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Leafy spurge research and education programs in the Great Plains: The Leafy Spurge Task Force

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Introduction

Leafy spurge continues to be a serious problem in the Great Plains. It has taken over millions of acres of grasslands. The heaviest infestations are in the northern Great Plains states, but each year leafy spurge is found further south in the Great Plains, and further east and west outside the Great Plains. It is also widespread in Canada, particularly in the Prairie Provinces.

We don't know what the limits are to its range in North America, but as widespread as it is in Europe and Asia, there may be few places in North America in which it cannot become established. Consequently it is of utmost importance that programs of awareness be widely promoted and that the best control technology available be applied in all areas that have the problem. The Leafy Spurge Task Force provides an important forum for those doing research, providing education and extension programs, and for those carrying out control programs on private and public lands.

Leafy spurge - the plant

Leafy spurge is a long-lived, deep-rooted perennial with erect stems up to 36 inches tall. The plant is yellow-green with flowers of the same color borne above a pair of bracts on the tips of the stems. The extensive, tough, woody root system extends to 14 feet or more and to as much as 30 feet into the soil, making the plant difficult to control. A white, milky latex in all plant parts causes irritation of the mouth and digestive tract and causes scours and weakness in cattle. Sheep generally have more tolerance to contact with leafy spurge and they often eat it. Goats seem to prefer it to most other plants. Seed is eaten by birds and a few seeds will pass through the digestive tract, or will be transported in the feathers or hair of birds and animals, or through transport of plant parts on machinery and vehicles.

Once established, numerous pink buds on the crown and rootstalks produce stems which form a dense clump. Removal of or damage to the stems by any means results in a

new flush of bud-initiated stems. Root reserves seem to be endless, so the plant can survive endless defoliation.

Leafy spurge - the problem

Leafy spurge is not native to North America. It was introduced to the United States and Canada from Europe and Asia. Some of it came as a contaminant in ship ballast unloaded on the East Coast of North America, but most of the leafy spurge found in the mid-continent areas came as a contaminant in seed grain brought from Europe and Asia by immigrants.

Consequently it was a problem in cropland until annual application of herbicides became part of the crop production systems after World War II. Leafy spurge has survived in cropland, often without the landowner realizing it is there. When management of the land changes, reduced tillage and/or reduced herbicide use, leafy spurge emerges. At the present time, CRP land is a good example. In some areas, entire fields of CRP are infested with leafy spurge as soon as annual tillage and herbicide application are discontinued and the land is seeded to grass. Leafy spurge has survived for many years, in a suppressed condition, but capable of occupying the area within a year or two following the change in management. At this time, we do not have the technology needed to kill a leafy spurge plant once it has developed its deep root system.

Leafy spurge began to invade grasslands adjoining cropland many years before people became aware of its threat to anything but cropland. By the late 1940's and early 1950's, landowners were aware that leafy spurge was becoming established in grasslands, but generally it was a small patch, started from a seed dropped by a bird or animal, and because the patch was small, nobody was concerned. These patches became the seed source for establishing many more patches. People became part of the problem, moving plant parts and seed during haying operations, road maintenance and construction, and in recreational and many other activities. By the 1970's, leafy spurge patches were widespread in grasslands, along highways and railroad tracks and in waste areas as well as in the best managed grazing lands.

Leafy spurge is of no economic importance in Europe and Asia because hundreds of species of insects and diseases attack it and keep it under control. None of the insects and diseases were brought along to North America with the leafy spurge seed. No native North American insect or disease causes much problem to leafy spurge, so it can grow and reproduce readily and rapidly. Once established in an area, it does not take many years to establish a monoculture, even in well managed grasslands.

Leafy spurge is an extremely complicated plant with many devices for survival. Researchers are trying to find ways to make herbicide treatment more effective and more economical because none of our present herbicides will kill the deep root system of leafy spurge. When properly used, annual applications of herbicide will control leafy spurge to the degree that useful forage will be produced in leafy spurge infested areas. A mix of picloram and 2,4-D is the most effective herbicide treatment, at an annual cost of from \$25 to \$50 per acre. The high cost of treatment, in addition to the loss in production of

desirable forage make it extremely important to protect clean land from infestation through a well planned and coordinated control program.

Herbicides will only contain it and are costly, but won't kill it. Biological control won't eradicate it (at least it has not done so in the past several thousand years in Europe and Asia) and is several decades from being a major control factor. The Leafy Spurge Task Force is very useful for generating ideas for more cost-effective, long-term, integrated control and containment programs.

The Leafy Spurge Task Force

The Leafy Spurge Symposium held in Bismarck, North Dakota, June 26-27, 1979 was the beginning of a coordinated effort to develop a regional research and education program aimed at development of an effective leafy spurge control program. North and South Dakota, Montana and Wyoming provided the initial thrust in getting research, extension, and coordinated control programs started. Some means of maintaining continuity to the effort was needed. The Great Plains Agricultural Council committee structure was the most promising vehicle, so a proposal was presented and the GPAC established the Leafy Spurge Committee (GPC-14) in 1981. It is now the Leafy Spurge Task Force of the Crops and Soils Committee of GPAC.

It has been a very active group with an extremely broad interest. The basic membership represents the research and extension programs of not only the Great Plains states, but also of several of the adjoining states. The annual meetings include attendance by those in research and extension, private landowners and public land managers, weed district supervisors and county weed control officers, county agents, county commissioners, people representing chemical companies and state Departments of Agriculture and Natural Resources, to name a few. Annual meeting programs are geared to provide something for everybody. Communication between researchers and among researchers and user groups helps to address the urgent problems and to get the new technology into the control plans on a timely basis.

Accomplishments of the task force

1. The annual meeting of the Task Force is held in July of each year. It was rotated between Montana, Wyoming and North Dakota until other states increased their activity on leafy spurge. Since then, it has been held in South Dakota and Minnesota, and in 1992 it will be held in Nebraska. These meetings are well attended, programs are provided that are useful to all concerned, from researchers to landowners.

2. The **Leafy Spurge News** is published three times each year. It provides an additional forum for exchange of information. The mailing list expands with each issue and now stands at about 1,800.

3. Through the Task Force, interdisciplinary regional research projects are initiated particularly on chemical and biological control. State experiment stations, private research institutions and ARS often cooperate on these projects.

4. When interest in biological control increased, a proposal was prepared on behalf of the Task Force to get APHIS-PPQ involved. APHIS accepted and implemented the proposal, and Task Force participants helped get additional funds appropriated, specifically for the leafy spurge and knapweed program of APHIS. This allowed APHIS, ARS, and state experiment stations and departments of agriculture to cooperate on development of a viable biological control program.

5. It is often difficult to identify where credit for program development should go. This is the case for the Leafy Spurge Task Force. Those participating in its activities could each provide a list of the benefits from interaction of the group, formally and informally.

The future of the task force

On behalf of the members of the Task Force, and of all those who participate in its programs, thanks to the GPAC for continuing to authorize the Leafy Spurge Task Force. It has provided the continuity and the forum for exchange of information that was the aim of the original request for formation of the original committee. As long as leafy spurge continues to spread and to increase the acreage infested, there is a need for this Task Force.