BIOLOGICAL CONTROL AGENTS (INSECTS)

Biological control agents are organisms (usually insects) that are deliberately introduced to an area to control weeds. The aim of biological control is not eradication, but rather to exert enough pressure on a weed to reduce its abundance to acceptable levels (Wilson and McCaffrey 1999).

These noxious weed species have biological control programs in Colorado:

Leafy spurge
Diffuse and Spotted knapweed
Russian thistle
Puncture vine
Musk thistle
Yellow and Dalmatian toadflax
Bull thistle
Canada thistle
Russian knapweed
Purple loosestrife

Biological controls are most useful for …

- Reducing seed production or weakening plants.
- Large, dense infestations where other control methods are not cost-effective.
- Situations where a reduced but effectively permanent presence of a noxious weed species is acceptable.

Biological controls have limitations such as…

- Failing to eradicate the target plant species. Do not use biocontrol agents where you seek to eradicate a weed population. Eradication of weeds with biological agents never occurs.
- Use of biological control is effectively an admission that a particular weed species is here to stay and that this is acceptable.
- Feasible for only a handful of weed species due to the high cost of finding, screening and testing potential control organisms. Biological controls have a mixed record with some tremendous successes but also with many failures.
- Rarely successful as the sole means of control of a weed species.
- Lack of effective biological control agents for most noxious weed species.
- Biological control agents being unavailable when you want them.
- Necessity of having a reservoir of host weeds to support biological agents over the long term. Thus, it may be necessary to leave some weeds to support populations of control organisms. This may be unpopular with neighbors or the public.
- Degree of control is variable and will take several years to achieve.

Pitfalls of biological controls include:

- Insects attacking beneficial, non-target plants. For example, the seed weevil *Rhinocyllus conicus* that has been used to control musk thistle also attacks native thistles. There are indications that this weevil is adversely affecting a rare thistle (*Cirsium ownbeyi*) in Colorado (C. Dawson, pers. comm.). The weevil *Larinus planus*, introduced for control of Canada thistle, has been reported to attack native thistle species as well (S. Louda, pers. comm.). Insects that have been released to control St. Johnswort also feed on native *Hypericum* species, and some insects released for leafy spurge control also attack native spurge species (Wilson and McCaffrey 1999).
- Inability to establish populations of biological control organisms for reasons relating to climate, soils and so forth that are not well understood.

Cost of biological controls:

- Biological control agents are available free of charge from the Insectary. Availability is limited.
- Insects are available for sale from commercial sources, often for several hundred dollars for a sufficient number of insects for one release.
- The cost of reseeding a construction site should be included in the cost of the project.