Utah IPM/SA Mini-Grant Final Report Format for 2010

1. **Project Title**: Comparison of cultural and chemical treatments to deter infestation of flatheaded borers in young peach trees

2. **Location of Project (Counties in Utah)**: Carbon County

3. **Total Grant Award**: $687.54 – 2009 research budget
   $256.00 – 2010 research budget
   $943.54 – Total budget
4. **Principal Investigator**: Ron Patterson

5. **Co- Principal Investigator(s):** Diane Alston

6. **Cooperators:** Caitlin Patterson

7. **Objectives of Project**:
   a. Compare the effectiveness of cultural and chemical treatments (paint trunk with white latex paint, apply white tree wrap to trunk, spray trunk with carbaryl insecticide, combine paint with pesticide treatment, combine tree wrap with pesticide treatment, and an untreated control) in deterring flat headed borer infestations in young peach trees.
   b. Establish a demonstration orchard, and provide tours to fruit growers, agency personnel, homeowners and the general public.
   c. Share the knowledge gained with other extension personnel and fruit growers by making presentations at state and national association meetings.

8. **Methods of Project:**

2009

Twenty-four PF-24C peach trees were ordered and received in April 2009. They had broken dormancy and were in bloom when the containers were opened so they were immediately planted. Shortly thereafter there were several days of frost that caused most of the leaves to drop and some of the trees were pushed back into dormancy, from which three did not appear to recover. The stems of the damaged trees still had some living tissue going into dormancy this fall, but they never leafed out during the summer. We are waiting to see if the chilling of winter will break their dormancy next spring or if they will die in the winter. The 21 remaining living trees are adequate to apply the planned treatments with a reduction in replication.

1. January 2009 – all project personnel determined research parameters and location for project.
2. January 2009 – ordered young bare root peach trees.
3. April 2009 – received, examined and planted trees.
4. Summer 2009 – applied appropriate treatments as indicated by research plan. The trees were divided into three blocks of six trees and each treatment was randomly assigned to the trees within the block.

2010

As a follow-up to the survival of the initial trees—one of the trees that remained dormant that first season died, the other two leafed out and grew very well. A second tree that was not included in the data collection died.

a. March 18, 2010 – Tree trunk diameter was measured at 1 foot above the soil – done by Ron Patterson and Caitlin Patterson. N-S and E-W measurements were taken and averaged for growth analysis.

b. July 5, 2010 – Trunk treatments (Sevin) were applied on July 5 (it was later this year due to the cold, wet June weather) - done by Ron Patterson
c. September 21, 2010 – visually evaluated trees going into dormancy and collected photos of tree treatments and tree health status – done by Ron Patterson and Diane Alston
d. November 19, 2010 – Tree trunk diameter was measured at 1 foot above the soil – done by Ron Patterson. N-S and E-W measurements were taken and averaged for the final growth analysis.

9. Results of Project:

At this point there is little, if any, damage to any of the trees by insects, especially by flatheaded borer.

Treatments:

1. Untreated Control
   a. Growth – 0.527"; no visible injury
   b. Growth – -0.203"; dieback to the graft, scion bud growth for current year appears to be very strong
   c. Growth – 0.753"; a small sap ball at scaffold limb, no apparent damage
2. Insecticide – apply a registered insecticide 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
   a. Growth – 0.599"; no injury
   b. Growth – 0.066"; no insect attack, severe limb death with scalding on upper surface of scaffolds
   c. Growth – 0.669"; no injury
3. Tree wrap – wrap a white-colored vinyl or cotton tree wrap around the trunk up to the lower scaffolding limbs in October
   a. Growth – 0.675"; minor mechanical scar on the south side
   b. Growth – 0.397"; sap leak at node/bud scar—suspect shothole borer
   c. Growth – 0.590"; no injury
4. Paint – paint the trunk and lower portion of scaffolding limbs with diluted white latex exterior paint in August
   a. Growth – 0.536"; no injury
   b. Growth – 0.192"; no injury, stunted growth obvious
   c. Growth – 0.817; no injury
5. Insecticide/Tree wrap – combine Treatments 2 and 3
   a. Growth – 0.597"; no injury
   b. Growth – 0.180"; mechanical injury, nothing major but stunted growth
   c. Growth – 0.556"; no injury
6. Insecticide/Paint – combine Treatments 2 and 4
   a. Growth – 0.557"; no injury
   b. Growth – 0.576"; no injury
   c. Growth – 0.328"; no injury

10. Evaluation and Impact: The information being gathered from this project has the potential to yield important information for peach orchards and backyard peach trees. While there is only one commercial peach orchard in Carbon County, there are many home yard peach trees throughout the county. In addition, there is another individual who has expressed interest in planting a peach orchard in the county. Results from Carbon Co. will be relevant to other central Utah counties with similar growing conditions, e.g., Emery, Millard, Sanpete and Richfield Cos. In order to understand

the long-term effects of the various treatments this study will need to continue for several more years.

1. While the trees all seem to remain healthy at this time there appears to be some significant stunting in the second block of trees. It is possible that the stunting is related to the soil. A soil test was taken, but it was for the entire area without consideration for how this one patch may affect the trees. More specific soil data will be collected to help determine the reason for the variance of that block. Until there is evidence of susceptibility to flatheaded borer there can be no conclusions made with the current information.
2. While peach trees will generally survive winter in Carbon County, the longevity of peach orchards is compromised because of what appears to be environmental stress and subsequent insect damage to the trees. Future project results on tree longevity will aid advisement to local growers on how to establish and maintain a healthy peach orchard or backyard peach trees.

11. Educational Outreach:

1. There are no outputs and outcomes to report at this time. Treatment application, data collection and tree health observations will continue for several more years. A fact sheet on efficacy of trunk protection methods will be written and made available to county Extension faculty.

2. Once there are results available, I will present the findings to the Utah Association of Count Agriculture Agents and to the Utah Fruit Growers Association. I will also make this information available to my Master Gardener students. I will hold tours for local growers and other groups that request it.

12. Educational Products Produced – Not enough data yet, but a fact sheet and presentations are planned for the future.

Provide Final Report in the format above with:

- **Attachments:** Photos taken during tree evaluation are attached..
- **Required Western SARE survey questionnaire results or original paper copies (see next page)**

and send to: Marion Murray, marion.murray@usu.edu by December 31, 2010.

Evaluation Form: Sustainable Agriculture Projects

Western Region Sustainable Agriculture Research & Education

IPM/SA Mini-Grant Project Title:

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Everyone	**Please circle**	
Improved my awareness of the topics covered	Yes	No
Provided new knowledge	Yes	No
Provided new skills	Yes	No
Modified my opinions and/or attitudes	Yes	No

How many people do you estimate you will share some aspect of this project within the next 12 months?

_____

Producers – In the next year I am likely to use some aspect of this project to

Adopt one or more of the practices shown	Yes	No
Increase the operation's diversifications	Yes	No
Reduce my use of purchased off-farm inputs	Yes	No
Increase my networking with other producers	Yes	No
Incorporate value-added into some aspect of my operation	Yes	No

Professionals – In the next year I am likely to use some aspect of this project

In an education program that I plan or participate in	Yes	No
As a resource I will make available to producers	Yes	No
As a professional development tool for my peers	Yes	No
To improve advice/council I give to producers	Yes	No

Professionals – Please describe how you are likely to use some aspect of this project for an educational purpose?