

TEAM Leafy Spurge Special Edition

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TEAM Leafy Spurge on tour Summer, 2000

Team Leafy Spurge is gearing up for another busy summer, with a series of flea beetle distributions, tours and biocontrol training sessions set for June.

With six events in an eight-day span, the schedule will be hectic but worth the effort, said TEAM Leafy Spurge program coordinator Chad Prosser.

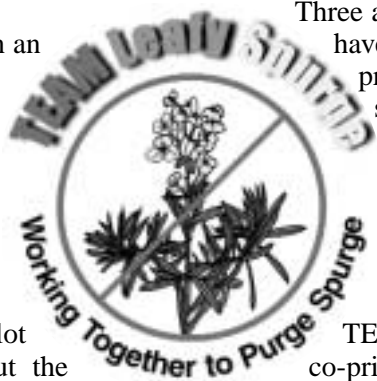
“We generated a lot of interest throughout the region last year with Spurfest, and now it’s time to build on that interest,” he said. “We’ve heard from a lot of people around the region, including some people from new areas, and we’re looking forward to what should be a very productive summer.”

Most significant for TEAM Leafy Spurge this summer is the program’s expansion beyond the Little Missouri River drainage.

Three additional drainages have been added to the program’s original study area: The Heart (North Dakota), Powder (Wyoming) and Grand river drainages.

Gerry Anderson, TEAM Leafy Spurge co-principal investigator, said the expansion is a “natural extension of an area-wide program.”

“There are a lot of good people doing good work in all three areas, and we wanted to offer our assistance,” Anderson said. “It **See TEAM on Tour, page 2**”



Success

As we head into the leafy spurge season, I’d like all of you to keep something in mind: Success can be defined in many different ways.

To the rancher or land manager, success means less leafy spurge today than yesterday. But there are other types of success as well – ecological, scientific, social, economic and political, for example – and all play important roles in achieving the ultimate goal.

Clearly, leafy spurge is still spreading. Does that mean 50 years of management efforts have been in vain? Absolutely not.

Leafy spurge had a 100-year head start before we recognized it as a problem, before we initiated true management efforts. Catching up isn’t easy, but there is now little doubt that successful leafy spurge management is just over the horizon. How quickly that goal is realized depends on our commitment, our willingness to work as a team, our dedication to staying involved.

So, as we head into this busiest time of year, remember that your efforts – both on the ground and in the office – are appreciated and worthwhile. Remember that your involvement on a number of fronts is crucial to solving the problem. And finally, please remember that TEAM Leafy Spurge is here to help.

Gerry Anderson
Co-principal Investigator,
TEAM Leafy Spurge

TEAM Leafy Spurge Summer Schedule

June 21 - Ekalaka, MT

Insect distribution & biocontrol training session in conjunction with the annual Montana Range Days tour. **When & Where:** The tour departs from county courthouse at 8:20 a.m.; insects will be distributed at the tour's conclusion.

June 22 - Sentinel Butte, ND

Insect distribution and tours of TEAM Leafy Spurge research & demonstration sites. The tour includes stops at multi-species grazing & grazing-biocontrol demonstration sites; at herbicide and herbicide-biocontrol demonstration sites; and at a dietary preferences of different sheep breeds demonstration site. **When & Where:** The tour departs from Chimney Park in Medora at 4 p.m., with a BBQ dinner (sponsored by Monsanto) set for 7 p.m. Insects will be distributed after dinner.

June 26 - Mandan, ND

An insect distribution for ranchers and landowners from the Heart River drainage in Morton

County. **When & Where:** 11 a.m., USDA-ARS station, Mandan.

June 27 - Bison, ND

An insect distribution for ranchers & landowners from the Grand River drainage in Perkins County. **When & Where:** 10 a.m., Bison County courthouse.

June 27 - Buffalo, ND

Insect distribution & biological control training session. Includes tours of herbicide and herbicide-biocontrol demonstration sites. **When & Where:** Depart from county courthouse at 12:30 p.m. for biocontrol training session, with insect distribution to follow at 4:30 p.m.

June 29 - Sheridan, WY

Insect distribution for ranchers & landowners in Johnson and Sheridan counties/Powder River drainage. **When & Where:** 2 p.m., Sheridan County Weed & Pest office.

TEAM on Tour, from page 1

(the expansion) enables us to complement existing programs – TEAM Leafy Spurge is, after all, built on cooperation and creating partnerships, and this is a step in that direction.”

In addition to “bringing new people into the program,” the newly added drainages have “plenty of spurge,” Anderson said, and will provide TEAM Leafy Spurge with an opportunity to help establish new biocontrol sites and stimulate additional interest in biological control.

Flea beetle distributions have been scheduled to accommodate the newly added drainages on June 26 in Mandan, N.D., for landowners on the Grand River drainage; June 27 in Bison, S.D., for landowners in the Grand River drainage; and June 29 in Sheridan, Wyoming, for landowners on the Powder River drainage and in Johnson and Sheridan counties.

“Based on the comments we’ve heard from landowners and land managers, interest in all three of the new drainages is extremely high,”

Anderson said. “We’ve heard nothing but positive feedback so far.”

Another highlight of the summer schedule is a tour of TEAM Leafy Spurge demonstration sites on June 22 at Sentinel Butte, N.D. Featured will be stops at a multi-species grazing and grazing-biocontrol demonstration site, herbicide and herbicide-biocontrol demonstration site. Details on a study evaluating the dietary preferences of different sheep breeds will also be given at the tour. A BBQ dinner, sponsored by Monsanto, and flea beetle distribution will follow the tour.

“The tour will be very informative,” Prosser said. “Ranchers will be especially interested in the grazing and herbicide demonstrations.”

Flea beetle distributions are also scheduled for Buffalo, S.D., and Ekalaka, Montana.

Additional information about the Sentinel Butte tour and other TEAM Leafy Spurge summer activities is

above.

TEAM Leafy Spurge will also be participating in “International Days,” a Spurgefest-type of event scheduled for June 27 at Frostfire Mountain near Walhalla, N.D. The event, which was conceived and is being organized by Pembina County Extension agent Randy Melaas, features an impressive lineup of experts, tours and a flea beetle distribution. Complete details and a registration form can be found on page 14.

**For more information on
TEAM’s summer schedule,
see the TEAM Leafy
Spurge web site at
www.team.ars.usda.gov**

New biocontrol manual available

Personnel from TEAM Leafy Spurge, USDA-APHIS and the North Dakota Department of Agriculture recently teamed up to produce “*Biological Control of Leafy Spurge*,” a full-color, 20 page manual on using leafy spurge flea beetles.

The how-to manual is a revamped version of APHIS’s popular “*Biological Control of Leafy Spurge Using Flea Beetles in North Dakota*,” originally compiled in 1998 by Dave Hirsch, USDA-APHIS PPQ officer in Bismarck, N.D., and Dave Nelson, state entomologist for the North Dakota Department of Agriculture.

