

What Size of Apple is the Most Prone to Plum Curculio Attack Early in the Season?

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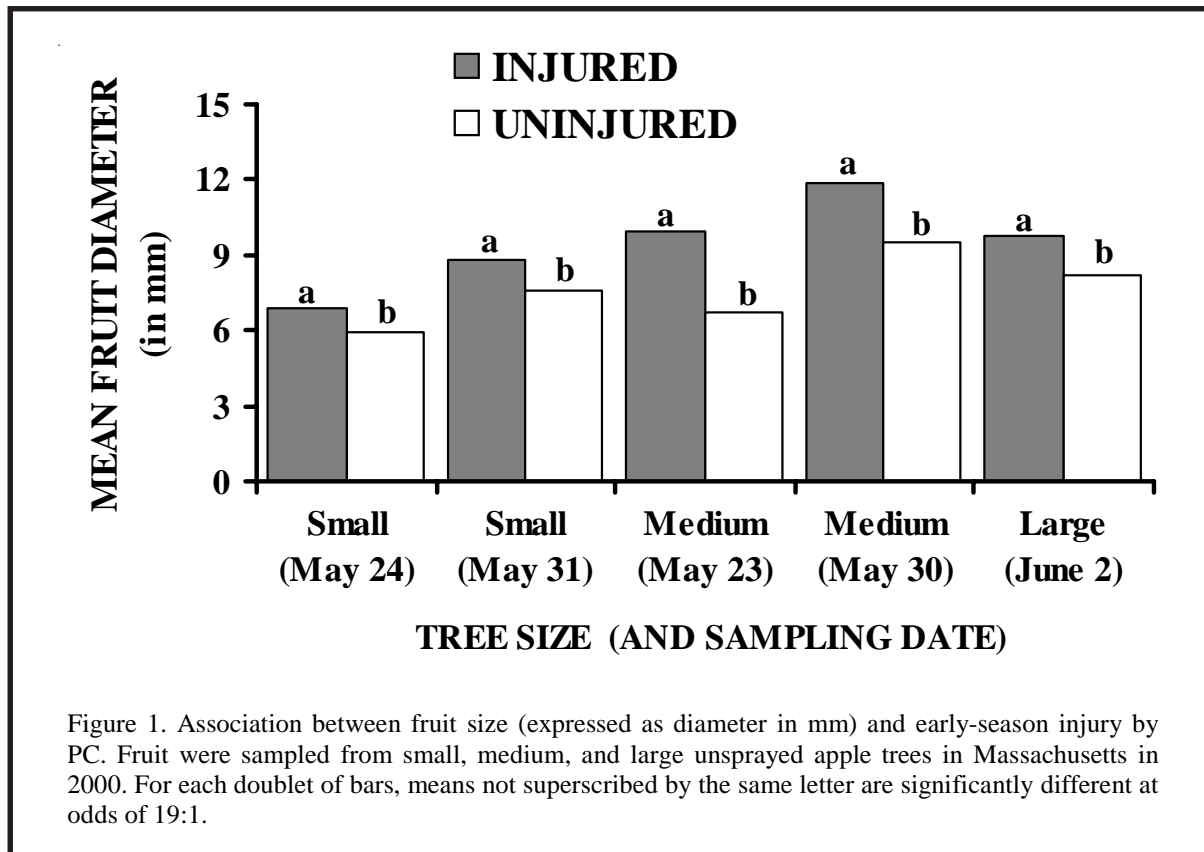
In the 2000 Issue of *Fruit Notes*, we reported on the distribution of fruit injury by plum curculios (PC) within the canopies of large, medium, and small trees that were not baited with attractive odor. Our findings indicated that, for large trees, early-season damage to fruit by PC was greatest at tree tops, which was the area in the canopy that also had the largest fruit. For medium and small trees, however, damage to fruit by PC was distributed similarly among different sectors of tree canopies, a result that coincided with the distribution of fruit size.

Here, we aimed at assessing the relationship between fruit size and early-season damage to fruit by PC in large, medium, and small unbaited trees located

in unsprayed blocks of commercial orchards in Massachusetts.

Materials & Methods

This study was performed at Atkins Farm and University of Massachusetts Cold Spring Orchard Research & Education Center (Belchertown, MA) in 2000. In all, 760 fruit were sampled haphazardly (about 30 fruit per tree on each sampling date) from six large (Cortland/M.7), four medium (Priscilla/M.26), and six small (McIntosh/M.9) trees. Sampling began 2 weeks after petal fall, which occurred by May 18 in 2000. Sampling was performed on June 2 for large trees, May



23 and May 30 for medium trees, and May 24 and May 31 for small trees. Each individual fruit was categorized as injured or uninjured based on the presence or absence of PC egg-laying scars (fresh or old), and its diameter was recorded. To assess the relationship between fruit size and occurrence of injury to fruit by PC, comparisons of the diameter (in mm) of fruit having or lacking PC scars were performed.

Results

Figure 1 clearly shows that, regardless of tree size, fruit sampled early in the season that showed PC injury were significantly larger than uninjured fruit. The smallest size of a fruit having a PC scar was 4.8 mm in diameter, which corresponded to the first sampling date in small McIntosh trees.

Conclusions

Our findings lead us to conclude that, early in the season, larger fruit are much more prone to attack by PC than are smaller fruit, probably because abscission of fruit damaged by PC is more likely to occur when fruit are small. Thus, early-season sampling of unbaited trees should be conducted preferentially in areas of the

trees where fruit are larger (e.g., upper part of the canopy of large trees, exterior zone of branches). As the season progresses, however, it is likely that smaller fruit may be more likely to be attacked by PC, possibly because, as suggested by Levine and Hall (1977), late-season mortality of PC larvae is greater in large fruit due to the higher internal pressure of the growing cells. None of the trees in our study was baited with attractive odor. Results on the distribution of PC injury among fruit in various tree sectors could be different for odor-baited trap trees.

Acknowledgments

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Literature Cited

Levine, E., and Hall, F.R. 1977. Effect of feeding and oviposition by the plum curculio on apple and plum fruit abscission. *Journal of Economic Entomology* 70: 603-607.

