



Reducing Losses from Apple Pests with Alternative Control Strategies



LEAD RESEARCHER

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This research aims to reduce apple crops losses from pests such as apple maggot and ambrosia beetles and other leafroller pests. The research team is investigating a protocol for sterile insect release for control of apple maggot (SIR for AM) to determine the potential for this strategy as a viable option for management of apple maggot. Ambrosia beetles are being identified in apple orchard agroecosystems, along with new methods to manage the pest. Researchers are also working to find a sustainable non-pesticide tool for management of leafroller pests.

The research team is evaluating the ratio of sterile to wild flies needed to stop apple maggots from stinging apples. The team is developing an artificial diet to raise large numbers of apple maggot flies for sterilization. Laboratory and sleeve cages on apple tree branches in field studies have been done with different ratios of sterile to wild flies. Several artificial diets for maggots have been tested. An artificial substrate to collect eggs is in development. Results from the field and laboratory ratio studies are being analyzed. This year the in-field ratio experiments will continue with a possible scaling up to whole-tree treatment.

Researchers are identifying captured ambrosia beetles and analyzing data to understand what makes an orchard more susceptible to an attack. Dying apple trees from some orchards and adjacent woodlots were collected in 2024 to count and identify emerging ambrosia beetles. Researchers have attempted rearing some ambrosia beetle species for future studies. Plans for the growing season will be based on data analysis.

Release devices for a biocontrol agent are being tested to ensure the device allows for the survival of parasitic wasps but is forceful enough to provide full tree coverage against leafroller pests. Researchers found that the device is easier than expected to attach to growers' sprayer setups. Researchers are hoping this will lead to faster adoption by growers.

KEY TAKEAWAYS:

- Evaluation of the ratio of sterile to wild flies needed to stop apple maggot from stinging apples is underway.
- Artificial diets to raise large numbers of apple maggot flies for sterilization are in development and are being tested.
- Researchers are identifying captured ambrosia beetles and analyzing data to understand what makes an orchard more susceptible to an attack.
- It is easier than expected to attach a device to growers' spray set ups to protect apple trees against leafroller pests. Researchers are hoping this will lead to faster adoption by growers.



FAR LEFT: A BugDorm where sterile flies emerge from sand post-sterilization in preparation for use in laboratory or field studies. LEFT: A BugDorm containing 10 pairs of sterile flies and one pair of non-sterile flies in order to determine the ratio of sterile to non-sterile to prevent stings on apples.

Photos: Suzanne Blatt