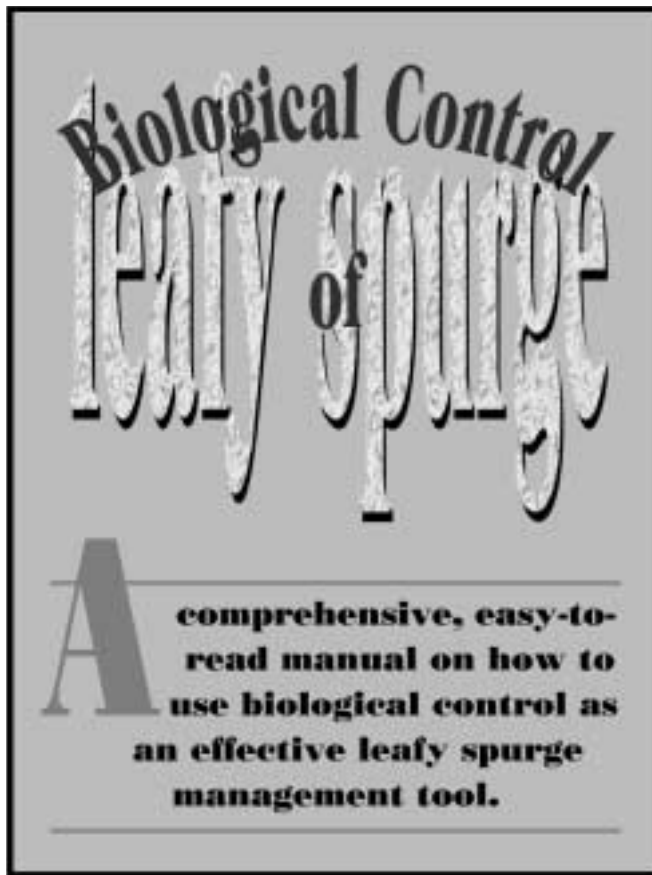
Steve Merritt, TEAM Leafy Spurge technology transfer specialist, said the new manual features the “same great information” as the original in a format that will make it useful throughout the northern Great Plains.

“The original manual was one of the best resources available for information about using leafy spurge flea beetles, but its focus was limited to North Dakota,” he said. “Our goal was making the same information useful to people throughout the northern Great Plains region.”

The manual provides a step-by-step chronology of how to implement a leafy spurge biocontrol program using flea beetles. It details the entire process, from obtaining flea beetles and picking release sites to monitoring sites, evaluating success, harvesting and redistributing flea beetles, and integrating biocontrol with other leafy spurge management tools.

Hirsch said the best thing about the manual is the quality of information it contains.

“Information used in the manual



Anyone interested in obtaining multiple copies of the new manual for use at field days or other informational activities can contact TEAM Leafy Spurge by calling 406/433-9403 or 406/433-9440, or by sending an e-mail to team1s@sidney.ars.usda.gov

was collected by a lot of experienced people,” Hirsch said. “That’s what makes it so useful – it’s information from people with hands-on experience, from people who know what really works.”

Hirsch and Nelson both stressed that the original manual resulted from a cooperative effort.

“The concept was conceived by the North Dakota Biological Control Steering Committee, but there were a lot of people who contributed,”

Nelson said.

Key contributors include the North Dakota State departments of Entomology and Plant Sciences, the USDA-APHIS PPQ/Biological Control of Weeds Laboratory in Bozeman (Montana), the North Dakota Weed Control Association and the USDA-ARS Northern Plains Agricultural Research Laboratory.

“It is, quite simply, the best of the best information that’s available,” Hirsch said. “If people follow the guidelines listed in the manual, they will definitely improve their chances of effectively incorporating biological control into their leafy spurge management plans.”

Merritt said he expects a big demand for the new manual.

“The original manual was extremely popular, and we expect no less for the revised version,” he said.

The manual is available from county Extension and weed offices, state departments of agriculture, state USDA-APHIS PPQ offices and other sources in Montana, North Dakota, South Dakota and Wyoming.

Anyone interested in obtaining multiple copies for distribution at field days or

similar activities should contact TEAM Leafy Spurge coordinator Chad Prosser at 406/433-9403 (cprosser@sidney.ars.usda.gov), or by writing to TEAM Leafy Spurge, 1500 N. Central Ave., Sidney MT 59270. The manual can also be downloaded as a PDF from the TEAM Leafy Spurge website at <http://www.team.usda.ars>

The project was funded by TEAM Leafy Spurge and a grant from the National Biological Control Institute.

TEAM Leafy Spurge/Program Components

Operations

Principal Investigators: Bob Richard, director, USDA-APHIS PPQ/Biocontrol of Weeds Laboratory (Bozeman, Montana), and Lloyd Wendel, USDA-APHIS PPQ (Mission, Texas).

Project description: Operations is primarily responsible for flea beetle collection and redistribution efforts. This effort resulted in the distribution of more 20 million flea beetles to ranchers, landowners and land managers from seven states in 1999. Even greater distribution can be expected for the 2000 field season, as three new distribution points (Bison, S.D., Mandan, N.D. and Sheridan, Wyo.) have been added to the schedule. Operations also utilized its extensive library of photographic resources to produce the "Leafy Spurge Biological Control Informational and Photo Resource Gallery" in 1999; the CD has been distributed and is available from a variety of outlets, and can also be accessed at the TEAM Leafy Spurge web-site.

Planned activities for 2000 include providing technical assistance to assessment teams and tech transfer activities; providing ground truthing of digital imagery collected by aerial mapping; and distribution of the "Photo Resource Gallery" CD.

Team members: Connie O'Brien, biocontrol technician.

Contact: Bob Richard, USDA-APHIS PPQ/Biocontrol of Weeds Laboratory, FSL-MSU/1648 S. 7th Ave., Bozeman MT 59717. Phone: 406/994-5033. E-mail: robert.d.richard@usda.gov

Technology Transfer

Principal Investigators: Gerry Anderson, USDA-ARS Northern Plains Agricultural Laboratory (Sidney, Montana).

Project description: The multi-faceted tech transfer program has multiple goals for the year 2000, with all revolving around information and education. Key among these goals are the production and distribution of full color manuals on grazing and herbicides to compliment the 20-page "Biological Control of Leafy Spurge" manual produced and distributed in the spring of 2000. Other planned activities include continued development of the TEAM Leafy Spurge web site; continued development of the "Purge Spurge" CR-ROM database update; continued production and distribution of informational press releases and related popular articles; continued participation in various winter trade shows; etc.

Team members: Steve Merritt, TEAM Leafy Spurge technology transfer specialist, Montana State University, and Beth Redlin, technology transfer specialist, USDA-ARS Northern Plains Agricultural Research Laboratory.

Contact: Gerry Anderson, USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 N. Central Ave., Sidney MT 59270. Phone: 406/433-9416. E-mail: gander-son@sidney.ars.usda.gov

Overview

The "TEAM"

TEAM Leafy Spurge is a USDA-ARS research and demonstration program focused on the Little Missouri River drainage in Wyoming, Montana and the Dakotas, and other spurge-infested drainages in the region. Its goal is to research, develop and demonstrate ecologically based Integrated Pest Management strategies that can be used to achieve effective, affordable and sustainable leafy spurge control.

TEAM Leafy Spurge is built on three important concepts:

- **Integrated Pest Management (IPM)** - IPM combines management tools to provide more effective control than any single tool could produce. Biological control provides the foundation: Biocontrol agents like the flea beetle are used with other tools – multi-species grazing, herbicides, etc. – for effective, affordable and ecologically sustainable control. IPM offers the flexibility landowners need to devise different strategies for different situations.

- **Teamwork** - TEAM Leafy Spurge has assembled some of the nation's most experienced leafy spurge researchers into a focused, goal-oriented team. This collaboration allows participants to share expertise, data and resources to more effectively work toward a common goal. TEAM Leafy Spurge stresses that EVERYONE, from the private rancher/landowner to local, state and federal agencies, work together to solve the problem.

- **Regional Approach** - TEAM Leafy Spurge is an area-wide program, and as such, is evaluating the leafy spurge problem on a regional rather than a local, or place-by-place, basis.

Partnerships!!!

TEAM Leafy Spurge is funded by the USDA-Agricultural Research Service, and managed in conjunction with the USDA-APHIS. Other TEAM members include the U.S. Forest Service, National Park Service, Bureaus of Land Management and Reclamation, U.S. Geological Service, state departments of agriculture and other state agencies, Cooperative Extension Services, land grant universities, county weed managers, landowners and ranchers. A non-partisan ad hoc committee provides management and direction.

