

Leafy Spurge in Manitoba

Leafy Spurge Stakeholders Group Members

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New Publications

Leafy Spurge and Species Diversity

The Mides Touch
Scientists are beginning to understand the impact of leafy spurge on native species diversity. Leafy spurge is a common, aggressive, perennial weed that has rapidly spread across much of North America, especially to regions where native species diversity is high. Leafy spurge is a highly competitive, aggressive, perennial weed that has rapidly spread across much of North America, especially to regions where native species diversity is high. Leafy spurge is a highly competitive, aggressive, perennial weed that has rapidly spread across much of North America, especially to regions where native species diversity is high.

The Importance of Species Diversity
Species diversity is increasingly defined as the number of different species living in an area. Species diversity is not only the number of species present, but their abundance as well. It is believed that there are over 10 million plant species in the world that can be used for food sources, as well as medicinal products. Species diversity also contributes to human and ecosystem health and well-being.

Leafy Spurge: Effects on Species Diversity
Leafy spurge spreads rapidly through seed and vegetative reproduction. Leafy spurge plants can produce about 100 seeds. Most seeds remain viable for 3 years, although some can last up to 20 years. The seeds of the leafy spurge plant can reach a depth of 20 feet (7 feet and extend 15 feet (5 feet) below the soil surface. Leafy spurge plants can reach a height of 20 feet (7 feet) and extend 15 feet (5 feet) below the soil surface. Leafy spurge plants can reach a height of 20 feet (7 feet) and extend 15 feet (5 feet) below the soil surface.

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 expensive means of controlling leafy spurge as there is no danger of the agents of control preying on or affecting other plant species. Bio-control is also used to control where the best management may be limited by type of control, such as herbicides.

Implementing a Bio-control Program for Leafy Spurge

About bio-control
The control of leafy spurge through the use of natural enemies of leafy spurge (insects) is a natural and effective method of controlling leafy spurge. It is the objective of this fact sheet to provide information on the most effective bio-control agents for leafy spurge. The most effective bio-control agents for leafy spurge are the black dot beetle (J. lecontei) and the brown dot beetle (J. lecontei). The black dot beetle and the brown dot beetle are highly effective bio-control agents for leafy spurge. They feed on the roots of leafy spurge plants, causing them to weaken and, in some cases, die. The black dot beetle and the brown dot beetle are highly effective bio-control agents for leafy spurge. They feed on the roots of leafy spurge plants, causing them to weaken and, in some cases, die.

The most effective beetle for you
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Collect and release
Look for beetles between 10:00 and 4:00 on warm to hot sunny days with little wind. If the beetles are to be used for release, they should be collected in a clean container. Use a standard vacuum to sweep the top half of the vegetation to collect them. If you can collect two or more flat beetles per sweep, you can harvest the site.

Release
The beetles should be released around the first week of June and dispersed by the best method of transport. You will want to release the beetles before mid-July in order to ensure you collect them before the females lay their eggs. Release your beetles in your own yard, preferably the same day as they were collected. If you are going to a farm, transport them in your own car. Otherwise, pack them in paper or cardboard containers (1.5 to 2.0 liter) with leafy spurge vegetation. Seal them with tape and place them in a cooler containing ice. This ensures that the containers do not become hot, or cool, or dry out during transport. Keep the beetles at 10°C to 15°C until you release them.

Monitoring
Remember to monitor your release sites every year. It does not take much time, and if you get a preliminary indication, you will want to take advantage of it to move your beetles to new sites. Look for a "cloud" of beetles on the ground around leafy spurge plants and disturbed vegetation around the release site. This is an indication of larval activity and indicates establishment of your population. As well, beetles should be visible to the plants.

Integrated Pest Management (IPM)
It is important to note that bio-control is not a silver bullet for everyone. It may be several years before you see any effect. Also, while the flat beetles will help reduce the density of the leafy spurge at the sites they will not eradicate it. You will want to continue to control the leafy spurge while the beetles establish themselves. Using IPM techniques will allow you to complement the work being done by the flat beetles.

