

Utah Extension IPM and Sustainable Agriculture Mini Grant Final Report

Project Title

Involving Local Middle and High School Science Students in Monitoring, Collecting, and Distributing Biological Control Agents in Leafy Spurge, Poison Hemlock and Knapweeds

Project Personnel (Project Leader, co-Leader(s), Collaborators)

Clark Israelsen (USU Extension) Joel Merritt, Eric Bingham and Jake Forsgren (Cache County Weed Department) Amber Mendenhall (APHIS) Joe Larsen (North Cache Conservation District) Larry Olsen (Blacksmith Fork Conservation District) Clint Asten and Andrea Clark (Vocational Agriculture Instructors, Cache County School District)

Total Grant Award

\$ 2,500

Location of Project (county/ies in Utah)

Cache County (Logan, Young Ward, Richmond and Cornish areas) Salt Lake County received the excess biocontrol agents that were collected.

Objectives

- 1) Involve Middle and High School FFA and science students who are currently enrolled in Plant Science classes in IPM/BCA activities.
- 2) With appropriate training from USU Extension, APHIS and the Cache County Weed Department, students will monitor BCA populations in areas when they have been introduced.
- 3) Under the direction of adult leaders, students will collect and redistribute BCA's from areas of excess to areas that are deficient. Care will be taken to insure that proper protocols are followed so that success can be enhanced.
- 4) If funds permit, trained high school students and their supervisors will introduce purchased BCA's to new areas where weed infestations are troublesome.
- 5) Our major objective is to convince the younger generation, future land owners, of the benefits of IPM/Sustainable Agriculture methods along with the proper use of BCA's.

Summary and Project Results

Our 2012 bio-control days were another great success. On June 5th we met the students at Logan High School to begin the days activities. Participants included three Logan High Science teachers, three representatives from Cache County Weed Department, two from USU Extension, Amber Mendenhall from APHIS, 19 students, and Carla Hoopes who was filming a documentary on bio-control.

The agenda for the day was very similar to our 2011 activities. To introduce the concept of invasive species we started with an excerpt from the movie Gremlins. Then Eric Bingham, Cache County Weed Department, delivered a powerpoint presentation which focused on the dangers of noxious weeds and the concept of bio-control. After the powerpoint, students loaded

into three vans and we headed to Ogden Canyon where we collected 5,000 *Mecinus janthinus* weevils, which are the bio-control for Dalmation toadflax weed.

The following day, we traveled to the release site which is just below first dam in Logan Canyon. Before releasing, we had the students try to find bugs that had survived the winter from release last year. We were able to find a few, and the students were excited to see that the bugs are able to survive at this site. The students then released the 5,000 bugs and filled out monitoring and release forms for that site.

At the time we did our collection, *Mecinus janthinus* weevils were selling at \$1.50 per bug. As such, our one field day of collection netted \$7,500.00. We released 2,500 bugs at the Cache County site in Logan Canyon and sent 2,500 bugs with Amber for release at other sites in Salt Lake County and surrounding areas.

The students had a great time learning about bio-control and getting some hands-on experience with the bugs. They were amazed to see the difference between the collection site and the release site. The bugs have done an impressive job in controlling Dalmation toadflax at the collection site. We anticipate similar results at the distribution site. Several students expressed surprise that such a “pretty flower” could be a noxious weed. The field days were a success from both a financial and educational perspective.

Additionally, we held another field day in late June to collect *Aphthona nigriscutis* flea beetles for control of Leafy spurge weeds. We estimate we collected approximately 5,000 bugs which would be valued at \$500.00. Again, we released them at a site near Cove in northern Cache County. Release survey sheets were completed prior to the release. Leaders also helped students assess the impact of reduced Leafy spurge plant populations based on our release from the previous year. We see evidence of impact, though more time will be needed to control the current infestation of weeds.

Monies from this grant also allowed for the purchase of *Agonopterix alstroemeriana*, defoliating moth larvae, for Poison hemlock control. Students assisted personnel from USU Extension and Cache County Weed Department in distributing these bugs in the College Ward area where there is lots of water and high concentrations of Poison hemlock. We will not be able to assess control until next season. We also released some Field bind weed mites in the Hyde Park area, just to see if we can determine any success in future years.

We also purchased some *Ceutorhynchus litura* with monies from this grant. These stem mining weevil were released in the Trenton area in late June where Canada thistle patches are troublesome. We will monitor those sites next season. We also purchased and released some *Urophora cardui* bugs and released them in the Logan area on September 5, 2012.