The Approach

TEAM Leafy Spurge research and demonstration projects are designed to build on existing data and explore promising new areas of leafy spurge research. These projects cover a range of topics, including biological control, multi-species grazing, herbicides, range management, and the integration of various control

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Inventory & Assessment

Extensive assessment and inventory work continues at TLS study areas in North and South Dakota, Montana and Wyoming. The intent is to develop consistent, comparable baseline data for each site. This data will be used to determine the effectiveness of control strategies demonstrated at the various sites, and particularly to measure the establishment and effectiveness of biocontrol agents and help better understand the elements of a "good release site." Data collected by assessment and inventory teams will be used in numerous research projects conducted by other TLS program participants.

Assessment and inventory work performed at the sites included:

- Physical inventory: Includes all physical site characteristics such as topography, aspect, elevation, soil type (samples & analyses), moisture, etc.
- Biological inventory: Includes extensive vegetative sampling (using Daubenmire samples and COAST digital imaging system to record images of ground cover) to document size, type, density, etc., of plants at study areas.
- Cultural inventory: Includes current land use and any prior treatments/management practices.
- Flea beetle sampling & releases
- Geo-referencing (GIS, GPS)

Data collected by the Inventory & Assessment teams will contribute to numerous aspects of leafy spurge management: Mapping the extent of leafy spurge infestations; predicting patterns of leafy spurge spread and identifying areas that are susceptible to invasion; defining characteristics present at successful biocontrol release sites; predicting recovery patterns for native and desirable plant species, etc.

Assessment teams and team members are:

Demonstration Sites Assessment Team

Principal Investigator: Jim Jacobs, post-doctoral research technician, Montana State University.

Team Members: Tim Faller, director, NDSU-Hettinger Research Extension Center; Bob Richard, director, USDA-APHIS PPQ/Biocontrol of Weeds Laboratory; Gerry Anderson, TEAM Leafy Spurge co-principal investigator, USDA-ARS Northern Plains Agricultural Research Laboratory; and Rod Lym, professor, North Dakota State University Department of Plant Sciences.

Special area of investigation: Inventory & assessment of

TEAM Leafy Spurge research and demonstration sites.

Contact: Jim Jacobs, Montana State University Extension Service, Leon Johnson Hall, Bozeman MT 59717-3020. Phone: 994-6749. E-mail: jjacobs@montana.edu

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tools.

Most research is conducted by weed specialists, range scientists and entomologists. Research is directed at gaining a better understanding of how and why biocontrol agents work, how biocontrol interacts with other management tools, and how different tools can be used alone and in combination to improve spurge control. Research is also being conducted overseas, where entomologists are looking for new biocontrol agents. Other research explores the economic and environmental damage caused by leafy spurge.

TEAM Leafy Spurge demonstration sites (Sentinel Butte, N.D.; Ekalaka, Mt.; Buffalo, S.D. and Devil's Tower, Wyo.) give ranchers, landowners and land managers a first-hand look at results produced by various IPM strategies. Tours of the sites are periodically held to provide updates about new and improved management strategies.

The Bottom Line

Leafy Spurge is a formidable opponent that cannot be controlled or eliminated by any single entity or management practice – a collaborative, integrated and area-wide approach is essential to solving this costly problem. TEAM Leafy Spurge exists to promote these concepts, and to serve as a clearing house for proven management strategies.

Contact: Jack Butler, Central Missouri State University Department of Biology, Warrensburg MO 64093. Phone: 660/543-8877. E-mail: jb8877@cmsu2.cmsu.edu

Wyoming Assessment Team

Principal Investigator: David Kazmer, assistant professor, University of Wyoming Department of Biology.

Team Members: Ray Hunt, professor, University of Wyoming Department of Botany; Amy Parker, graduate student, University of Wyoming; and Gerry Anderson, TLS co-principal investigator, USDA-ARS Northern Plains Agricultural Research Laboratory.

Special area of investigation: Evaluation and application of remote sensing data to large-scale mapping of leafy spurge infestations.

Contact: David Kazmer, University of Wyoming Department of Biology, Aven Nelson Building, Laramie WY 82071-3165. Phone: 307/766-5199. E-mail: djkazmer@uwyo.edu

North Dakota Assessment Team

Principal Investigator: Don Kirby, professor, North Dakota State University Department of Animal & Range Science.

Team Members: Rod Lym, professor, North Dakota State University Department of Plant Sciences, and Jack Butler, associate professor, Central Missouri State University Department of Biology.

Special area of investigation: Evaluation of native plant species recovery at sites where biocontrol agents and/or other IPM tools have reduced spurge infestations.

Contact: Don Kirby, North Dakota State University Department of Animal & Range Science, Hultz Hall, Fargo, ND 58105. Phone: 701/231-8386. E-mail: dkirby@ndsuxt.nodak.edu

South Dakota & Montana Assessment Team

Principal Investigator: Jack Butler, assistant professor, Central Missouri State University Department of Biology.

Team members: Matt Parker, Shannon Tyree and John Murphy, graduate students, Central Missouri State University.

Special area of investigation: Analysis of spurge seed banks.

Remote Sensing Assessment Team

Principal Investigator: Gerry Anderson, TEAM Leafy Spurge co-principal investigator.

Project Description: Anderson's project utilizes remote sensing techniques (aerial photography and videography, GIS, GPS, hyperspectral imagery, etc.) to map leafy spurge infestations. The project builds on a cooperative venture initiated at Theodore Roosevelt National Park in 1993 and involves numerous cooperators. Data resulting from the project will eventually be combined with existing and developing GIS/GPS information on soil types, vegetation, moisture, elevation, aspect, etc., to create new GIS "layers." The ultimate goal of this and related projects is area-wide mapping of leafy spurge infestations, and providing the information needed to identify areas that are susceptible to leafy spurge invasion.

Project status: Data collected from several sites has been used to make several preliminary conclusions: 1) Based on comparisons with data collected in 1993, leafy spurge appears to be spreading twice as fast as originally thought; 2) Control of leafy spurge is more prevalent on south facing slopes; 3) Infestations appear correlated with proximity to drainages; and 4) Aspect appears to be far more important than slope in regard to leafy spurge infestation and subsequent control efforts. In addition, data indicates that leafy spurge has a unique spectral signature that should make it easy to identify as resolutions increase on developing, high-tech hyperspectral imaging systems and other remote sensing tools improve.

Team members: Theodore Roosevelt National Park/National Park Service; U.S. Bureau of Land Management/ Department of Interior; U.S. Geological Survey; NASA; and the University of California-Davis.

Contact: Gerry Anderson, USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 N. Central Ave., Sidney, MT. 59270. Phone: 406/482-9416. Fax: 406/482-5038. Email: ganderson@sidney.ars.usda.gov

Assessment Team Steering Committee

The assessment team steering committee is responsible for establishing protocol to measure changes that take place at research and demonstration sites as a result of TLS-initiated management and control activities.

Assessment Team Steering Committee members include: Gerry Anderson, USDA-ARS Northern Plains Agriculture Research Laboratory; Bob Richard, USDA-APHIS PPQ/Bozeman; Jack Butler, Central Missouri State University Department of Biology; David Kazmer, University of Wyoming Department of Entomology; Don Kirby, North Dakota State University Department of Animal & Range Science; and Roger Sheley, Montana State University Extension Service.

Program Management Administration

Team members: Lloyd Wendel, TEAM Leafy Spurge co-principal investigator, USDA-APHIS PPQ/Mission Station; Gerry Anderson, TEAM Leafy Spurge co-principal investigator, USDA-ARS Northern Plains Agriculture

Research Laboratory; Charlotte Anderson, administrative officer, USDA-ARS Northern Plains Agriculture Research Laboratory; Chad Prosser, TEAM Leafy Spurge program coordinator, USDA-ARS Northern Plains Agriculture Research Laboratory; Jim Quarantino, contract officer, USDA-ARS Northern Plains Area office; and Neal Spencer, research leader, USDA-ARS Northern Plains Agriculture Research Laboratory.