Resources
Leafy Spurge Stakeholders Group: <http://www.brandonu.ca/rdi/leafyspurge.html>
Leafy Spurge: <http://www.ams.usda.gov/leafyspurge/>
Leafy Spurge: <http://www.ams.usda.gov/leafyspurge/>
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One of the LSSG's latest publications is the *Leafy Spurge and Species Diversity* fact sheet. The production of this fact sheet was made possible through the support of the West Souris River Conservation District and the Government of Canada Habitat Stewardship Program for Species at Risk.

Support for the publication of the *Multi-species Grazing of Leafy Spurge* fact sheet was provided by Covering New Ground, a program of Manitoba Agriculture, Food and Rural Initiatives.

Both fact sheets are available in paper or on the LSSG Web site.

Spring 2004
Volume 3, Issue 1



Leafy Spurge in Manitoba



- The newsletter of the Leafy Spurge Stakeholders Group -

Spruce Woods Leafy Spurge Campaign

Spruce Woods Provincial Park lies between the communities of Glenboro and Carberry in southwestern Manitoba. Covering a total area of 250 square kilometers, the park boasts a number of vegetation communities such as prairie, spruce, oak and aspen forest, fens, bogs and open sand dunes. The prairie areas of Spruce Woods Provincial Park are some of the best and some of the last examples of native mixed grass prairie in the Assiniboine Delta natural region.

Leafy spurge is prevalent throughout the entire Park south of the Assiniboine River and is quickly spreading to many areas north of the river. In response, we initiated an extensive leafy spurge control campaign in 1983. At this time, we employed an integrated approach whereby chemical control was coupled with the release of biological control agents.

Chemical control has focused on park boundaries and main travel routes. Areas are driven twice yearly - at the end of June and end of August - with a Raintree

Sprayer mounted in the back of a ¾ ton truck. The chemical used is 2, 4-D Amine 600. Up until and including the 1999 season, spraying was completed by Park operators. In 2000, spraying was contracted out, forcing us to decrease the total area of application. We are currently seeking more funds to maintain this type of control.

Biological control has included the release of four agents: *Aphthona nigricutis*, *A. cyparissiae*, and *Lobesia euphorbiana* and more recently, the introduction of *Aphthona lacertosa*. As insects were released, we recorded general observations and marked sites with metal identification tags for future reference. Beetles from established populations were moved to new sites whenever feasible. At present, release sites are recorded on an aerial photo of the Park. Most sites have been identified by GPS and a numbering system.

In June 2000, an additional 400,000 beetles were acquired during the ...continued on page 2

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Leafy Spurge at Ag Days

Ag Days took place January 2004 at the Keystone Centre in Brandon. The LSSG sponsored an afternoon session on Tuesday, January 20 at 1:30 pm. Presentation topics included prescribed burning and chemical control.

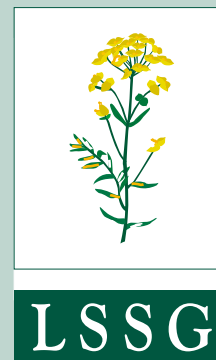
Featured speakers were Dr. Barry Irving and Brian Hunt. Barry Irving is manager of the Rangeland and Wildlife Research Unit, made up of the Kinsella Research Ranch and the Ministik Wildlife Research Station at the University of Alberta. His background is in integrated land use, especially on rangeland.

Barry is a Professional Agrologist and is an active member of the Society for

Range Management, a diverse international group of 4,000 members who are interested in the management of rangeland. In his spare time, he travels to China to "teach the teacher" about North American grazing management and teaching and extension methods.

Barry actively uses fire to manage the grass-forest interface in the Aspen Parkland of central Alberta. He delivered his presentation "Getting control of Leafy Spurge" at the LSSG session during Ag Days.

Prescribed burning has many applications, including manipulation ...continued on page 2



Ag Days 2004

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of vegetation composition. There is a real lack of experienced prescribed burning practitioners in western Canada. The potential and limitations for using prescribed burning in a leafy spurge control program were discussed in his presentation.

