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Foreword/Program

In 1999, we celebrate the 20th year of the annual Leafy Spurge symposium and the most aggressive battle ever waged against a weed in the Northern Great Plains. On June 26 and 27th of 1979, more than 125 scientists, legislators, land managers, farmers and ranchers met in Bismarck, North Dakota to discuss the increasing threat of leafy spurge to the land and livelihood of people in the Northern Great Plains.

Leafy spurge had a good foothold by the time the first symposium was held. Introduced into North America from Europe and Asia, it had no natural enemies. A heavy seed producer and an aggressive root system allowed it to easily invade and become established on many sites. For about the first 50 years after introduction, it was primarily a problem in cropland, often spreading to new areas in seed grain. It did not cause much concern, particularly after WWII when herbicide use became common on cropland. Use of herbicides plus annual tillage generally kept leafy spurge from becoming an economic problem in cropland. It did become of greater concern in the 1960's and early 1970's when it began to appear in grasslands. Landowners found that the herbicides were not very effective on leafy spurge. But the attitude was that soon a new herbicide would be developed that would be the "magic bullet" for leafy spurge. In time, a "magic bullet" was available, but it was considered by most landowners to be too costly to use on low-value rangeland, and it did not always eradicate the treated plants. Landowners and public land managers did become concerned in the 1970's. In response to their concerns, a multi-state/multi-agency steering committee was formed, which organized the 1979 symposium. The symposium consisted of technical papers on everything that was known about leafy spurge, followed by group discussions on the leafy spurge plant, chemical control, cultural control, biological control, and social and economic impacts. The reports from these discussion groups served as the basis for beginning an organized plan for research, education, and control of leafy spurge.

The first five years after the 1979 symposium were not smooth sailing. General support for the program often slacked when funding was needed, particularly for research. Some agencies and institutions redirected funds to enhance or start programs. Legislators and administrators had to be convinced that the new funding was needed. The annual leafy spurge symposium brought researchers and others together to report on and discuss needed research and to report to potential users any positive results. Attendees included representatives of federal and state agencies, chemical companies, and private landowners.

To insure continuation of the symposium, a petition was sent to the Great Plains Agricultural Council (GPAC) requesting that they establish a Leafy Spurge Task Force (LSTF) as part of their program for addressing problems in the Great Plains. The proposal was accepted. The LSTF was the longest standing task force in GPAC, and the symposium has continued after GPAC was disbanded several years ago. (The symposium is now affiliated with the Weed Science Society of America).

In 1985, a proposal was prepared and submitted by LSTF to USDA-APHIS to enlist their help in the development of a biological control program on leafy spurge. The proposal was accepted and additional funding was provided by congress to enhance the APHIS program.

The Proceedings published following each symposium are an excellent history of the development of the leafy spurge control program. Early proceedings included work on evaluating the problem and on advances in chemical control. A real breakthrough was the finding that a small quantity of Tordon mixed with 2,4-D was a very effective herbicide at a lower cost. Best time of application and long-term plans for herbicide use were also very important. Use of sheep and goats as leafy spurge grazers and eventually the biological control program became a large part of the reporting in the Proceedings. Farmers, ranchers, and other users were many times part of the symposium.

“The Leafy Spurge News” has been published for over 20 years. It is another outlet for symposium reports and it has a very large circulation.

The 1999 combined symposium and Spurgefest is testimony that the leafy spurge research, education, and control programs are making a difference. Leafy spurge is still here, and it will probably always be here, but two things are certain: 1) we can control leafy spurge to keep it below a disastrous economic level and; 2) there are far less acres of leafy spurge now than there would have been without the dedicated efforts of everyone the past 20 years.

Russell J. Lorenz
USDA-ARS/NDSU-retired
Also past Leafy Spurge News editor
And past GPAC-LSTF facilitator-retired!

1999 Leafy Spurge Symposium Proceedings

Medora, North Dakota

June 29, 1999

Program

8:30 a.m. Welcome and introduction - Rod Lym, North Dakota State University, Fargo, North Dakota.

8:45 a.m. Perceptions of leafy spurge by ranch operators and local decision makers: an update. Randy Sell, Dean A. Bangsund, and F. Larry Leistritz, Department of Agricultural Economics, North Dakota State University, Fargo, North Dakota.

9:00 a.m. "Know thine enemy" - understanding weed management through biological research. James V. Anderson, David G. Davis, Michael E. Foley, and David P. Horvath, USDA, ARS, Fargo, North Dakota.

