

## Cane Borers, Crown Borers, Thrips, Oh My!

Douglas G. Pfeiffer, Dept. of Entomology  
Virginia Tech, Blacksburg VA 24061  
540-231-4183 [dgpfeiff@vt.edu](mailto:dgpfeiff@vt.edu)

### Rednecked Cane Borer, *Agrilus ruficollis* (F.)

**I. Introduction:** This buprestid beetle infests wild and cultivated blackberries and raspberries in the eastern states from Canada to the Gulf of Mexico. Adults are about 6-7 mm (1/4 inch) long, with an iridescent coppery pronotum. On galled plants, there is less live vegetative growth and more dead wood. There is often reduced berry size and number, as well as vegetative growth with increasing number of galls per plant. Affected canes may not produce fruit. Canes weakened by galls are more subject to winter injury.

**II. Biology:** Adults are present from May to August, or late April to early June, depending on the region. Females lay white spherical eggs on the trunk, and produce a yellow viscous material from the ovipositor which is smoothed over into a covering, before fading to white or grey. Larvae exit the egg directly into the plant, never becoming exposed, and so are impervious to sprays. Young larvae are restricted to the cambium, circling the cane 3-4 times in a close spiral, girdling the primocane, and producing gall-like swellings. Larvae winter in the cane, and in March create a pupal chamber. The pupa is formed in late April. The pupal period lasts 20-40 days. When the adult leaves the pupal skin, it remains in the tunnel for about 10 days before chewing a D-shaped emergence hole. Adults feed on foliage for several days before beginning oviposition. They are most easily found on the plants on warm sunny days. There is one generation annually.

**III. Control:** Chemical control: After leaf fall or during winter pruning, note galls. If more than 10% of the primocanes are infested, or if the number of primocanes expected to be pruned off is exceeded, a spray is justified. Examine primocanes for adults twice weekly, beginning at the beginning of bloom. Damage is minimized when Malathion 8F (2 pt/A) or Brigade 10WSB (8-16 oz/A) is applied at intervals of 7-12 days from the time the first beetles appear (early to mid May) until early June (last emergence). Cultural control: Remove galled canes in dormant season or early spring. This is most effective if nearby wild hosts are eliminated, and also more effective in open settings (wild brambles in nearby woods provide a source of wild beetles). Summer pruning also may provide a substantial reduction in rednecked cane borer infestation, since by the time new shoots appear, they have escaped much of the oviposition period of rednecked cane borer.

### Raspberry Cane Borer, *Oberea bimaculata* (Olivier)

**I. Introduction:** This cerambycid beetle is about 12 mm (1/2 inch) long, and is black except for the pronotum which is bright orange with two black spots. The long antennae easily separate it from the rednecked cane borer.

**II. Biology:** Raspberry cane borer is distributed from Kansas eastward, and has been reported as being very destructive in Quebec. It infests the young shoots of raspberry, blackberry and sometimes rose. Adults appear in June, and are present until late August. After ovipositing, the female girdles 6 mm above and 6 mm below the egg puncture. Shoot tips wilt in early summer.

**IV. Control:** Chemical control: Just before blossoms open, either malathion 8F (2 pt/A) or M-Pede (2% solution) may be applied. Cultural control: Wilting canes or those with girdling should be destroyed. If pruning occurs within a few days of the onset of wilting, only a small amount of additional shoot need be removed.

### Raspberry Crown Borer, *Pennisetia marginata* (Harris)

**I. Introduction:** The sesiid moth can be a severe pest to raspberry and blackberry plantings. Its cryptic nature may complicate diagnosis.

**II. Biology:** Eggs are laid on the undersides of new leaves, with 2-3 eggs per plant. Eggs incubate 3-10 weeks, beginning to hatch in late July (about the first week of September and continuing until early November in the northern

part of its range (Canada)). The young larva spins down to the crown, where it overwinters in a hibernaculum. In the spring it tunnels into the cambium. Cracks develop at this site, from which reddish brown frass is produced in April. During the first summer, the larva feeds at the base of new canes, girdling the plant and causing gall formation. Galls are most evident in October. Moths fly from early to mid July through late September (August through September in the north). Females begin to oviposit beginning on the first day after emergence; the female lives 3-11 days, averaging about 103 eggs.

**III. Control:** Chemical control: Bifenthrin (Brigade 10WSB), may be used as a drench treatment for raspberry crown borer. Apply at either post-harvest (fall) or pre-bloom (spring), as a drench application directed at the crown of plants in a minimum of 50 gal water/A. Do not make a prebloom foliar *and* prebloom drench application. The most effective time of application is between October and early April. Sevin or malathion may be used as foliar sprays. Cultural control: Remove all wilted canes in June and July.

## Thrips

**I. Introduction:** The most common species are the flower thrips, *Frankliniella tritici* (Fitch), and the western flower thrips, *F. occidentalis* (Pergande). The latter species is more damaging, has been expanding its geographic range, and may be more common. WFT infestations appear to be somewhat local and often occur in the proximity of greenhouses with a history of high incidence of WFT.

**II. Injury:** Thrips feed on plant cells in flowers and young fruit. This injury causes fruit to be abnormally shaped later. Caneberries and strawberries are very susceptible. In caneberries, individual drupelets may be killed. In strawberries, achenes are killed. Adjacent parts of berries do not grow, causing an apparent crowding of the achenes, termed "apical seediness". Thrips are also important vectors of many plant viruses. Thrips populations in brambles therefore pose two, and potentially three, problems. The first relates to feeding injury. Feeding by thrips can injure floral parts and also drupelets after berries are formed. Feeding in fruit may cause individual drupelets to be white. The second problem arises when high populations persist until harvest (not usually the case), and active thrips found in the harvested fruit may be a concern with buyers. The potential third problem relates to virus transmission (see below).

**III. Biology:** The life cycle of thrips is complex. After the egg stage, there are two feeding instars called larvae. Following these larval stages there are two non-feeding stages, called the prepupa and pupa. These are followed by the adult stage, also a feeding stage. The WFT population built up on weeds, especially clover, in and around orchards throughout the season. In areas with cold winters, thrips may overwinter as pupa in earthen cells, but in warm areas may survive as active forms all year.

**IV. Chemical control:** There are several chemical alternatives. Because of the tendency of thrips to develop resistance to insecticides, it is important to rotate among differing modes of action. Some pesticide labels recommend an adjuvant to improve efficacy toward thrips.

	<u>Rate /A</u>	<u>Class</u>	<u>REI (h)</u>	<u>PHI (d)</u>	
Assail 30SG	4.5-5.3 0a	4A	12	1	
Aza-Direct	12.5-42.0 fl oz	unknown	4	0	OMRI
Azera	2-3 pt	3A/unknown	12	0	OMRI
Delegate 25WG	3.0-6.0 oz	5	4	1	
Entrust 80WP	80WP	5	4	1	OMRI
Malathion 8F	1.0-4.0 pt	1B	12	1	
Provado 1.6F	8.0 fl oz	4A	12	3	
SucraShield 40	0.8-1.0%	unclass.	48	0	OMRI

The PHI value is of critical importance in caneberries. Thrips are most prevalent during bloom, but there is broad overlap between blossoming and fruit development, including harvest. Not only is proximity to harvest a concern, but bee hazard is an issue as well. Malathion is highly toxic to bees. Entrust is moderately toxic (do not apply to blossoms if bees will forage within 3 hours). Aza-Direct is relatively non-toxic to honey bees.