Brian Hunt is interim Ag Rep serving the Carman District with Manitoba, Agriculture, Food and Rural Initiatives (MAFRI). Prior to that, he held the position of Weed Specialist within the Crop Diversification Section in the Soils and Crops Branch. He is a native of Manitoba and a graduate of both the University of Winnipeg and the University of Manitoba.

Brian spoke on "The Use of Herbicides in Integrated Weed Management of Leafy Spurge." While herbicides alone will not eliminate leafy spurge, combining methods can be effective in managing the spread of this noxious weed. He provided an overview of Manitoba recommendations compared to other

neighbouring jurisdictions.

After the presentations by Barry and Brian, there was a panel discussion. Each participant spoke briefly and informally about his or her experiences in controlling leafy spurge.

Ralph Oliver, Councillor with the RM of North Cypress, summarized what his RM is doing about leafy spurge. Myles Kopytko, Manager of the Little Saskatchewan River Conservation District, shared with the audience some of the activities his CD has undertaken to combat spurge. Gerry Oliver provided information about how some producers are successfully using goats to graze spurge to decrease infestations.

The panel was designed to be an informal way for sharing information about what is being done in the area to control leafy spurge. A question and answer session followed the panel discussion.

Spruce Woods

Continued from Page 1

Walhalla International Spurge Meeting. These beetles were released the following day in locations throughout the Park. A grid method of release was used for two spurge sites, averaging approximately 30,000 beetles per site. The remaining beetles were released in spurge infestations, with 3,000 - 6,000 beetles per site. All sites were photographed and observational data recorded. A sampling methodology has been devised to monitor the effects of biological control in two of these new release sites. Sampling began in the 2001 season.

Staff have been collecting beetles near Minot, North Dakota for additional release at new spurge sites or to supplement existing sites. These beetles include a mix of *Aphthona nigricutis* and *lacertosa*. Plans are to continue beetle transfers from North Dakota to spurge infestations north of the Park in order to

create new release sites where needed. To date, there are approximately 200 biological control release sites in the Park. Observations since 1983 have shown a significant reduction in the number of flowering and seeding plants in some areas.

To maintain the health of prairie remnants within Spruce Woods Provincial Park and ensure there is no net loss in the overall area of prairie in the Park, a Prairie Management Plan was initiated by Manitoba Conservation in 1996. To date, sixteen prairie sites have been included in the plan. In addition to leafy spurge control, management prescriptions for each site may include controlled burning, grazing, mowing and/or chemical and biological control of other non-native species.

Gerry Rosset
Natural Resource Officer
Carberry



Foundation Creates Environmental Fund

The LSSG received a grant from the Brandon Area Community Foundation (BACF) to assist with its awareness and education project called "Strengthening Community Capacity for Environmental Change."

Funds received from the BACF were used to organize and host a leafy spurge session at Ag Days in January 2004 (see page 1). Other activities included the erection of precautionary signage around the City of Brandon, the production of an interactive CD and the preparation of news articles on leafy spurge issues.

The LSSG would like to thank the BACF for its support.

"Funding the Future" has symbolized the philanthropy of the Brandon Area Community Foundation since 1965. A new partnership with the McConnell Foundation and Community Foundations of Canada is now providing BACF with an opportunity to expand these philanthropic efforts to include the environmental community. The project, "Funding The Environmental Future", promotes a strategy that reflects the previous, present and future community leadership roles of the Foundation; community convening and leadership; grant making; and endowment building.

Leadership

The project gives BACF an opportunity to expand its leadership in the environmental community.

BACF will convene meetings of conservationists to encourage networking and coordination of efforts. Training sessions will be held to improve marketing and promotional skills. Identifying and providing resource speakers, providing design and writing support, recognizing best practices and establishing media support to highlight environmental efforts are some of the activities under consideration. Plans also include the development of a media publication that will be distributed throughout the Brandon area on a regular basis. It is intended that the regularity and consistent format of this publication will develop a sense of environmental direction in the community. These activities are intended to assist organizations with achieving their objectives more effectively and efficiently.

