

Comparison of Cultural and Chemical Treatments to Deter Infestations of Flatheaded Borers in Young Peach Trees

Utah Extension IPM and Sustainable Agriculture Mini-Grant Proposal 2009

Project Personnel

Project leader: Ron Patterson (PI), USU Extension Agent, Carbon County
Project co-leader: Diane Alston (CI), USU Extension Entomology Specialist
Collaborator(s): Caitlin Patterson, Producer, 4-H member

Situation Statement

Recent observations of apple and peach trees in Carbon County have revealed that a majority of the trees have suffered secondary infestations of flat headed borer (fhb). A peach orchard located in western Carbon County has had to gradually remove trees that have declined and died. All the peach trees in the orchard exhibit the classical signs of damage that is explained below. The death loss in the orchard started at the southwest corner. Each year sees a few more dead trees along the south and west border of the orchard. The incidence of fhb damage in most other fruit tree species in the county, such as cherry, apricot and pear seems to be minimal.

The damage is, in almost all cases, confined to the southwestern exposure of the main trunk and scaffold branches. Observation indicates that the trees are damaged by Southwest sun scald at a young age. Lack of cloud cover for most of the winter and intense sunlight common to this high desert region contribute to sun scald damage. Some evidence suggests that cytospora canker has further weakened some trees prior to fhb infestation. While there are not many peach or apple orchards in Carbon County, many county residents have fruit trees in their yards and gardens. The infected trees are weakened structurally as well as physiologically, and in some cases killed outright. It is frustrating to homeowners and orchardists alike to put money and time into these trees only to have them succumb to the elements.

Research indicates that painting a diluted latex-based paint on the trunks and scaffold branches will help protect young trees from winter-time sun scald damage. While this approach addresses the question of sun scald it is not clear if the incidence of fhb infestation will also be reduced. In addition, homeowners who may not be willing to have white paint on the trunk of their fruit trees may accept other procedures if they prove effective.

Objectives

The objectives of this proposal are as follows:

1. Compare the effectiveness of six treatments (five treatments and a control) on deterring flat headed borer infestations in young peach trees.
2. Establish a demonstration orchard that can be shown to fruit growers, agency personnel, home gardeners and the general public.
3. Share the knowledge gained with other extension personnel and fruit growers by making presentations at state and national association meetings.

Procedures

Study procedures:

Before planting peach trees, the soil will be prepared by roto-tilling and raking smooth. Twenty-four peach trees of the same cultivar will be planted in the site (6 treatments × 4 trees). The trees will be irrigated with a drip irrigation system. Nitrogen-containing fertilizer will be applied soon after planting and again in June. Weed growth will be controlled around the base of trees. A drought-tolerant ground cover will be encouraged in row alleyways. Each of six treatments will be replicated four times and treatments assigned in a randomized block design.

Treatments:

1. Untreated Control
2. Insecticide – apply a registered insecticide (e.g., malathion or permethrin) to the trunk and lower portion of scaffolding limbs in early to mid June to target the time when adult fhb emerge from trees and seek new trunks for egg-laying
3. Tree wrap – wrap a white-colored vinyl or cotton tree wrap around the trunk up to the lower scaffolding limbs in October
4. Paint – paint the trunk and lower portion of scaffolding limbs with diluted white latex exterior paint in August
5. Insecticide/Tree wrap – combine Treatments 2 and 3
6. Insecticide/Paint – combine Treatments 2 and 4

Timetable:

1. January 2009 – meet with project leaders and collaborators to determine the suitability of the site and establish care and study procedures – to be done by all project personnel
2. January 2009 – order young bare root peach trees – to be done by Caitlin Patterson
3. April 2009 – examine and plant trees – to be done by Ron Patterson and Caitlin Patterson
4. Summer and Fall 2009 – apply appropriate treatments as indicated by research parameters to be done by Ron Patterson and Caitlin Patterson
5. October 2009 – evaluate and photograph trees going into dormancy – to be done by Ron Patterson and Diane Alston, if able
6. Tours and demonstration will be given to Master Gardeners and other interested patrons. A newspaper article will be published in the local paper and PowerPoint presentations will be developed for state and national association scholastic activities, which attendees can carry the information back to their respective counties and clientele. This will be done by Ron Patterson and Diane Alston

This project will clearly involve more than one year of application and evaluation. It is expected that a minimum of three years will be required to determine the effectiveness of treatments. A majority of the cost will be in establishing the trial in the first year. Trial costs for subsequent years will be dealt with in the future.

Data Analyses & Presentation of Results

Data on tree health (trunk diameter, bark color and number of bark fractures, number and diameter of new limb growth, and tree death) will be collected in October and the following spring (and at subsequent dates as part of a second-year grant application). Tree health data will be compared among treatments with analysis of variance (quantitative data) or chi-square

analysis (qualitative data). Observations on ease of treatment applications and pitfalls will be recorded. Photographs will be taken of each tree during data collection.

Evaluation

- a. The evaluation instrument included at the end of the Request for Proposals will be used as is or modified to fit the specific project to help determine changes in knowledge of presentation and tour participants.
- b. The evaluation instrument will also be used to help the presenters determine if the knowledge gained from this study will be incorporated in the educational programs of other counties.
- c. Information gathered from this study will help direct the county agriculture agent with information to include in newspaper articles and presentations to Master Gardener participants and pesticide applicator training programs.

Educational Products

The educational materials resulting from this trial will include, but not be limited to, PowerPoint presentations that can be given various small acreage workshops, and association meetings and the state, regional and national levels. It is expected that a fact sheet detailing appropriate methods to protect trees from the indicated problems, and hopefully a published article will result from this project.

Educational Outreach

Educational materials will be distributed via:

1. Personal presentations
2. Utah State University Extension online publications

Professional meetings where information will be presented

1. Utah Association of County Agriculture Agents
2. Western Region County Agriculture Agents Forum
3. National Association of County Agriculture Agents

Budget

24 Bare root PF-24C "Cold Hardy" peach trees @ \$23.99 ea + shipping (\$50.47):

\$626.23

1 qt latex exterior paint: \$8.00

Insecticide: \$8.00

24 36" tree wrap @ \$1.39 ea + Shipping (\$11.95): \$45.31

Travel for Specialist from Logan: \$200.00

Total:

\$887.54