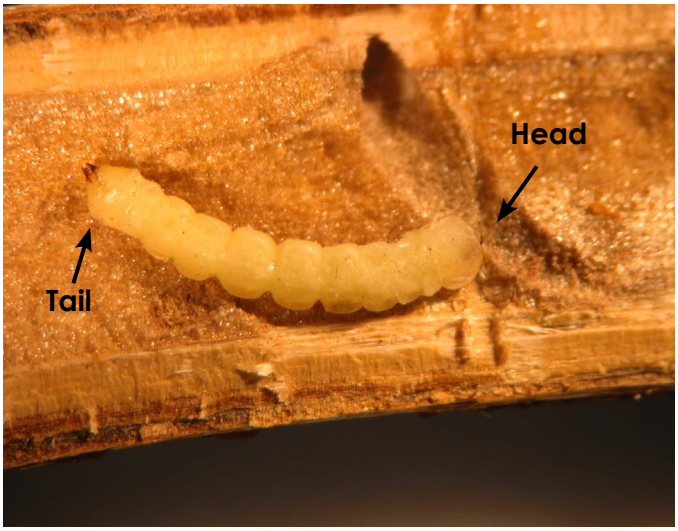

Fig. 3. An overwintering 4th instar larva in the pith of a blackberry cane. Note the spiral groove in the cane cambium layer[3].

MONITORING AND THRESHOLDS

Infested canes are evident due to their wilted top growth during June and July. Infested first-year canes can be identified by the gall-like swellings at the base of the wilted growth. Rose stem girdler larvae can be observed by slicing open canes in the galled region. After the 3rd instar tunnels upward in the pith, canes may break and tip over.

No economic thresholds have been established for this pest. Ever-bearing raspberry cultivars that produce fruit on first-year canes (primocanes), and summer-bearing cultivars (floricanes) that produce lush first-year growth are more susceptible to attack by rose stem girdler.

MANAGEMENT

Good cultural practices, such as proper fertility and irrigation management are critical to growth of healthy, non-stressed brambles. Healthy plants are in turn less susceptible to attack by pests.

Sanitation and Pruning

Avoid planting raspberry and blackberry stands near roses, or remove nearby roses before planting brambles. Wild and shrub-like roses are particularly attractive hosts, and can increase the population of rose stem girdler in the nearby vicinity.

Prune out and destroy infested canes in spring through summer to remove larvae. Prune below the point of insect boring activity, or remove entire canes. 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 an infestation is substantial, pruning should be supplemented with chemical control.

Fig. 4. A multiflora rose cane showing spiral grooves caused by girdling of a rose stem girdler larva[4].

Insecticides

Insecticide applications are ineffective against larvae because the chemicals cannot reach them inside the canes. Applications should be timed with adult emergence in an attempt to prevent egg deposition on canes. Begin applications in early May, or just before bloom, and repeat based on the reapplication interval of the product through early June. If applications are made during bloom, wait until nearly dusk when bee activity has ceased for the day. Materials should be applied as full cover sprays to entire canes. Always read and follow all product label directions. Strictly follow all bee protection guidelines. Note and follow the required time interval to re-enter the site after application (re-entry interval) and wait-time until harvest of fruit (pre-harvest interval).

Insecticides recommended for **COMMERCIAL** raspberry and blackberry production in Utah.

Chemical Name	Examples of Brand Names	Insecticide Class[1]
carbaryl	Sevin	Carbamate (1A)
diazinon	Diazinon[R]	Organophosphate (1B)
malathion	Malathion	Organophosphate (1B)
bifentrhin	Brigade[R], Capture[R]	Pyrethroid (3)
esfenvalerate	Asana[R]	Pyrethroid (3)
fenpropathrin	Danitol[R]	Pyrethroid (3)
zeta-cypermethrin	Mustang Max[R]	Pyrethroid (3)
acetamiprid	Assail	Neonicotinoid (4A)
chlorantraniliprole	Altacor	Diamide (28)
azadirachtin	Aza-Direct[O], Neemix[O]	Anti-feedant, Insect Growth Regulator (UN)
pyrethrin	Pyganic[O]	Botanical (3)

Insecticides recommended for **HOME** garden raspberries and blackberries in Utah.

Chemical Name	Examples of Brand Names	Insecticide Class[I]
carbaryl	Sevin, Bonide Fruit Spray	Carbamate (1A)
malathion	Malathion	Organophosphate (1B)
gamma-cyhalothrin	Spectracide, Triazicide	Pyrethroid (3)
permethrin	Hi-Yield Lawn, Garden, and Livestock Insect Control	Pyrethroid (3)
acetamiprid	Ortho Max Flower, Fruit, and Vegetable Spray	Neonicotinoid (4A)
neem oil	Neem Oil[O], Garden Safe[O]	Anti-feedant, Insect Growth Regulator (UN)
pyrethrin	Pyganic[O]	Botanical (3)

[I]Insecticide Resistance Action Committee (IRAC) mode of action classification codes. To minimize resistance development in the insect population, rotate among classes.

[O]OMRI approved for organic production.

[R]Restricted use products.

All brands are registered trademarks. Examples of brands may not be all-inclusive, but are meant to provide examples of products registered on caneberries in Utah. The availability of insecticides changes frequently. ALWAYS READ THE LABEL FOR REGISTERED USES, APPLICATION AND SAFETY INFORMATION, AND PROTECTION, RE-ENTRY, AND PRE-HARVEST INTERVALS.

REFERENCES

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- 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 Entomological Society of America 57 (2): 154-159.

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