Grant Making

The efforts of various environmental groups shall be strengthened by the provision of financial support, some of it in shared or matching dollars. An outreach program to promote the use of the new recycling process in the City is being initiated. This program will include a composting resource kit for schools, school tours through the new facility and the distribution of composting and recycling promotional materials. Plans are underway to reduce dependency on the

reduce dependency on the Assiniboine River for the assimilation of waste water. This initiative will involve coordination among public and private enterprise for a cause of common interest. Strengthening the environmental capacity of these and other like organizations is a key objective of the project.

Endowment Building

BACF is building an Environmental Endowment that, over the years, will serve to satisfy the particular short and long-term philanthropic objectives of those who are committed to improving our environment. Developing this endowment with sufficient funds to meet the growing needs of environmental organizations in the community will be a primary component of the project.

The project will be administered by a Committee composed of BACF Directors and community volunteers. Board members of BACF have committed themselves to becoming more knowledgeable about environmental issues. Because they are involved with many other organizations, their interest and enthusiasm for strengthening environmental capacities will be expressed throughout the community.



BRANDON AREA COMMUNITY FOUNDATION

Rural Municipalities

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“As a part of the project, we have set up transects in the road allowance near the farm. Pryzner will be grazing her flock of sheep in the road allowance, using eight strand, portable electric fencing. She moves the sheep back to the farm at night, so predators should not be a problem.”

“We believe that applied demonstration is effective in convincing producers to implement better management strategies for leafy spurge,” Pachowski said.

“Demonstration sites allow for a visual representation of the effectiveness of

various controls to accompany textual information. It helps to familiarize producers with different methods of leafy spurge control that they may not have seriously considered in the past. Seeing is believing.”

Leafy spurge is an invasive noxious weed infesting an estimated 225,000 acres of grazing land in Manitoba with a reduction in grazing capacity of more than 16,000 cattle. Based on 1999 data, it costs the Manitoba economy an estimated \$19 million annually and the problem continues to escalate.

*Bill Stilwell
Neepawa*

Remote Sensing

Remote sensing is the “science and art of acquiring information about material objects from measurements made at a distance, without coming into physical contact with the objects.”

This past year, the West Souris River Conservation District (WSRCD) began a study in the RM of Cameron to determine the feasibility of using remote sensing geographic information systems (GIS) techniques to detect and map leafy spurge infestations.

“This technology was successful in detecting leafy spurge on satellite imagery and aerial photographs,” says Dean Brooker, GIS Analyst / Resource Technician with the WSRCD.

Brooker is currently classifying the

Quickbird Multi-Spectral satellite image (with a 2.8 metre resolution) acquired on July 2 to determine the acres of leafy spurge infestations in the study area. He anticipates some problems during final classification of the image due to the presence of some cloud cover.

In addition to the satellite image, Brooker utilized a GPS unit for ground truthing and to mark locations of leafy spurge infestations in the study area. This additional data will be useful in determining at what density leafy spurge can be detected on imagery.

Next year, the WSRCD would like to expand the study area to include more rangeland and grassland acres where leafy spurge grows more

readily. This will bring the study area from 92 square kilometres to a total of 270.

“Traditionally, leafy spurge infestations are detected and mapped by visual observation, usually by local weed supervisors. The use of remote sensing and GIS techniques will allow the investigator the advantage of rapid acquisition of data and the ability to accurately detect and map leafy spurge infestations,” states Brooker.

The WSRCD received support for this project from the Covering New Ground program, Natural Resources Canada and Atlas Geomatics. More information on the remote sensing project can be found on the WSRCD Web site at:

www.wsrcd.com/leafyspurge.htm.