Contact: Chad Prosser, USDA-ARS Northern Plains Agriculture Research Laboratory, 1500 N. Central Ave., Sidney MT 59270. Phone: 406/433-9403. Fax: 406/433-5038. E-mail: cprosser@sidney.ars.usda.gov

Ad Hoc Committee

An ad hoc committee consisting of representatives from collaborating agencies helps guide program activities, ensure efficient management and assist program participants. The ad hoc committee meets twice annually: In October to review progress made during the preceding year and evaluate research/demonstration proposals for the upcoming year, and in January to discuss and select research/demonstration projects of the upcoming year. The ad hoc committee was specifically designed to include representation from a diverse group of participating entities and potentially affected interests, including landowners and land managers.

Ad hoc committee members include:

- Gerald Anderson, TEAM Leafy Spurge co-principal investigator, USDA-ARS Northern Plains Agriculture Research Laboratory (Sidney, Montana).
- Ken Eraas, noxious weed specialist, North Dakota Department of Agriculture.
- Lars Baker, Fremont County (Wyo.) Weed & Pest Coordinator (Riverton/Lander, Wyoming).
- Nancy Curriden, supervisor, Custer National Forest/U.S. Forest Service (Billings, Montana).
- Dennis Dietz, rancher (Sentinel Butte, N.D.).
- Robert Faust, National Program Leader/Field & Horticulture Crop Entomology, and Ernest Delfosse, National Program Leader/Weed Science, USDA-ARS National Program Staff (Beltsville, Maryland).
- Kevin Fridley, director, Agriculture Services, South Dakota Department of Agriculture (Pierre, S.D.).
- Mike McNeill, range management specialist, Dakota Prairie National Grasslands/U.S. Forest Service (Bismarck, N.D.).
- Barb Mullin, weed coordinator, Montana Department of Agriculture (Helena, Montana).
- Noel Poe, superintendent, and Russ Runge, resource management chief, Theodore Roosevelt National Park/National Park Service (Medora, N.D.).
- Bob Richard, director, USDA-APHIS PPQ/Biocontrol of Weeds Laboratory (Bozeman, Montana).
- Neal Spencer, director, USDA-ARS Northern Plains Agriculture Research Laboratory (Sidney, Montana).
- Lloyd Wendel, TEAM Leafy Spurge co-principal investigator, USDA-APHIS/Mission Plant Protection Center (Mission, Texas).

TEAM Leafy Spurge/Program Components

Native Euphorbias

Principal Investigators: Jack Butler, assistant professor, Central Missouri State University Department of Biology.

Project description: The objective of this study is to evaluate current and potential impacts of area-wide *Aphthona* flea beetle distribution to non-target, native *Euphorbia* species.

The study will be conducted in three phases: 1) Identify native *Euphorbias* that may exist in the TEAM Leafy Spurge study area; 2) Find populations of native *Euphorbias*, collect site characteristics and survey for flea beetles; and 3) Release flea beetles at some of the sites, then monitor the sites to determine if flea beetles are having an impact on non-target native *Euphorbias*.

This study is an important one for TEAM Leafy Spurge and leafy spurge biocontrol in general, as no field data regarding host specificity of *Aphthona* flea beetles on native *Euphorbias* currently exists. With some native *Euphorbias* classified as sensitive species, the results could potentially be extremely important.

Team members: Matt Parker, Shannon Tyree and John Murphy, graduate students, Central Missouri State University.

Contact: Contact: Jack Butler, Central Missouri State University Department of Biology, Warrensburg MO 64093. *Phone:* 660/543-8877. *E-mail:* butler@cmsu1.cmsu.edu

Early Detection System

Principal Investigator: Karl Brown, U.S. Geological Survey Center for Biological Informatics.

Colorado State University Department of Forestry & Natural Resources

Project description: This project builds on past research by incorporating new, state-of-the-art technologies into the remote sensing project initiated by TLS in 1998.

It is generally recognized that efforts to control leafy spurge and other invasive weeds are dependent on reliable information regarding the location of current infestations, the "movement" or spread of current infestation, and areas susceptible to invasion. Existing and developing remote sensing technologies now, for the first time, make mapping

weed infestations a realistic possibility.

The objectives of this study are multi-faceted, and can potentially make significant contributions to the practicality of area-wide mapping programs. Specific project goals include: Reviewing the state of current remote sensing capabilities; comparing capabilities of different remote sensing and imaging systems; evaluating cost/benefit analyses for various remote sensing systems; combining, when possible, the best aspects of existing and new technologies; and developing an overall system that can easily incorporate various types of GIS information. Of key importance is using this information to develop and implement an information delivery system for public use. In addition, and perhaps most important, team members will be identifying

areas most suspect to leafy spurge invasion and spread, thus enabling resource managers to take preventative measures.

Team members: Gerry Anderson, TLS co-principal investigator, USDA-ARS Northern Plains Agricultural Research Laboratory; Ralph Root, U.S. Geological Survey Center for Biological Informatics; Ray Kokaly, U.S. Geological Survey Spectroscopy Laboratory; Steve Hager, National Park Service/Theodore Roosevelt National Park; and Edmond Holroyd, U.S. Bureau of Reclamation Remote Sensing & Geographic Information Group.

Contact: Karl Brown, U.S. Geological Survey/Biological Resources Division, Building 810/Room 8000/Mail Stop 302, Denver Federal Building, Denver CO 80225. *Phone:* 303/202-4240. *E-mail:* karl_brown@usgs.gov

A Management Approach to Leafy Spurge Control

Principal Investigators: Andrew Canham, South Dakota Department of Schools & Publics Lands, and Lyle Chase, Bureau of Land Management.

Project description: Located on the South Fork of the Moreau River, this project is designed to use inventory and survey data as a foundation for developing cooperative weed management projects. Data will be collected utilizing the Montana Weed Mapping System and GPS technologies, then used to identify areas of concern, define levels



Photo by Jim Johnson, South Dakota State University

Butler's crew will be looking to see if flea beetles have an impact on native spurges like *E. robusta*.

of infestation and document historical control efforts. The resulting database will be useful in the strategic coordination of comprehensive weed management plans.

Additional benefits provided by the project include its emphasis on building partnerships between landowners and local, state and federal entities, and providing a demonstration of how inventory and survey databases can be used in weed management plans.

Team members: Harding County Weed Board, Butte County Weed Board, U.S. Forest Service/Custer District, NRCS, Butte County Conservation District, South Dakota State University, South Dakota Department of Transportation. Co-sponsored by the National Fish & Wildlife Foundation .

Contact: Andrew Canham, 35920 Canham Place, Miller, SD 57362. *Phone:* 605/853-3802. *E-mail:* canhamtc@turtlecreek.net

Multi-Species Grazing Demonstration

Principal Investigators: Tim Faller, director, NDSU Hettinger Research Extension Center.

Project description: This research/demonstration project is designed to determine the impact of multi-species grazing (cattle plus sheep) on leafy spurge, plant community composition and diversity, and the interaction of multi-species grazing programs and flea beetle populations in season-long and twice-over grazing systems. The demonstration is modeled after a successful study at Mandan, N.D.

Heading into its third year of data collection, Faller reports that the demonstration is producing the expected trends. As expected, no changes in leafy spurge stem densities or species composition was recorded after the first year. During the second year of grazing, however, results from the Sentinel Butte study were visually similar to results from the Mandan study in its second year of grazing; in particular, fenceline contrasts between adjacent cattle-only and cattle/sheep pastures were evident. Stem densities from the first two years are now being analyzed to determine if significant changes occurred. If the Sentinel Butte study continues to mirror results produced at the Mandan study, significant reductions in leafy spurge stem densities should be evident after the third year of grazing, with additional reductions occurring after a fourth year of grazing.



