Plum Curculio

Time of Concern
Petal fall through 2-3 weeks after petal fall

Damage

Pest Cycle

Plum curculio is a pest of apples, pears, and stone fruit crops such as peaches, plums, and cherries. This weevil overwinters as an adult alongside woods, then migrates into the edges of orchards when average temperatures exceed 60°F for a couple days during bloom. After petals fall, when small fruitlets have developed, and after a couple days with temperatures of 70-75°F, the females (Figure 1) cut into small fruitlets and lay eggs in the cuts (Figure 2). The larvae do not successfully develop in apples since the eggs are usually crushed by the fruitlets as they grow, but in peaches, cherries and other stone fruit, will complete their development destroying the fruit (Figure 3). The grub is creamy white, legless, and has a brown head capsule. The egg-laying cuts in apples develop into half-moon russet spots shown in Figure 4. The presence of other curculio hosts around the orchard such as unsprayed wild plum and black cherry trees provide a ready source of plum curculio adults to cut and scar the apples.

European sawfly damage can be mistaken for plum curculio fruit cutting (Figure 5). This pest is common in Eastern NY and New England but is moving west into central and western NY. The eggs are laid on the fruit surface at petal fall, and the larvae feed around the surface before burrowing into the apple flesh. Severely damaged apples (Figure 6) will typically drop. Figure 7 shows the surface scarring of apple by European apple sawfly at harvest.
IPM Steps for Beginners

1. Spray effective pesticide at petal-fall (see Choosing Sprays for a list of choices in apples). This weevil is a damaging pest every year in a majority of NYS orchards. If applied promptly at petal fall, the correct pesticide spray will also control European apple sawfly where it is a problem.

2. Plum curculio adults continue to migrate into the orchard for a few weeks after petal fall, so spray another insecticide 10-14 days after the petal fall spray, or after 1.5 inches of rain (whichever comes first) to maintain protection of fruitlets for 3 weeks after petal fall.

3. For large plantings where curculio was controlled at petal fall throughout the orchard, the second spray can be applied to the perimeter rows of the orchard (50-75 feet).

4. Precautions on the use of carbaryl (Sevin) at petal fall: this product is highly toxic to honeybees and other bees exposed to direct treatment, residues on crops, or weeds in bloom. Do not apply carbaryl to crops or weeds in bloom. The use of carbaryl at petal fall can result in unintended fruit thinning. For alternatives to carbaryl, review Choosing Sprays. For other product options, refer to the most current version of Cornell Tree Fruit Guidelines.

Ready for More Precision?

The next level of precision in plum curculio management is monitoring degree days to know more precisely when adults are finished coming into the orchard.

1. Note the date of petal fall, specifically when 75% of petals have fallen from the north side of the tree. This will vary by variety but work with the date of petal fall on early blooming varieties. If you wait until the later blooming varieties are at petal fall, you may be leaving the early blooming varieties open to damage because they will have fruitlets set before the late bloomers.

2. Monitor temperatures (degree-days base 50°F) starting at petal-fall. Use NEWA to estimate your degree day (DD) accumulation after petal-fall. When 308 DD have accumulated after petal-fall, plum curculio activity is no longer a threat.

3. If you reach 308 DD base 50°F quickly before the most recent spray has worn off, you don’t need to spray again for plum curculio—adults are finished coming into your orchard for the season.

4. If 10-14 days pass and you haven’t reached 308 DD, apply another spray. New adults are still coming into the orchard and the petal-fall spray isn’t effective any more.

5. Consult NEWA (newa.cornell.edu) for the plum curculio model by clicking “Pest Forecasts”, then “Apple Insects”. Choose plum curculio from the list.

6. Use Cornell Tree Fruit Guidelines to choose a labeled insecticide for New York State.