

Leafy Spurge and Species Diversity

The Midas Touch

Sometimes purposefully, often inadvertently, through our activities we have spread and introduced non-native species into our environment. In many cases they flourish, unchecked by North American/Canadian predators. One of these thriving species is leafy spurge (*Euphorbia esula*). Leafy spurge is a noxious deep-rooted perennial weed that has rapidly spread across much of North America, especially throughout the western provinces and states. It will readily establish itself in a variety of environments, and it is quick to take advantage of disturbed sites. It can be found in Manitoba in pastures, agricultural lands, along roadsides and in wooded areas. Areas with high spurge densities and distributions especially occur in the dry, mixed grass prairie habitat where there is less competition from native plants.



The Importance of Species Diversity

Species diversity is commonly defined as the number of different species living in an area. Species diversity considers not only the number of species present, but their abundance as well. It is believed that there are over 80,000 plant species in the world that can be used for food sources, as well as industrial products. Species diversity also contributes to tourism and recreation, as well as ecological significance.

Leafy Spurge: Effects on Species Diversity

Leafy spurge spreads rapidly through seed and vegetative reproduction. Each leafy spurge plant can produce about 140 seeds. Most seeds remain viable for 8 years, although some may last for up to 20 years. The roots of the leafy spurge plant can reach a depth of 26 feet (7.9m) and extend 15 feet (4.6m) across. Buds along the roots contribute to the main spread of the plant. The vast energy reserves held by the roots allow the leafy spurge plant to swiftly recover from herbicide and grazing pressures. Where cattle and horses will not consume leafy spurge, sheep and goats will readily include it as a part of their diet.



Aided by early spring emergence and lack of predators, leafy spurge absorbs the bulk of light, space, water and nutrients, often becoming the dominant plant in mixed grass prairie habitats. General species diversity and abundance declines as a result of being crowded out by this noxious weed.

Animal and bird species also suffer as leafy spurge reduces wildlife forage, alters escape cover, and reduces territorial space necessary to many species' survival. Endangered species, whether they are plant or animal, are particularly vulnerable to habitat loss caused by noxious weed invasions.

Bio-Control of Leafy Spurge

Bio-control is a method of controlling invasive species through the introduction of predators from their native land. Before any form of bio-control is released, it undergoes rigorous testing to ensure it will not adversely affect anything other than the target species. It is an attractive means of controlling leafy spurge as there is no danger of the agents of control preying upon or affecting other plant species. Bio-control is also useful in areas where the land managers may be limited by type of control, such as herbicides.

Effective Bio-Control Agents

In Manitoba, the *Aphthona* flea beetles are biological control agents that have shown the most success in controlling leafy spurge. It is the larvae of the *Aphthona* species that will have the most impact upon leafy spurge. Young larvae bore into and feed upon the filamentous roots of the leafy spurge plants. As they get older, the larvae will feed on the larger roots and root buds. This causes the plant to weaken and become susceptible to other agents, such as disease and herbicides used in Integrated Pest Management programs.



Effective leafy spurge flea beetles include the black spurge beetle (*A. lacertosa*), the brown dot spurge beetle (*A. cyparissiae*) 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. The black spurge beetle prefers heavier clay-loam soils and will tolerate some shade and moisture. Open, south-facing slopes on hills usually make good release points for all beetles.

It is important to note that biological control is slow, and 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, alone, they will not eradicate the leafy spurge.

IPM and Bio-Control

Using Integrated Pest Management (IPM) techniques will allow you to complement the work being done by the flea beetles. Because beetles are slow to spread, you will want to contain and control the leafy spurge while the beetles establish themselves. For example, careful herbicide application around the site perimeter will help to contain the leafy spurge. Whatever the methods you choose, always be careful to leave enough leafy spurge during June and July for the adult beetles to feed upon. For more specific information about leafy spurge control methods, consult your local weed supervisor or Manitoba Agriculture, Food and Rural Initiatives representative.

Control Method	April	May	June	July	August	September
Herbicide			■		■	
Cultivation (every 2 weeks)	■	■	■	■	■	■
Mowing		■	■	■		
Burning	■	■				
Multi-species grazing (rotational)	■	■	■		■	■
Multi-species grazing (continuous)	■	■	■	■	■	■
Beetles			■	■		
Forage competition	■	■	■	■	■	■

Resources

Leafy Spurge Stakeholders Group: <http://www.brandonu.ca/rdi/leafyspurge.html>

Environment Canada: Species at Risk: <http://www.speciesatrisk.gc.ca/>

Team Leafy Spurge: <http://www.team.ars.usda.gov/>

West Souris River Conservation District: <http://www.wsr.cd.com>

Local Weed Supervisor

Manitoba Agriculture, Food and Rural Initiatives

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