Sheep are the focus of two projects in Sentinel Butte, N.D. – a multi-species grazing demonstration and a study on the dietary preferences of different sheep breeds. TEAM Leafy Spurge also funded a study to evaluate the feasibility of a sheep coop.

Team members: Kevin Sedivec, Range Specialist, North Dakota State University Extension Service; Jerrold Dodd, chair, North Dakota State University Department of Animal & Range Science; Scott Kronberg, professor, South Dakota State University Department of Animal & Range Sciences; and Jack Dahl, Hettinger Research Extension Center.

Contact: Tim Faller, Hettinger Research Extension Center, Box 507, Hettinger ND 58639. *Phone:* 701/567-4323. *E-mail:* tfaller@ndsuxext.nodak.edu

Sheep Coop Feasibility

Principal Investigators: Tim Faller, director, NDSU Hettinger Research Extension Center.

Project description: Faller teamed up with Larry Leistritz, professor of Agricultural Economics at NDSU, and crew to evaluate the economic feasibility of a sheep cooperative that would provide members with sheep to graze leafy spurge. The concept is simple: Sheep can be used to graze and control leafy spurge, thus generating an economic return instead of an expense. A cooperative would help eliminate some of the common barriers to using sheep: Lack of equipment, lack of expertise, etc.

All of the work associated with the study has been completed, and Faller says the numbers are clear. "It's definitely feasible. Now someone needs to pick the ball up and run with it." The study is based on a cooperatively owned and professionally managed 5,000-head operation. The sheep would be wintered at the coop's facilities, with lambing

prior to delivery of sheep to coop members. Projected returns on investment for members ranged from 16 to 21 percent, depending on the amount of fence modification needed. Participants/members would additionally benefit from reduced leafy spurge control costs as well as increased range carrying capacity resulting from reductions in leafy spurge infestations.

A copy of the full report, "Feasibility of a Sheep Cooperative for Grazing Leafy Spurge (Report #435, January 2000)," a summary of the report (Report #435-S) and a related report, "Economic Analysis of Controlling Leafy Spurge with Sheep (Report #431)," can be obtained electronically at <http://www.agecon.lib.umn.edu/ndsu.html> or by calling 701/231-7441 or sending an e-mail to cjensen@ndsuxext.nodak.edu

Team members: Larry Leistritz, professor, North Dakota

State University Department of Agricultural Economics, and Dan Nudell, Extension Specialist, North Dakota State University/Hettinger Research Extension Center.

Contact: Tim Faller, Hettinger Research Extension Center, Box 507, Hettinger ND 58639. *Phone:* 701/567-4323. *E-mail:* tfaller@ndsuxext.nodak.edu

Impact of Grasshopper Control Tactics on Flea Beetle Populations

Principal Investigators: Nelson Foster, supervisory entomologist, USDA-APHIS PPQ/Phoenix Plant Protection Center, and Keith Winks, state plant health director, USDA-APHIS PPQ/Bismarck Plant Protection Center.

Project description: This study is designed to evaluate the effects of grasshopper management on established flea beetle populations. Research efforts will focus on three basic areas: 1) Determining if treatments used for grasshopper control on spurge-infested range lands causes flea beetle mortality; 2) Identifying treatments that do not cause flea beetle mortality; and 3) Determining a flea beetle population recovery period for treatments that do cause flea beetle mortality. The project will additionally demonstrate and evaluate the use of dimilin and carbaryl bran bait treatments, and investigate flea beetle mortality at traditional and reduced treatment rates.

The demonstrations will be conducted at or near TLS study sites in western North Dakota and northwestern South Dakota.

Team members: K.C. Reuter, USDA-APHIS PPQ/Phoenix Plant Protection Center; T.E. Reule, USDA-APHIS PPQ/Bismarck Plant Protection Center; Dave Hirsch, USDA-APHIS PPQ/Bismarck Plant Protection Center; B. Radsick, pilot, USDA-APHIS PPQ/Mission Plant Protection Center; and Bruce Helbig, USDA-APHIS PPQ/South Dakota Plant Protection Center.

Contact: Nelson Foster, USDA-APHIS PPQ/Phoenix Plant Protection Center, 3645 E. Wier Ave., Phoenix AZ 85040. *Phone:* 602/437-1295, ext. 225. *E-mail:* nelson.r.foster@usda.gov

GIS Database Development

Principal Investigators: Steve Hager, GIS specialist, National Park Service/Theodore Roosevelt National Park.

Project description: One of the primary goals of TEAM Leafy Spurge is sharing information between cooperating

partners. A GIS database is extremely well suited for this purpose. Geographic-based data on soils, hydrology, transportation, leafy spurge and other noxious weed infestations, historical control data, etc., are input into the system, then used to produce customized map products and analyses. The end goal is providing resource managers and program cooperators with a GIS-based data base and informational tool that is easy to use and access.

Team members: Russ Runge, resource management specialist, Paula Anderson, biocontrol/herbicide technician, Bonnie Foster, GIS technician, National Park Service/Theodore Roosevelt National Park.

Contact: Steve Hager, Theodore Roosevelt National Park, Box 7, Medora ND 58645. *Phone:* 702/623-4466, ext. 3433. *E-mail:* steve_hager@nps.gov

Effects of Leafy Spurge on Nesting Grasslands Birds

Principal Investigators: Doug Johnson, USGS Northern Prairie Wildlife Research Center.

Project description: Now in its second year, this project

is evaluating the effects of leafy spurge on grassland-dependent breeding birds at the Sheyenne National Grasslands. Incidental observations made in 1999 suggest that some species are less common in heavily infested areas, and that fewer nests are present. Research will now be geared towards comparing densities and success of grassland bird nests in low, moderate and high infestations.

Although not directly related to leafy spurge control, this project can potentially provide valuable information to resource managers. Grassland birds have shown greater population declines during the past 30 years than any other group of birds, and are of particular concern to the conservation community. Knowing how

leafy spurge effects grassland birds specifically, and biodiversity in general, will help resource managers make informed, intelligent management decisions. In addition, by showing an impact on grassland-dependent species of wildlife, this project can potentially bring new players into the war against noxious weeds.

Team members: U.S. Forest Service, Eastern Illinois University

Contact: Doug Johnson, Northern Prairie Wildlife Research Center, 8711 37th Street SE, Jamestown ND 58401. *Phone:* 701/253-5500. *E-mail:* douglas_h_johnson@usgs.gov

Website: <http://www.npwrc.usgs.gov>

Check out the TEAM Leafy Spurge website at

www.team.ars.usda.gov

Featured is information on the program, its projects and IPM strategies for managing leafy spurge. If you have comments, questions, suggestions or possible links, send an e-mail to teams@sidney.ars.usda.gov

Dietary Preferences of Different Sheep Breeds

Principal Investigators: Scott Kronberg, associate professor, South Dakota State University Department of Animal & Range Sciences.

Project description: Results from a grazing trial at Sentinel Butte, N.D., indicate significant dietary preferences for leafy spurge among different breeds of sheep. Comparisons between four breeds will continue in 2000 to validate the data collected and methodologies used. The potential payoff resulting from this research could allow range managers to make specific sheep breed recommendations for leafy spurge control. Information obtained from the project could also lead to a better understanding of how leafy spurge is metabolized, which could in turn be used to increase leafy spurge consumption by sheep and possibly even cattle.

A secondary focus of the project is evaluating leafy spurge control provided by sheep grazing with/without flea beetles and with/without herbicides. Previous literature suggests that grazing in combination with either of these tools provides greater control than grazing alone; this study will help document previous findings. These trials will be conducted at the TEAM Leafy Spurge study site located on the South Fork of the Moreau River near Buffalo, South Dakota.

Team members: Tim Faller, director, NDSU Hettinger Research Extension Center; Kevin Sedivec, range specialist, North Dakota State University Extension Service; Jerrold Dodd, chair, North Dakota State University Department of Animal & Range Science; Leon Wrage, Extension agronomist/weeds, South Dakota State University; Jack Butler, associate professor, Central Missouri State University Department of Biology; and ranchers Larry Nelson and Jim Johnson.

