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APHIS - Biocontrol project of leafy spurge, a report

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1988 is the first year for Animal and Plant Health Inspection Service (APHIS) to become involved in the biological control of leafy spurge. Prior to this time, a planning committee had developed ideas on the best approach to implement a project with minimal fiscal support and few biological control agents. Although several State and Federal scientists were working on the biological control of leafy spurge, a major drive to implement a program was not initiated until this year. Fortunately, with the help of State cooperators, an increased interest in the biological control of leafy spurge provided for significant congressional support. This type of support enhances committee activity so that a definite plan can be developed for a period of time.

Project organizers realized the major problem in implementing a biological control project on leafy spurge was the lack of biological control agents. The number and diversity of biological control agents needed to be expanded. Second in importance was the need for quarantine capability in providing pass-through services for introducing biocontrol agents previously cleared for release in the United States (U.S.).

Third, because many of the insects known to attack leafy spurge are univoltine the ability to mass produce each species must be addressed. It was these major concerns that initiated our goal to set in place a major effort in the biological control of leafy spurge. Cooperative agreements have been negotiated with State cooperators, the Commonwealth Institute of Biological Control (CIBC), and Agricultural Research Service (ARS) to address many of these areas of concern.

Currently ARS personnel at the Rome laboratory and CIBC scientists in Delmont, Switzerland, are collecting in Austria, Italy, and Yugoslavia, *Aphthona flava*, *A. cyparissiae*, *A. czwalinai*, *Bayeria capitigena*, and *Oberea erythrocephala*, all of which have been cleared for release in the U.S. As soon as these insects have undergone a quick screen, they are sent to cooperators in Nebraska, North Dakota, Montana, Oregon, and South Dakota for field cage releases. APHIS has staffed and based portions of the Biological Control of Weeds quarantine facility in Albany for the quick screen activity. In conjunction with State cooperators in North Dakota, several different release strategies are being evaluated. The need to deliver the biocontrol agents into a specific niche greatly enhances the success rate for field insectary establishment. Once these parameters for

successful establishment have been determined, insectary sites will be set up and the bio-control agents made available for distribution to other locations.

Another important aspect of our program is the ability to propagate large numbers of biocontrol agents for release purposes. Research is being conducted by ARS and North Dakota State University (NDSU) scientists on methods of providing a host plant that can be utilized for mass production of insects. Currently discussions are underway to begin research on development of a defined diet for mass production of certain species of insects that attack leafy spurge. This research could have a very positive impact on mass production of biological control agents.

A need exists to increase the diversity of the biological control agents currently available for release in the U.S. An agreement has been finalized with CIBC to collect and screen approximately four additional species of insects; however, availability of plants for this work is limited at this time. APHIS, in conjunction with the Center for Plant Conservation, is collecting fifteen species of *Euphorbia* including seven species which are listed as endangered or threatened. These plants will be propagated by the Mission Biological Control Laboratory and made available for use in host specificity testing. Current plans are to provide this material to Delmont, Switzerland, for screening purposes. Once the specificity work has been accomplished the insects will be cleared through a quarantine laboratory in the U.S. and made available for field evaluation.

Equally important is the need to know how successful we have been in reducing the problem of leafy spurge to privately owned land and national rangeland. In an attempt to quantify the impact of leafy spurge in these areas, an economic evaluation will be conducted. Economists at NDSU will initiate this study and develop models that will address each area of concern.

Finally, efforts to increase the effectiveness and reduce the cost of survey for leafy spurge are underway. More research in this area will greatly increase our awareness of the spread and distribution of leafy spurge in the U.S.