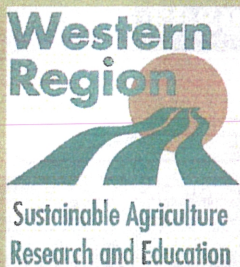


Appendix C.

Spotted Knapweed Biological Control

The Park County Biological Control Field Seminar is supported by a matching grant from Biological Control of Weeds, Inc.

and the USDA Western Region Sustainable Agriculture Research and Education Program.



Grant cooperators include:
Park County Extension Office and
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Knapweed Flower Weevil and Attacked Seedhead

Thank you for coming to the Park County Knapweed Biological Control Field Seminar! The insects you received today are **Knapweed Flower Weevils**, *Larinus obtusus*. It is one of the newest insects available against spotted knapweed. This important bio-control insect attacks the flowers of knapweed, thereby reducing seed production. While this insect is very effective at destroying seeds, it will not kill your knapweed outright (*sorry, no silver bullets here*). There are other introduced, bio-control insects that also attack knapweed. It will be the combined attack from these different agents at different times of the year and on different parts of the plant that will ultimately be responsible for the successful control of this weed.

When you release your *Larinus obtusus* weevils onto your knapweed you are beginning a colony of insects that will build up in numbers each successive year. The female weevils will lay up to 130 eggs into the developing knapweed flowerheads. As the larvae hatch and feed in the developing flowers, they will destroy plant tissues that are responsible for seed production. They will pupate (form their cocoon) inside the heads later this summer. The adult weevils will emerge from the attacked heads and overwinter in the leaf litter and soil. Next summer, the adults will begin the cycle all over again, feeding, mating, and reproducing on your knapweed. With each successive generation (one per year), your colony will build up in greater and greater numbers and have an increasing impact on your knapweed. While bio-control is slow, it is permanent. No additional expenditures are required. As one customer of ours said: "My bugs are working even when I'm not!"

This insect is very easy to monitor its attack and spread on your knapweed. In the autumn when the knapweed heads dry out and turn brown, one can identify the presence of the insect's attack by looking for the round exit hole in the knapweed (see photo insert). As the weevil population builds, the number of attacked heads will become more numerous. In the future, look for their spread to knapweed patches nearby.