Contact: Scott Kronberg, SDSU Department of Animal & Range Science, Box 2170, Brookings SD 57007. *Phone:* 605/688-5412. *E-mail:* kronbers@mg.sdstate.edu

Socio-Economic Impacts

Principal Investigators: Larry Leistritz, professor, North Dakota State University Department of Agricultural Economics.

Project description: Leistritz's project takes a multi-faceted approach to studying the economics of leafy spurge by: 1) Assessing the socio-economic impacts of leafy spurge reduction and rangeland restoration; 2) Evaluating costs and benefits of various IPM control strategies to develop a user-friendly economic decision-making tool for landowners and land managers; and 3) Evaluating managerial, institutional and social factors that influence the use of various leafy spurge control strategies, developing approaches to counter factors that inhibit the use of effective control strategies, and assessing the impact of TEAM Leafy Spurge demonstrations on the perceptions of landowners, land managers and decision makers.

The goals of the socio-economic component are to forecast the economic impact of reducing leafy spurge infesta-

tions, evaluate the economics of various control strategies, and find ways that leafy spurge control methods can be more widely adopted. The project builds on several earlier research projects, including previous efforts to estimate the economic effects of leafy spurge infestations in the northern Great Plains (Leitch et al. 1994), the economic assessment of herbicide controls (Bangsund et al. 1996), and an APHIS-funded analysis of the economic benefits of bio-control techniques (Bangsund et al. 1997).

Project Status: Specific areas of work in 2000 will include: 1) Evaluating the economic impact of leafy spurge reduction and range restoration; 2) Assessing the costs and returns of various leafy spurge controls; and 3) Suggesting solutions that may make some control strategies more acceptable to landowners and managers.

Work on evaluating the economic impact of leafy spurge reduction and range restoration will include developing likely scenarios (situations) illustrating the expected result of implementing cost-effective practices for controlling leafy spurge. These assessments will be used to provide an estimate of the value of providing incentives to speed adoption of various control technologies and the economy-wide benefits resulting from an area-wide control of leafy spurge. Information from objective 1 will be of particular value to policymakers in evaluating the benefits of devoting resources to additional demonstration projects focusing on other problem weeds. A departmental report will be prepared highlighting the results of work completed on objective 1.

In addition, assessments of using various management tools – grazing, biocontrol and herbicides – will continue. Information derived from these studies is essential to development of a computer-based economic decision model, which will ultimately be produced through this project.

Team members: Dean Bangsund and Randy Sell, research scientists, North Dakota State University Department of Agricultural Economics; Tim Faller, director, North Dakota State University/Hettinger Research Extension Center; and Dan Nudell, Extension Specialist, North Dakota State University/Hettinger Research Extension Center.

Contact: Larry Leistritz, North Dakota State University Department of Agricultural Economics, Morrill Hall, Fargo, ND 58105. *Phone:* 701/231-7455. *E-mail:* lleistri@ndsuxext.nodak.edu

Herbicide, Herbicide-Biocontrol Demonstration

Principal Investigators: Rod Lym, professor, North Dakota State University Department of Plant Sciences.

Project description: The objective of this study/demonstration is to show leafy spurge control with various herbicides, and that herbicides and biocontrol in combination provide better control than either method used alone.

Included in the herbicide study are all currently labeled treatments, including promising new products such as imazapic (Plateau) and quinclorac (Paramount). Various

Re-establishment of Prairie Fringed Orchid

Principal Investigators: Rod Lym, professor, North Dakota State University Department of Plant Science.

Project description: This project is designed to evaluate reestablishment of the western prairie fringed orchid, federally listed as a threatened species, in areas where various Integrated Pest Management strategies have been used to control leafy spurge infestations.

Preliminary studies have shown that herbicide application can be used to control leafy spurge without adversely effecting reappearance of the orchid the following year. Research efforts will now be directed at determining if herbicide application for three successive years adversely impacts orchid reappearance and seed set, and at evaluating the effects of IPM strategies on orchid and associated plant species.

The goal is finding a control tool that will allow the

orchid to reestablish in areas where it was found prior to leafy spurge invasion. Biological control can then be used to maintain leafy spurge densities at levels low enough to allow the orchid to reestablish.

The project is being conducted on

the Sheyenne National Grasslands, home to one of the continent's largest prairie fringed orchid populations.

Team members: Don Kirby, professor, NDSU Department of Animal & Range Science; Carolyn Hull Selig, research wildlife biologist, U.S. Forest Service/Rocky Mountain Research Station; Karen Kreil, biologist, U.S. Fish & Wildlife Service.

Contact: Rod Lym, North Dakota State University/ Department of Plant Sciences, Loftsgard Hall- Room 474B/Box 5051, Fargo ND 58105. *Phone:* 701-231-8996 *E-mail:* lym@plains.nodak.edu

Ecological Barriers to Flea Beetle Establishment

Principal Investigators: Bob Nowierski, professor, Montana State University Department of Entomology, and David Kazmer, assistant professor, University of Wyoming Department of Biology.

Project description: The main thrust of this research is to identify ecological barriers to the establishment and subsequent development of flea beetle populations. Information provided by the project will help determine why flea beetles fail to establish at some sites and establish but fail to significantly impact spurge at other sites.

Four specific areas are being evaluated: 1) Flea beetle habitat associations; 2) Genetic variation of leafy spurge



herbicide application rates, combinations and timings will be demonstrated – spring and fall applications, most cost-effective applications, applications for short- and long-term control (at various costs), and applications that can be used near trees or water.

The leafy spurge flea beetle-herbicide demonstration will show how tools combined can provide better control than either tool used alone. This integrated technique has been especially effective in areas where flea beetles have been slow to establish populations large enough to have a significant impact on leafy spurge infestations.

A tour of the demonstration site, located near Sentinel Butte, N.D., will be given on June 22 (see the story on page 1 for more details).

Contact: Rod Lym, North Dakota State University/Department of Plant Sciences, Loftsgard Hall-Room 474B/Box 5051, Fargo ND 58105. *Phone:* 701-231-



Utilization of *Oberea erythrocephala*

Principal Investigators: Denise Olson, assistant professor, and Don Mundal, research specialist, North Dakota State University Department of Entomology.

Project description: This project will continue research begun in 1999 to evaluate the impact of *Oberea erythrocephala* as an additional leafy spurge biocontrol agent. With different reproductive and feeding behavior than the *Aphthona* flea beetle, *Oberea* may prove to be better suited for establishment in areas where flea beetles are producing less than satisfactory results. Specifically, researchers suspect that leafy spurge root depth and placement may be limiting flea beetle establishment in some areas; *Oberea* would not be suspect to this environmental limitation. Work in 2000 will include supplemental releases of *Oberea*, and site monitoring for plant damage attributed to *Oberea* and *Oberea* relocation.

Contact: Denise Olson, North Dakota State University Department of Entomology, Hultz Hall/Room 265, Fargo ND 58105. *Phone:* 701/231-6292. *E-mail:* denolson@badlands.nodak.edu

that causes resistance to flea beetle attack; 3) Genetic variation of flea beetles; and 4) Population limitations imposed by female-biased sex ratios.

Project Status: Flea beetle habitat association models developed from European data are being validated with information collected from 48 research sites from Montana, North Dakota, and Wyoming. Preliminary results suggest that we could have predicted the appropriate habitats to release the various flea beetle species if pre-release studies had been conducted in Europe prior to their release in North America. The models suggest that *Aphthona nigricutis* is associated with sandier soils with relatively lower levels of plant productivity, while *Aphthona laceratosa* is associated with heavier clay soils with higher levels of total plant cover. These results are also reflective of the patterns of establishment of these two flea beetle species in North America. Genetic research on the flea beetles and leafy spurge is continuing, as are studies addressing the causes and extent of female-biased sex ratios among the various flea beetle species.

