

## FOCUS ON IMPORTANT ARTHROPOD PESTS OF RASPBERRY



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**Y**ou can find a diversity of insects and related arthropods in a raspberry planting. Most of these are innocuous, some are beneficial and some have the potential to be pests. It behooves the grower to know something about these potential pests so they can correctly determine if they are present in their planting and what they can do about it. Obviously growers have a lot to keep track of and arthropods are just one of them, but there are some general things to know or do to help simplify the process. First, you need to regularly monitor the planting for pests or pest damage. And when monitoring, you should know what to look for and when to expect it. In this article I want to review the most likely arthropod pests you might encounter in brambles, when they are most likely to show up, what their damage looks like and what can be done about it terms of pest control.

There are a number of potential pests of raspberries to be concerned with during the growing season. Be on the alert for feeding damage from the adult raspberry fruitworm (a beetle, light brown in color, see Figure 1) on foliage and fruit buds during the prebloom period. The larvae of this beetle pest feed inside flower buds and young fruit (Figure 2). Adult feeding damage on foliage creates a skeletonized appearance somewhat similar to the feeding damage caused by larvae of raspberry sawfly (pale green caterpillar-like body with many long hairs, Figure 3, damage shown in Figure 4). Both the fruitworm and the sawfly appear during the prebloom period. Carbaryl [Sevin] is labeled for both of these pests and the timing is similar as is Spintor [spinosad].



**Figure 1**



**Figure 2**



**Figure 3**



**Figure 4**

Tarnished plant bug (TPB) is another potential problem for raspberry growers during the period from bloom to harvest. Both the adults (Figure 5) and their nymphs (Figure 6) can cause deformed fruit (Figure 7), although the deformities are not as obvious in raspberries as in strawberries where TPB is also an important pest. We do not have a good estimate of the economic threshold for TPB in raspberries but a rough guide would be 10 to 20% of canes infested with adults or nymphs. Carbaryl is labeled for control of TPB on raspberry. It's not the most effective material on plant bugs but pretty much all we have with plant bugs specifically on the label. Malathion can be effective against TPB, but I have yet to find a product registered in NY with plant bug on the label for caneberries. Note that weedy fields aggravate TPB problems since the adults and nymphs will feed on a wide variety of weed species.



**Figure 5**



**Figure 6**



**Figure 7**

Raspberry cane borer and related beetle species make their appearance during this period. The adults (Figure 8) emerge in the spring, mate and start laying eggs. Larvae (Figure 9) bore into canes during the season and for some species, the next season. They cause injury and death to canes and potentially entire crowns. The best time to kill adults is during the late prebloom period (for summer-bearing raspberries), although note that there is nothing specifically labeled for it now that methoxychlor [Marlate] is no longer available. As an alternative to insecticides, during the season remove wilted shoot tips (Figure 10) below the girdled stem (two rows of punctures around an inch apart, Figure 11) where the egg of the raspberry cane borer has been placed. Also, during the dormant season remove and destroy canes with swellings.



**Figure 8**



**Figure 9**



**Figure 10**



**Figure 11**

Potato leafhoppers (both adults-Figure 12 and immatures) also begin appearing in New York farms after bloom. This species overwinters as adults in the southeastern USA and then migrates north in spring and early summer (it does not overwinter). They feed on a lot of different crops including many small fruits like strawberries, raspberries, and grapes. They use their soda-straw like mouthparts to pierce the water conducting vessels of the plant (xylem) and suck out water and nutrients. If this were all they did, it probably would not cause much problem. But they also inject saliva into the plant and for some species this causes a strong reaction in the plant. Typical symptoms include yellowing of leaf margins and distorted and possibly stunted leaves (Figure 13). Different plant species respond differently and some are very sensitive while others are not. Raspberries, grapes, and strawberries are pretty sensitive. The adult potato leafhopper is iridescent green and wedge-shaped while the nymph is usually green and moves sideways in a unique manner when disturbed. If injury to foliage is moderate to severe, control may be necessary. Sevin [carbaryl] and Malathion 57 EC are labeled for potato leafhopper on raspberries but note there is a 7 days to harvest restriction for Sevin but only a 1 day restriction for Malathion.



**Figure 12**



**Figure 13**

I should also mention two-spotted spider mite (TSSM, Figure 14) as a potential pest. These tiny spider-like arthropods can become very numerous on foliage, causing white stippling on leaves (Figure 15). They seem to be most problematic in dry sites and/or in mild growing areas such as the Hudson Valley and Long Island, although I can usually find a few in most plantings during the summer period. Note that we don't have a good assessment of the economic threshold for TSSM

on raspberries but a rough guide would be about 50% of leaves with at least one mite present. As of a couple of years ago there is a miticide registered in New York for control of TSSM (Savey DF). Predatory mites can also provide control of TSSM. These beneficial mites are frequently naturally present in raspberry fields, especially where few broad-spectrum insecticides are used, but can also be purchased from a supply house. For both Savey and predatory mites, it's important to start control actions early before you see lots of severe injury to foliage (bronzing).



**Figure 14**



**Figure 15**

Another pest that can cause serious injury to canes and the crown is the Raspberry crown borer. The larvae of this moth (Figure 16) feed at the base of the cane and into the crown over a two-year period. The first signs of a problem often appear during fruit maturation. The withering of and dying of canes, often with half matured fruit, can be a symptom of feeding damage at the base. Canes with these symptoms, and the associated crowns, should be removed during the growing season and destroyed. The adult moth actually does not appear until later in the summer (early August). It is a very attractive moth that superficially resembles a yellow jacket (Figure 17). Guthion was labeled for use against raspberry crown borer larvae through the 2006 season but will no longer be allowed after this September. For the 2006 season the pyrethroid insecticide bifenthrin (Capture) has been approved for use against crown borer. Apply to lower parts of canes and soil in fall to kill newly hatched larvae or possibly in the spring to kill overwintered larvae that are attempting to bore into canes. Research conducted at the University of Arkansas suggests the fall application is the more effective timing.



**Figure 16**



**Figure 17**

Although this is not an exhaustive list, the pests included in this article are the most likely to cause you problems. Some other species that might show up include sap beetles feeding on ripe and over ripe fruit (picnic beetles, fig 18, have black and white spots, strawberry sap beetle, Fig. 19, is smaller and brown in color) and adult Japanese beetles(Fig. 20) feeding on foliage. For additional information consult the 2006 Cornell Pest Management Guidelines, Raspberry Production Guide, or the Compendium of Raspberry and Blackberry Diseases and Insects.



**Figure 18**



**Figure 19**



**Figure 20**

There are several useful web sites to consult for pest management information. Marvin Pritts of Cornell University put together a valuable diagnostic tool for the web to help you identify pest problems in small fruit crops. The web site address is <http://www.hort.cornell.edu/departement/faculty/pritts/BerryDoc/Berrydoc.htm>. Also, a new website for bramble pest management has been recently launched by NABGA (North American Bramble Association). Doug Pfeiffer, Professor of Entomology at Virginia Tech, put this useful resource together. The web site is <http://www.ento.vt.edu/Fruitfiles/NABGAIPMSite/NABGAIPMHome.html>.

**References:**

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