QuickBird Satellite Image - Digital Globe			
Satellite: Quickbird	Sensor: Optical	Geographic Extent (Top Left) 370784.35E - 5478350.45N	Geographic Extent (Bottom Right) 380407.93E - 5468361.83N
Pixel Resolution: 2.8 (x) meters 2.8 (y) meters	Number of Rows: 3600	Number of Columns: 3591	Number of Bands: 4
Bands Used: R=4, G=3, B=2	Projection: UTM Zone 14	Datum: NAD 83	Date of Imagery: July 2, 2003
Cloud Cover: 6%	Image Quality: Fair	Off Nadir: 14 degrees	File Formats: pix, tif, jpg

There can be Successful Control of Leafy Spurge

While leafy spurge seems to be winning the war, there are some small battles taking place in the region that provide hope that it can be controlled in an economically and sustainable manner.

Two families who are voluntary land stewards in the Mixed-Grass Prairie Stewardship Program (MGPSP) have taken innovative ideas and developed them into sustainable weed management tools, one on a small scale, the other large.

Ellen and Bob Blain of Glenboro have battled leafy spurge in their native pastures for the last 18 years. The spurge was located in isolated patches through large portions of their pastures. They tried the biological approach using beetles, as well as chemical treatments. Neither method provided satisfactory control.

Two years ago, Ellen attended an MGPSP tour that looked at the effective use of goats to control leafy spurge and brush. They liked the idea of goats rather than sheep, because goats seemed to have a higher preference for spurge and didn't require shearing.

The idea of “goats on wheels” began to gel. If you have isolated patches of spurge, why not move the goats to the spurge and/or brush? They purchased a used stock trailer and mounted a solar panel on the top and a solar-powered fencer on the side. A water tank was later added on the other side of the trailer. The Blains then had a way to move



the goats from one spurge patch to another as well as provide a safe place for them to get out of the elements and supply protection from predators. An electrified wire mesh fence, approximately 500 feet in length, is used to enclose the goats in the desired place.

The biggest challenge to this system has been the labour inputs. The fence is moved, on average, every three days, depending on the amount of spurge and brush in each location. The fencing is rotated in four areas around the trailer, before the trailer is moved to a new location. Predators haven't been a problem so far.

On a larger scale, Pierre and Marie Vallotton of Stockton have tackled and are winning the war on spurge in their native pastures in the rolling sandhills near their farm.

Pierre has been fighting leafy spurge since 1976. He also tried beetles and chemical sprays without great success. The spurge continued to spread, and he was losing more and more pasture production each year.

Four years ago, during conversations with the MGPSP, the idea of using sheep or goats to control spurge was discussed. Pierre liked the idea of using goats. After searching out more information, he decided to go ahead with a grazing project, starting with a 50-acre pasture located beside his feedlot.

His neighbour, Derek Shearer, was at the same time looking for pasture for his goats. An arrangement was struck, the fences were constructed, a llama for predator control was purchased and 58 does and kids began the process of cleaning up the spurge. Along the way, they also cleaned up the brush, which had been slowly encroaching into his pasture. Anything green up to six-foot high was fair game for the goats.

Last year, Pierre enlarged the area to 160 acres. By moving the water supply to the center of the pasture,

the goats were able to graze over much of the pasture. Control in the first pasture continued. Monitoring results indicated an increase in the amount of spurge the second year.

All that changed this year. The number of goats was almost doubled to about 100. They grazed the pasture longer. The hot, dry conditions this summer added insult to injury for the spurge. Spurge density dropped between 85-90 percent.

Pierre said the level of brush and spurge control “went way beyond my expectations.” He has been so pleased with the results, he is planning to fence another ¼ section next spring, as well as buy 30 of his own goats to add to the “borrowed” goats. He will need to continue using some goats in the first pasture to maintain the control he has now gained; however, he can now move onto other infested areas.

Along the way, he found that the fencing requirements were less than initially stated. Now he uses three or four strands of barbed wire and one electric wire 10 inches off the ground. Next year he will graze some cattle with the goats and do more rotational grazing. He also added a Maremma guardian dog to the herd for additional predator protection.