Team members: Richard Hansen, USDA-APHIS PPQ/Biological Control of Weeds Laboratory; David Horvath, USDA-ARS Red River Valley Agriculture Research Center, and Tony Caesar, plant pathologist, USDA-ARS Northern Plains Agricultural Laboratory.

Contact: Bob Nowierski, Montana State University Department of Entomology, Leon Johnson Hall, Bozeman, MT 59717-3020. *Phone:* 406/994-5080. *E-mail:* nowiersk@montana.edu

Herbicide Demonstration

Principal Investigators: Chad Prosser, program coordinator, TEAM Leafy Spurge program.

Project description: This herbicide study near Ekalaka, MT, will demonstrate the use of several popular herbicides for leafy spurge control. Emphasis will be placed on timing and rates that are effective and cost-efficient. An additional goal is providing demonstration sites for educational tours that will be conducted in cooperation with the Fallon and Carter County weed boards. This year's tour is scheduled for June 21 (see the story on page 1 for more details).

Team members: Kevin Sedivec, Range Specialist, North Dakota State University Extension Service;

Contact: Chad Prosser, USDA-ARS NPARL, 1500 N. Central Ave., Sidney MT 59270. *Phone:* 406/433-9403. *E-mail:* cprosser@sidney.ars.usda.gov

Web Site: <http://www.team.ars.usda.gov>

Ecologically Based Support Decision Model

Principal Investigators: Roger Sheley, noxious weed specialist, Montana State University Extension Service, and Jim Jacobs, post-doctoral research technician, Montana State University.

Project description: The objective of this ongoing project is development of an ecologically based decision support system that can be used to compare different leafy spurge control techniques. By inputting certain types of

information, the user can see a predictive model of what can be expected in terms of control, costs, sustainability and range recovery. When completed, the user-friendly model will be useful as a decision-making tool, an educational tool, and as a tool to provide research direction. The final product will be PC-compatible, and will be made available on disk, CD-Rom and via the Internet.

Team members: Jim Jacobs, post-doctoral research technician; Matt Rinella, graduate student, Montana State University; and Larry Leistritz, professor, North Dakota State University Department of Agricultural Economics.

Contact: Roger Sheley, Montana State University Department of Plant, Soil & Environmental Science, Leon Johnson Hall, Bozeman MT 59717-3020. *Phone:* 406/994-5686. *E-mail:* usrs@msu.oscs.montana.edu

Foreign Exploration

Principal Investigators: Neal Spencer, laboratory director, USDA-ARS Northern Plains Agricultural Research Laboratory

Project description: This project includes all field and lab activities associated with the search for new biological control agents in Europe and the Middle East. Researchers will specifically be collecting and testing biocontrol agents that originate from, and are thus well-adapted to, cold, wet climates.

Four *Aphthona* flea beetles will be collected and studied in 2000: *A. nigriscutis*, *A. abdominalis*, *A. russica* and *A. chinchihii*. Researchers are particularly optimistic about *A. nigriscutis* and *A. russica*. *A. nigriscutis* colonies now established in the U.S. were originally obtained from dry climates in Hungary and Austria; the “new” strain of *nigriscutis* will be collected from wetter, colder climates in Russia, and will hopefully work in areas where current biocontrol agents have trouble establishing populations. *A.*

russica also shows promise as an agent that establishes quickly and is aggressive toward leafy spurge.

Team members: Gaetano Campobasso, research entomologist, and Gianni Terragitti, senior technician, USDA-ARS European Biological Control Laboratory; Massimio Cristofaro, research entomologist, ENEA; and Kim Mann, biological control technician, USDA-ARS NPRL.

Contact: Neal Spencer, USDA-ARS NPRL, 1500 N. Central Ave., Sidney MT 59270. *Phone:* 406/433-9407. *E-mail:* nspencer@sidney.ars.usda.gov

Website: <http://www.team.ars.usda.gov>

Integration of Current & Emerging Herbicide Technologies

Principal Investigators: Leon Wrage, Extension agronomist/weeds, South Dakota State University Extension Service

Project description: This herbicide study and demonstration focuses on comparisons of reduced-rate herbicide application for long term treatment, multiple application and when integrated with a grazing program. Several popular and new herbicides are included in the study, including 2,4-D, picloram, dicamba, fosamine and imazapic. Also included in the study is an evaluation of rates and timing with repeated imazapic application.

Team members: Sharon Clay, professor, South Dakota State University Department of Plant Science; Darrell Deneke, IPM coordinator, South Dakota State University Department of Plant Science; Ken Nelson, Harding County Extension agent, South Dakota State University Extension Service.

Contact: Leon Wrage, South Dakota State University, Ag Hall/Box 2207A, Brookings SD 57007. *Phone:* 605/688-4602. *E-mail:* leon_wrage@sdstate.edu

Photo CD produced by TEAM partner

The TEAM Leafy Spurge “Leafy Spurge Biological Control: Informational & Photo Resource Gallery” is now available from various sources throughout the region.

The CD features photographs and information about leafy spurge biocontrol agents, before and after pictures of biocontrol release sites, and other photographic and informational resources.

The CD was produced by Bob Richard, director of the USDA-APHIS PPQ/Biocontrol of Weeds Laboratory in Bozeman, Montana, with help from APHIS entomologist Rich Hanson and biocontrol technicians Lana King and Harold Ziolkowski.

TEAM Leafy Spurge coordinator Chad Prosser said the CD is a “great informational tool.”

“In addition to being recognized as a pioneer in the field of leafy spurge biocontrol, Bob is also an outstanding photographer,” Prosser said. “He has an extensive photo library of flea beetles and other biocontrol agents, and he came with the idea to put them on a CD. It was a great idea – a lot of people will be using this CD when they see what’s on it.”

Some of the photos, Prosser said, are “just amazing.” The CD, he added, will particularly useful for people who need flea beetle and leafy spurge bio-

control photos for papers, Power Point presentations and other types of informational presentations.

Distribution points were still being finalized at press time, but details on getting a copy of the Windows-only CD can be obtained by calling TEAM Leafy Spurge at 406/482-2020, sending an e-mail to teamls@sidney.ars.usda.gov or by visiting the TEAM website at www.team.ars.usda.gov

Prosser said contents of the CD will eventually be posted on the TEAM Leafy Spurge website to provide easy access to the photos and information.

The CD project was funded by TEAM Leafy Spurge.

Information day at Walhalla targets international audience

Randy Melaas, Pembina County Extension agent, liked what he saw last summer at Spurgefest '99 in Medora.

"It was a great event, and there was a lot of good information available," Melaas said. "Unfortunately, it was a 400 mile trip, and not too many people from our area made it."

So Melaas decided to do the next best thing – bring a Spurgefest-type of event to local farmers, ranchers, landowners and weed managers.

And thus was born Leafy Spurge International Day, set for June 27 at Frostfire Mountain near Walhalla, N.D.

"We've never done anything like this before, but the response so far has been positive and people seem very interested," Melaas said.

Registration for the event begins at 9 a.m., with speakers set to start at 9:45 a.m. Also included is a tour of an established flea beetle site, with demonstrations of collection, sorting, packaging and transportation techniques. A flea beetle distribution will conclude the day's activities.

Melaas said the event will feature some "great speakers."

"We've got some very knowledgeable, very involved speakers lined up," he said. "We don't often get a chance to bring this kind of expertise together in the same place at the same time."

Speakers for the event are listed in the schedule to the right.

Melaas said participants who are interested in obtaining flea beetles must register prior to June 20 to ensure delivery of flea beetles.

Melaas advised those who are coming to get flea beetles to bring a cooler with blue ice in order to properly store and transport the flea beetles back to their release sites.

