Implementing a Bio-control Program for Leafy Spurge

About bio-control

Bio-control uses the natural enemies of leafy spurge (*Euphorbia esula*) to control and reduce its population. In Manitoba, the flea beetles of the *Aphthona* genus have shown the most success in controlling leafy spurge. It is the *Aphthona* larvae that do the most damage by feeding on the roots of leafy spurge plants, causing them to weaken and become more susceptible to other controlling agents such as disease, grazing and herbicides. Bio-control is useful in areas where landowners may be limited by the type of control (e.g. herbicides).

The most effective beetle for you

In Manitoba, effective leafy spurge flea beetles include the black spurge beetle (*A. lacertosa*), the brown dot spurge beetle (*A. cyparrissiae*) and the black dot spurge beetle (*A. nigriscutis*). The black dot and brown dot spurge beetles are nearly indistinguishable and have similar site requirements. They prefer full sun and do well in sandy-loam soils. Releasing them in areas containing green needle grass is a good indicator of a suitable release site. The black spurge beetle prefers heavier clay-loam soils and will tolerate some shade and moisture.

Apthona nigriscutis

Aphthona lacertosa

Collect and release

Look for beetles between 10:00 and 6:00 on warm to hot sunny days with little wind. Flea beetles like to perch on grass and spurge in the sunlight. Use a standard sweep net to sweep the top half of the vegetation to capture them. If you can collect two or more flea beetles per sweep, you can harvest the site.

The beetles start to emerge around the third week of June and disappear by the beginning of August. You will want to harvest the beetles before mid-July in order to ensure you collect them before the females lay their eggs. Release your beetles as soon as possible, preferably the same day as they were collected. If you are just going a short distance, transport them in your sweep net. Otherwise, pack them in paper or cardboard containers 1/3 to 1/2 filled with leafy spurge vegetation. Seal them with tape and place them in a cooler containing ice. Take care that the containers do not become wet, or come in direct contact with the ice. Keep the beetles at 4 to 7°C (40 to 45°F) until you can release them.

A minimum of 1,000 beetles is recommended per release, more if they are available. Proper site selection is critical. Choose an area in full sun, avoiding sites that collect moisture or have a tendency to flood in the spring. South-facing slopes make ideal release points. Release them in a group towards the edge of moderately dense leafy spurge infestations (approximately 60-90 stems per square metre); do not sprinkle them through the patch. Given time, the beetles will move their way into the more heavily infested areas.

A. lacertosa on leafy spurge stem

Monitoring

Remember to monitor your release sites every year. It does not take much time, and if you get a population explosion, you will want to take advantage of it to move your beetles to new sites.

Look for a “halo” of thinning or dead canes, stunted leafy spurge plants and delayed flowering around the release site. This is symptomatic of larval activity and indicates establishment of your populations. As well, beetles should be visible on the plants.

Integrated Pest Management (IPM)

It is important to note that biological control is slow and may not work for everyone. It may be several years before you see any effects. Also, while the flea beetles will help reduce the density of the leafy spurge at the site, they will not eradicate it. You will want to contain and control the leafy spurge while the beetles establish themselves. Using IPM techniques will allow you to complement the work being done by the flea beetles.

Careful herbicide application helps to contain leafy spurge around the site perimeter. Beetles can also be combined with a managed, or multi-species grazing program, as long as the sheep or goats leave enough leafy spurge for the adult beetles to feed upon.

Resources

Leafy Spurge Stakeholders Group: http://www.brandonu.ca/organizations/rdi/leafyspurge.html
Team Leafy Spurge: http://www.team.ars.usda.gov/
Local Ag Rep Office
Local Weed Supervisor

COVERING NEW GROUND
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Leafy Spurge Stakeholders Group

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