Both projects have proven to be much more successful than both the Blains and Vallottons ever thought possible. It provides optimism that spurge control can happen.

*Gerry Oliver
Mixed-Grass Prairie
Stewardship Program
Carberry*

Native Species as Weed Control Method

One of the biggest challenges to the control of alien invasive weed species occurs on non-agricultural land and in ecologically sensitive areas. A recent study published by the University of Minnesota looked at establishing native species on a Minnesota sand plain which had an established population of weed species. Weed species were defined as those species that are considered undesirable in a tall grass prairie restoration. Some of these species are listed as noxious in Minnesota, or exotic to the United States.

Three methods were utilized in the study: (1) no restoration, (2) prairie seed addition and (3) site preparation plus prairie seed addition. The effects of the restoration treatments were measured 7 years after the initial restoration. Effects were documented by measuring weed biomass and weed stem numbers.

The initial theories that underlie this approach to weed control focus on the diversity of the plant community and the resulting competitiveness that will inhibit the establishment and spread of invasive weed species. There are other

benefits to the restoration of native species, such as improved control of the flow of water, sediments and nutrients, detoxification of polluted areas and the restoration of native habitat for wild life species.

The results that were observed from the sites were very promising. In the restored sites where glyphosate was applied, tillage, packing and seeding were employed, weed biomass was reduced by 94% and stem counts were reduced by 76%. In the sites where seeding only was employed, the weed biomass was not significantly reduced but the stem numbers were reduced by 45% as compared to the control sites. The sites were also subject to a prescribed burn in the fall of 1995 and fall of 1998.

The authors of the study believe that restoration is a viable option for the control of invasive weeds in disturbed and sensitive areas. D. M. Blumenthal believes that the late successional identity of the native species is as much a factor in the decrease in weed biomass and stem numbers as is the theory of diversity and competitiveness. The

results they were able to gather were, however, very site specific. If soil conditions such as texture, organic matter content and water holding capacity were different in another site, the results could also vary. The potential for this treatment is well worth considering in sensitive riparian areas where other control options are not applicable. This approach may also have a very good fit in the reclamation and restoration of disturbed sites.

For further information on this study please refer to: Blumenthal, D. M., N. R. Jordan, and E. L. Svenson. 2003. Weed control as a rationale for restoration: the example of tallgrass prairie. *Conservation Ecology* 7(1): 6. [online] URL: <http://www.consecol.org/vol7/iss1/art6>

Leafy spurge (Euphorbia esula) is a highly competitive alien invasive weed species that has not been specifically evaluated in any studies utilizing these techniques of weed control. The effectiveness of native species competing with leafy spurge has not been documented and has yet to be determined.

Weed species found in the sites in order of frequency

Common Name	Species	Common Name	Species
Western ragweed	<i>Ambrosia psilostachya</i>	Red sorrel	<i>Rumex acetosella</i>
Quack grass	<i>Elytrigia repens</i>	Common ragweed	<i>Ambrosia artemisiifolia</i>
Canada fleabane	<i>Conyza canadensis</i>	Thyme leaved spurge	<i>Euphorbia maculata</i>
Silverweed	<i>Potentilla argentea</i>	Hoary alyssum	<i>Berteroa incana</i>
Yellow foxtail	<i>Setaria glauca</i>		

Native species used for restoration were

Common Name	Species	Common Name	Species
big bluestem	<i>Andropogon gerardii</i>	rough blazing star	<i>Liatris aspera</i>
butterfly weed	<i>Asclepias tuberosa</i>	wild bergamot	<i>Monarda fistulosa</i>
sky blue aster	<i>Aster oolentangiensis</i>	slender beard-tongue	<i>Penstemon gracilis</i>
sideoats gramma	<i>Bouteloua curtipendula</i>	large-flowered beard-tongue	<i>Penstemon grandiflorus</i>
purple prairie clover	<i>Dalea purpurea</i>	Black-eyed Susan	<i>Rudbeckia hirta</i>
white prairie clover	<i>Dalea candida</i>	little bluestem	<i>Schizachyrium scoparium</i>
Canada wild rye	<i>Elymus canadensis</i>	stiff goldenrod	<i>Solidago rigida</i>
stiff sunflower	<i>Helianthus pauciflorus</i>	showy goldenrod	<i>Solidago speciosa</i>
bush clover	<i>Lespedeza capitata</i>	Indian grass	<i>Sorghastrum nutans</i>