Registration for the event, which is being sponsored by the NDSU Extension Service and Pembina County Biological Weed Control

Office, is \$15, and includes refreshments, lunch and two colonies of flea beetles.

Directions: Frostfire Mountain is located six miles west of Walhalla on County Road 55. People coming from the west may use North Dakota Highway 1 by going nine miles north of Langdon or seven miles south of the Maida-Windy Gates border crossing to the County Road 55 intersection, then going 15 miles east County Road 55 to Frostfire Mountain.

Presentations will be made under the facility's roofed, 500-seat outdoor amphitheater. The event will be held rain or shine!

Accommodations: Rooms are available in Walhalla at the Forestwood Inn (701/549-2651) or Hill View Lodge (701/549-3300); in Cavalier (33 miles) at the Cedar Inn (701/265-8341); and in Langdon at the Langdon Motor Inn (701/256-3600) or the Main Street Motel (701/256-2950). Camp sites are available at the Walhalla Riverside Park and Icelandic State park in Cavalier.

For additional information: Contact Pembina County Extension agent Randy Melaas at 701/265-8411.

Information Day Schedule, June 27

- 9-9:45 a.m. – Registration
- 9:45-9:50 a.m. – Introductions
- 9:50-10:05 a.m. – Economic Impacts of Leafy Spurge by Larry Leistriz, professor of Agricultural Economics, NDSU
- 10:05-11:30 a.m. – Chemical Control by Rod Lym, professor of Plant Sciences, NDSU
- 11:30 a.m.-noon – New Invasive Weeds by Rod Lym
- Noon-1 p.m. – Lunch (provided)
- 1-1:15 p.m. – Grazing with Sheep and Goats by Kevin Sedivec, NSDU Range Extension Specialist
- 1:20-3 p.m. – Biological Control with Insects, Denise Olson, entomologist, NDSU, and Kim Brown, Provincial Weed & Biocontrol Specialist, Manitoba
- 3-3:15 p.m. – Break
- 3:15 – On-site tour of leafy spurge flea beetle activity craters
- 4 p.m. – Flea beetle distribution

Will be held rain or shine!!!

Leafy Spurge International Days Registration Form

Name: _____
Organization: _____
Address: _____
City: _____ State/Province: _____ Zip: _____
Phone: _____

Registration Fee (\$15 US or \$20 Canadian): Covers morning & afternoon refreshments, noon meal and two colonies of leafy spurge flea beetles.
Fee x # of people attending = \$ _____

Send your registrations to:

Pembina County Extension Office 301 Dakota Street West #7 Cavalier, ND 58220 701/265-8411	Manitoba Agriculture & Food PO Box 969 Morden, Manitoba, RGO OBO 204/324-6871
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For more information...

TEAM Leafy Spurge

• Gerry Anderson, co-principal investigator (406/433-9416; ganderson@sidney.ars.usda.gov), or Chad Prosser, program coordinator (406/433-9403; cprosser@sidney.ars.usda.gov), USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 N. Central Ave., Sidney MT 59270; Lloyd Wendel, co-principal investigator, USDA-APHIS PPQ/Mission Plant Protection Center, Moore Air Force Base, Building S6414, Mission TX 78572 (956/580-7301; lloyd.e.wendel@usda.gov).

Biological Control

• Bob Richard, USDA-APHIS PPQ/Biological Control of Weeds Laboratory, 1648 S. 7th Ave., Bozeman MT 59717 (406/994-5033; robert.d.richard@usda.gov).
• Don Mundal, North Dakota State University/Dept. of Entomology, 202 Hultz Hall, Fargo ND 58105 (701/231-7920; dmundal@prairie.nodak.edu).
• Neal Spencer, laboratory director, USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 N. Central Ave., Sidney MT 59270 (406/433-9407; nspencer@sidney.ars.usda.gov).

Obtaining Insects

• Montana - USDA-APHIS, 1629 Ave. D/Suite 5-A, Billings MT 59103 (406/657-6282); Jerry Marks, Montana State University Extension Service, 126 West Spruce St., Missoula MT 59802-4204 (406/721-4095; acxgm@montana.edu).
• North Dakota - USDA-APHIS, 3509 Miriam Ave./Suite A, Bismarck ND 58501 (701/250-4473); Dave Nelson, state entomologist, North Dakota Dept. of Agriculture, 600 E. Boulevard/6th Floor, Capiatal Building, Bismarck ND 58505 (701/328-4765; dnelson@state.nd.us).
• South Dakota - USDA-APHIS PPQ, PO Box 250, Pierre SD 57501 (605/224-1713); Ron Moehring, weed pest supervisor, South Dakota Dept. of Agriculture, 523 E. Capital, Pierre 57501 (605/773-3796; ron.moehring@state.sd.us).
• Wyoming - USDA-APHIS PPQ, 504 W. 17th St., Cheyenne WY 82001 (307/772-2323); Lars Baker, Fremont County Weed & Pest, County Courthouse/Room 315, Lander WY 82520 (307/332-1052).

Herbicides

• Rod Lym, North Dakota State University/ Dept. of Plant Science, Loftgard Hall, Fargo N.D. 58105 (701/231-8996; lym@plains.nodak.edu).
• Leon Wrage, South Dakota State University Extension Service, Ag Hall/Box 2207A, Brookings SD 57007 (605/688-4602; wragel@ur.sdstate.edu).

Multi-Species Grazing

• Tim Faller, North Dakota State University/Hettinger Research Extension Center, Box 507, Hettinger N.D. 58639 (701/567-4327; tfaller@ndsuxt.nodak.edu).

• Kevin Sedivec, Range Extension specialist, North Dakota State University, Box 5053/Hultz Hall, Fargo ND 58105 (701/231-7647; ksedivec@ndsuxt.nodak.edu).

Range Management

• Don Kirby, North Dakota State University/Dept. of Animal & Range Science, Hultz Hall, Fargo ND 58105 (701/231-8386; dkirby@ndsuxt.nodak.edu).

• Jack Butler, Central Missouri State University/Dept. of Biology, Warrensburg MO 64093 (660/543-8877; butler@cmsu1.cmsu.edu).

General Weed Control

• Roger Sheley, noxious weed specialist, Montana State University Extension Service, Leon Johnson Hall, Bozeman MT 59717 (406/994-5686; ussrs@montana.edu).
• Ken Eraas, noxious weed specialist, North Dakota Dept. of Agriculture, 600 E. Boulevard Ave./Dept. 602, Bismarck ND 58505-0020 (701/328-2980; keraas@state.nd.us).

Web Sites

The following web sites provide good information and links to other informational sites.

• **TEAM Leafy Spurge** (<http://www.team.ars.usda.gov>) for information on biological control, Integrated Pest Management and related topics. The site also features an extensive listing of other informational sources and web sites.
• **APHIS Noxious Weeds Home Page** (<http://www.aphis.usda.gov/ppq/weeds/weedhome.html>) for information on noxious weeds and APHIS programs.
• **NDSU-Hettinger Research Extension Center** (<http://www.ag.ndsu.nodak.edu/hettinger/>) for information on multi-species grazing, sheep and range health.
• **NDSU-Dept. of Agricultural Economics** (<http://agecon.lib.umn.edu/ndsu.html>) for information on the socio-economic impacts of leafy spurge, the economics of integrating sheep & cattle, and the feasibility of sheep cooperatives.
• **NDSU Extension Service** (<http://www.ext.nodak.edu/extpubs/>) features a wealth of information. Extension Service bulletins with pertinent information can be found in the agricultural economics, animal science, entomology, plant science and water quality sections of the directory.

Clip and save this list of names and numbers for future reference. If you have a question about biological control or IPM strategies for leafy spurge, someone on this list can answer it!

Claude Schmidt
Agriculture Experiment Station
North Dakota State University
Fargo, ND 58105

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Fargo, ND
