

Can a Band of Tangletrap Around a Tree Trunk Suppress Plum Curculio Injury to Fruit?

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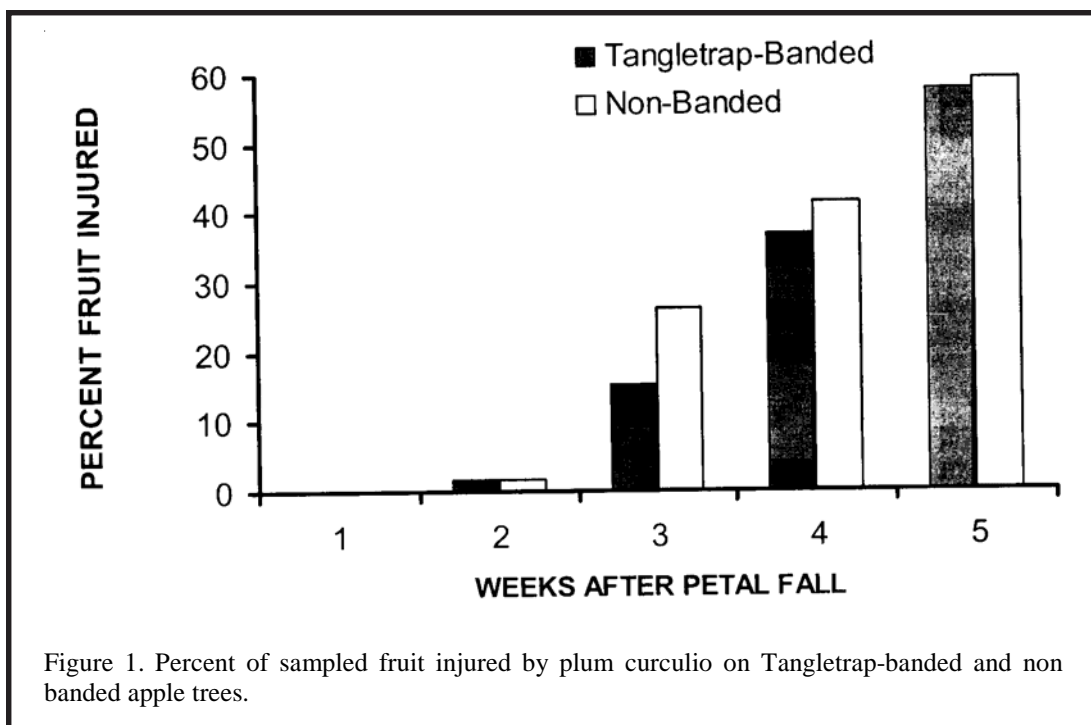
Operators of small apple orchards and homeowners have for decades been on the lookout for effective ways of controlling plum curculio (PC) without having to resort to use of insecticidal sprays. Approaches such as daily tapping of tree branches to dislodge PCs followed by removal fallen PCs from a cloth sheet placed beneath the tree canopy have proven ineffective. So also have a variety of non-toxic sprays designed to repel PCs (such as sprays of garlic). We know from studies by colleagues in Quebec that PCs enter and leave apple tree canopies almost on a daily basis as they search for food and egg-laying sites and thereafter shelter. We also know from some of our own behavioral observations that during cool weather and also during night hours, PCs tend to enter apple tree canopies by crawling up tree trunks, whereas during warm weather

they tend to enter tree canopies by flight.

Here, we asked whether a band of Tangletrap around a tree trunk could prevent PCs from entering the tree canopies to an extent that afforded protection of fruit against injury.

Materials & Methods

The study was carried out in 2002 in a block of unsprayed trees at the UMASS Cold Spring Orchard Research and Educational facility in Belchertown. Half of the trees were McIntosh, and half were Delicious. All were bearing trees on M.26 rootstock. Trees were pruned in such a way that none of the branches of any tree involved in the study touched the branches of any adjacent tree or touched the ground. Herbicide



treatment beneath the canopy and mowing grass in the alleyway kept understory growth from reaching any branches. These measures insured that PCs could gain entry into the canopy only by crawling up the tree trunk or by flight into the canopy.

On April 18 at the tight cluster stage of bud development, a band of white cloth 3 inches wide was wrapped tightly around the trunk of each of seven McIntosh and seven Red Delicious trees at a height of 12 inches above ground. The cloth was firmly stapled to the trunk, after which the cloth was coated with a thick layer of Tangletrap, 2 inches wide. The Tangletrap was maintained free of debris for the duration of the PC season. Adjacent to each Tangletrap-banded tree was a check tree of like cultivar, devoid of Tangletrap.

Weekly beginning one week after petal fall (May 15) and ending when fruit reached 1 inch diameter (June 10), ten fruit were sampled on each of the 14 Tangletrap-banded and 14 check trees for presence or absence of PC egg-laying scars.

Results

Results (Figure 1) show that very little fruit injury occurred on either Tangletrap-banded or non-banded apple trees during the first and second weeks after petal

fall. By the third week, when fruit averaged about 1/2-inch diameter, there were slightly fewer injured fruit on banded than non-banded trees. The weather was unusually cool and damp during the first 3 weeks after petal fall. During the fourth and fifth weeks after petal fall, temperatures warmed and injury to fruit by PC increased substantially on both banded and non-banded trees. By the fifth week, there was essentially no difference in percent injured fruit on banded and non-banded trees.

Conclusions

Findings from this experiment are in agreement with findings of our previous studies. In cool weather, PCs tend to enter tree canopies primarily by crawling up tree trunks. Under such conditions, a band of Tangletrap around the tree trunk can aid (at least slightly) in reducing the number of PCs entering the canopy and thereby reduce damage to fruit. In warm weather, PCs tend to enter tree canopies primarily by flight. Under such conditions, which are the most favorable of all for PC egg-laying, a band of Tangletrap around the tree trunk is of little or no help in preventing PC entry into the canopy and hence of little or no help in preventing damage to fruit.