Three non-native species were included as desirable due to their value as forage

Common Name	Species	Common Name	Species
smooth brome	<i>Bromus inermis</i>	Kentucky bluegrass	<i>Poa pratensis</i>
Scribner's panic grass	<i>Panicum oligosanthes</i>		

LSSG Partners with Rural Municipalities



An LSSG project is taking aim at the growing threat of a noxious weed that is spreading at an alarming rate. Leafy spurge is ravaging agriculture, public and recreation lands throughout the province.

The LSSG is assisting the municipalities of Daly, North Cypress and South Cypress with the development of a comprehensive leafy spurge management plan that provides long-term goals and actions for controlling this invasive weed in these rural municipalities.

"It's a big issue in our area," said Kyle Currie, RM of North Cypress weed supervisor. "There's a fair bit of leafy spurge especially along the highway. We've started some bio control and we're doing some monitoring too."

The problem will not go away unless action is taken, so his municipality is focusing on the proper control methods that will lead to a long-term solution, he explained. "We're trying to establish Integrated Pest Management (IPM) for the municipality."

Municipalities are concerned about leafy spurge and realize that a more coordinated, long-term approach is needed to be successful in managing it. The development of a management plan will assist these municipalities to determine priorities and allocate funds for future control methods.

This project has a second purpose: it demonstrates and measures the effectiveness of different leafy spurge control methods.

"The LSSG, in partnership with the Little Saskatchewan River Conservation District (LSRCD) and the RM of Daly, established demonstration sites that will evaluate the long-term effects of bio-control, chemical, mechanical and grazing methods to control leafy spurge," says Jennifer Pachkowski, research assistant with the Rural Development Institute. "Producers want information on how to carry out different control methods. Applied demonstration proves to be a very effective tool in helping producers implement better management strategies on their farm."

"Leafy spurge was identified as a priority by the LSRCD sub committee," said Myles Kopytko, manager of the

LSRCD. "We have sites in the RM of Daly and we are looking at alternative methods of control for the spurge."

Two demonstration sites have been set up, according to Pachkowski. These demonstration sites were chosen for their ease of accessibility, with hopes they will use these demonstration sites to convince landowners to pursue leafy spurge control programs.

"We wanted to stress the use of IPM strategies in this project," said Pachkowski.

IPM is the most successful method for dealing with infestations of leafy spurge. It combines different control techniques, which may include biological control, herbicides, mowing, cultivation, multi-species grazing and hand digging. One common method of biological control is the release of leafy spurge beetles that feed on the weed's leaves.

"I believe the LSRCD is planning to implement a leafy spurge control program using this project as a jumping off point," Pachkowski said.

The first demonstration site is a chemical control/bio-control site, where Pachkowski collected baseline vegetative data to allow for future tracking of the effectiveness of the controls. A portion of the spurge patch was sprayed with herbicides throughout the transect area.

Leafy spurge flea beetles, *Aphthona nigricutis*, are already established at the site from earlier releases dating back to 1992.

"It's hard to tell what impact the beetles have had in the area as we don't have any pre-release vegetative data, but we are hoping that the beetles will work in combination with the herbicide to have a significant impact upon the leafy spurge," said Pachkowski.

Ruth Pryzner, an RM of Daly municipal councillor, is interested in leafy spurge control as both a landowner and councillor. Her ward is located in one of the most heavily infested areas.

At the second demonstration site, Pryzner's sheep are used to graze leafy spurge along the road allowance. Sheep will consume leafy spurge as a part of their diet.

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