9:30 a.m. Imazapic for leafy spurge control. Denise M. Markle and Rodney G. Lym, North Dakota State University, Fargo, North Dakota.

9:45 a.m. Plateau (Imazapic) for leafy spurge control in Wyoming. Mark A. Ferrell and Tom D. Whitson, University of Wyoming, Laramie, Wyoming.

10:00 a.m. Discussion and break

10:30 a.m. Integration of the flea beetle, *Aphthona nigriscutis* Foudras, and herbicides for leafy spurge control. Jeff A. Nelson, Rodney G. Lym, and Robert Carlson, North Dakota State University, Fargo, North Dakota.

10:45 a.m. *Aphthona* flea beetle establishment determined by soil composition and root growth pattern. Donald A. Mundal and Robert B. Carlson, North Dakota State University, Fargo, North Dakota.

11:00 a.m. Sex ratio effects on fecundity and fertility of a leafy spurge flea beetle *Aphthona lacertosa*. Denise L. Olson and Donald A. Mundal, North Dakota State University, Fargo, North Dakota.

11:15 a.m. Change detection of leafy spurge (*Euphorbia esula*) infestations using aerial photography and geographic information systems. G. L. Anderson and C. W. Prosser, USDA, ARS, Sidney, Montana; and S. Hager and B. Foster, USDI, Medora, North Dakota.

11:30 a.m. AFLP analysis on individuals from leafy spurge populations characterized as resistant or susceptible to flea beetle biocontrol agents. David P. Horvath, USDA, ARS, Fargo, North Dakota.

11:45 a.m. Discussion and lunch

- 1:15 p.m. Comparison of companion grazing and single species grazing on leafy spurge infested rangeland.
– Jack D. Dahl and Timothy C. Faller, Hettinger Research Extension Center, Hettinger, North Dakota; Kevin K. Sedivec and Jerrold Dodd, Animal and Range Sciences Department, North Dakota State University, Fargo, North Dakota; and James Kam and Don Stecher, Northern Great Plains Agricultural Research Center, Mandan, North Dakota.
- 1:30 p.m. Removing the constraints of sheep as an alternative integrated pest management tool.
– Timothy C. Faller and Jack D. Dahl, Hettinger Research Extension Center, Hettinger, North Dakota.
- 1:45 p.m. Leafy spurge management with sheep and flea beetles.
– K. George Beck and Larry R. Rittenhouse, Colorado State University, Fort Collins, Colorado.
- 2:00 p.m. Progress update on toxic compounds in leafy spurge for ruminants.
– Fathi T. Halaweish and Scott L. Kronberg, South Dakota State University, Brookings, South Dakota.
- 2:15 p.m. Economic analysis of sheep grazing of leafy spurge: preliminary results.
– Dean A. Bangsund, Dan Nudell, Randall S. Sell, and F. Larry Leistritz, North Dakota State University, Fargo, North Dakota and Timothy C. Faller, Hettinger Research Experiment Center, Hettinger, North Dakota.

2:30 p.m. Discussion and break

- 3:00 p.m. Impacts of leafy spurge on local and landscape patterns of plant species diversity in Theodore Roosevelt National Park.
– Dan R. Cogan, U.S. Bureau of Reclamation, Denver, Colorado; and Jack L. Butler, Central Missouri State University, Warrensburg, Missouri.
- 3:15 p.m. Seedbank study of a leafy spurge infestation.
– John R. Sterling, Donald R. Kirby, and Rodney G. Lym, North Dakota State University, Fargo, North Dakota.
- 3:30 p.m. Effects of prescribed burning and herbicide treatments on leafy spurge (*Euphorbia esula* L.).
– Chadley W. Prosser, USDA, ARS, Sidney, Montana and Kevin K. Sedivec and William T. Barker, Animal and Range Sciences Department, North Dakota State University, Fargo, North Dakota.
- 3:45 p.m. Site characteristics of established flea beetle colonies in western North Dakota.
– Don Kirby, Mark Hayek, Dean Cline, Kelly Krabbenhoft, and Connie O'Brien, North Dakota State University, Fargo, North Dakota.

4:00 p.m. Discussion and summary

- Poster: The response of glutathione reductase and glutathione-S-transferase to environmentally- and chemically-induced stress; amelioration by polyamines in leafy spurge (*Euphorbia esula* L.).
– David G. Davis, Harley R. Swanson, Kristi A. Biewer, Donald R. Rusness, and James V. Anderson, USDA/ARS, Fargo, North Dakota.