Finally, we purchased and released *Chphocleonus achates* bugs to control Spotted knapweed in the Paradise area. These insects were released in late August. We will monitor for results in 2013 and beyond.

Evaluation and Impact

- a. It is our assessment that we did a great job educating and involving high school students, and their teachers, to the benefits of bio-control. As stated above, we collected \$7,500 worth of Toad Flax Weevils and \$500 worth of Flea Beetles to control Leafy Spurge. We had ample bio-control bugs to distribute to sites within Cache County. Excess numbers were distributed in Salt Lake and other Utah Counties by Amber Mendenhall, APHIS.
- b. We did measure changes in knowledge, as indicated on WSARE evaluation listed below. In every case, students and teachers had a significant increase in knowledge and a determination to expanding the impact of bio-control methods. Pretests and posttests were used to measure the impact of training on high school student's ability to identify weeds, beneficial and harmful insects and BCA's.
- c. The major change we see for future county extension programs, deals with the impact future land owners will make on adapting bio-control strategies as they become the land owners and managers of the future. We are also happy with the increased number of existing landowners who are involved in providing sites for us to distribute bio-control agents. We are anxious to continue our monitoring efforts next season and sincerely appreciate the funding that has been provided by this IPM and SA Mini-grant.

Educational Outreach

In addition to this report, which is available electronically to the entire world, results of our educational efforts were presented in the following settings. Utah Weed Meetings, County Crop Schools, Producer Field Days, Professional Development meetings for Agricultural Extension Agents. Utah Vocational Agriculture Teachers Workshops. This information is also being shared with local chemical dealers, and individuals via phone, email or walk-in conversations

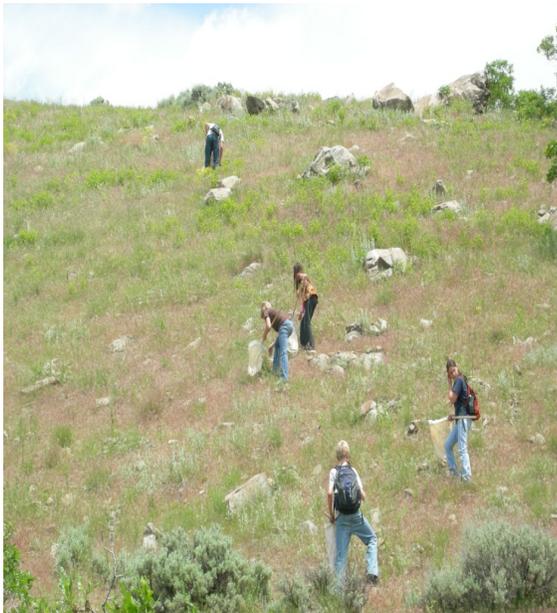
Educational Products Produced – list the educational products produced from this project (PowerPoint, fact sheet, poster, published article, etc.) (Electronic versions required).

Video segments available on CD.









This WSARE form is to be completed by all participants and applicants and is to be sent in as part of the Utah IPM/SA Mini-Grant final report.

Evaluation Form: Sustainable Agriculture Projects

Western Region Sustainable Agriculture Research & Education

IPM/SA Mini-Grant Project Title: Involving Local FFA Members in Monitoring, Collecting, and Distributing Biological Control Agents in Leafy Spurge and Other Troublesome Weeds

This evaluation includes 11 teachers (9 field day and 2 classroom) 75 students (38 field day and 37 classroom) Also included are 3 landowners/producers.

Everyone

Please circle

Improved my awareness of the topics covered	Yes	89	No	0
Provided new knowledge	Yes	89	No	0
Provided new skills	Yes	89	No	0
Modified my opinions and/or attitudes	Yes	80	No	9

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

Total number reported was 445.

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	3	No	
Increase the operation’s diversifications	Yes	2	No	1

Reduce my use of purchased off-farm inputs	Yes	2	No	1
Increase my networking with other producers	Yes	3	No	
Incorporate value-added into some aspect of my operation	Yes	2	No	1

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	10	No	1
As a resource I will make available to producers	Yes	6	No	5
As a professional development tool for my peers	Yes	11	No	
To improve advice/council I give to producers	Yes	6	No	5

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

Responses include: “A promotion of the economic and environmental benefits of using biocontrol on invasive species.” “What a great thing to have multiple generations working together on a common issue.” “I am also going to investigate the use of biocontrol agents on other weeds and insects.”