Bio-Control of Troublesome Weeds

Last week Cache County Weed Supervisor Joel Merritt gave his annual report to the County Weed Board. Among other things, Joel reported on the success of using biological control agents (BCA's) to limit the spread of invasive weeds within the county. The major focus this summer was controlling the spread of Leafy spurge with voracious Leafy spurge flea beetles. Yellow toadflax is also being controlled quite effectively with Toadflax weevils. Purple loosestrife, Poison hemlock and some of the Knapweeds are also limited by host specific insects that destroy particular plants. There is mounting evidence that Dyers Woad may soon be controlled by insects that are natural enemies. It was reported that we are at least two years away from necessary approval.

Among other things, USDA's Animal & Plant Health Inspection Service (APHIS) searches the globe to identify natural enemies to troublesome weeds. Before BCA's are released in the United States, extensive testing and careful research is done by APHIS to ensure that selected insects are host specific and safe to release. This is a time- consuming and expensive task that must be done before BCA's can be introduced. APHIS has been successful in identifying several insects that aid in the control of specific weeds, without being a threat to cultivated or native plants.

Biological weed control consists of introducing and managing selected natural enemies into invasive weed patches. These host-specific, plant-feeding organisms reduce the competitive advantage of the exotic weeds, thus allowing more desirable plant species to thrive.

Biological control has many advantages. One of the greatest benefits is that BCA's are on duty 24/7. This self sustaining, environmentally friendly method reduces the need for herbicides, and insects and pathogens don't argue about property boundaries. This long-term control method results in a lower weed control costs per acre and allows agents to build up and disperse to the limits of the weed infestation.

Some of the disavdantages of biological control include the limited availability of agents for some plants and a slower impact than other methods of weed control. Additional challenges to biocontrol methods have to do with the time required to monitor and evaluate beneficial insect numbers, collection of excess populations, and the redistribution of biocontrol agents to new areas. It seems we never have sufficient time or manpower to properly monitor, then collect and redistribute BCA's.

Cache County's success last summer came from involving ambitious high school science students in learning about the concept of biological control. Project leaders from APHIS, USU Extension and Cache County Weed Department met face-to-face with high school students in their classes during the spring of 2011. Instruction was provided regarding identification of weeds and insects. During the summer, project leaders and students worked in the field monitoring weed infestations, BCA populations, and redistributing and/or introducing BCA's to areas deficient in insect numbers.

Students captured 5,000 Toadflax weevils and more than 100,000 Leafy spurge flea beetles. Captured insects were put into tight fitting, but breathable, cardboard containers with a little vegetation for food and cover and temporarily placed in a cooler with ice until ready for release. Confined insects were

released at new sites in Cache and Utah Counties. Total value of the released insects, had they been purchased from an insectary, exceeded $17,500. We found that BCA's were quite easy to catch and distribute by using sweep nets through specific noxious weed types. Student labor was free to the county.

Funding for this project came from a small Integrated Pest Management (IMP) grant from Western SARE and Utah State University. Leaders are confident that students, as future land owners, will carry the IPM/BCA concept into the next generation. We plan to continue the effort next summer with a focus on additional weeds and BCA's.