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The number of people receiving the leafy spurge news continues to grow. This issue of the newsletter will be distributed to over 1200 addresses which indicates that awareness of the leafy spurge problem is growing steadily.

Montana

1982 tours

The 1982 tours were a success, with good attendance at 10 sites across Montana. Herbicide demonstration plots were established at most of the sites so the respective counties will be able to monitor effects and conduct future tours at the site.

ATV Program

All-terrain 3 wheeled cycles are becoming a common mode of transportation on ranches in Montana. These machines enable a person to travel to less accessible leafy spurge infested sites. MSU researchers are designing and fabricating chemical herbicide application equipment which can be mounted on the ATC. The designs are being developed around 2 main objectives: 1) to place the precision constraints of chemical application on the machine rather than the applicator, 2) to construct accessories which are suitably durable, easy to fabricate, and maneuverable for use on rough terrain. Next spring these accessories will be demonstrated at tours around Montana.

Position filled

Scott Nissen has accepted a graduate research assistantship to study the control mechanism of bud induction on the perennial roots of leafy spurge. Since 1979 Scott has directed the integrated Pest Management program for the Cooperative Extension service at MSU. Scott will be completing his Ph.D. under Dr. Mike Foley, weed physiologist at MSU.

North Dakota

Research has continued in order to find an acceptable program for leafy spurge control in trees. Glyphosate (Roundup) can be used safely under trees if one is careful not to allow drift onto the tree foliage. Glyphosate application of 1:1 (glyphosate:water) (v:v) using a hand held CDA or 1:7 using a one nozzle garden sprayer have given leafy spurge control of 90 to 100% one year later. To be most effective, glyphosate must be applied in the fall and a follow-up treatment of 2,4-D is needed in the spring to control seedlings.

Many people object to using glyphosate because it is non-selective and large treated areas are unattractive. With that in mind Tordon (picloram) was applied using the CDA at concentrations of 1:3 and 1:7 (picloram:water) (v:v:) which resulted in 90 to 100% leafy spurge control one year later. There was no damage to the trees which were mostly cottonwood with 8 to 16 inch diameter trunks. Earlier work had shown that Tordon applied in this manner would kill saplings. This type of treatment may never be completely safe but the risk can be minimized by treating in the fall when trees are growing less actively and by being careful not to over-apply.

Public interest in the leafy spurge program continues to increase. Field days were held this fall in three areas of the state. Several radio and television stories were developed and released to emphasize fall treatment programs. Many more people now realize the nature of the leafy spurge problem and understand that persistence is the key to any control program.

Dr. Sarah E. Lingle (Ph.D., Washington State University) has recently joined the staff at the Metabolism and Radiation Research Laboratory, Fargo, North Dakota for a two-year post-doctoral program. Dr. Lingle received her degree from the Agronomy Department, WSU, for her research on physiological aspects of grain filling in wheat and barley. Dr. Lingle will devote 100% of her time examining the physiological bases for the limited amount of downward movement of herbicides in leafy spurge. In addition to these studies, the effects of selected growth regulators on herbicide movement in leafy spurge will be evaluated. Dr. Lingle may be contacted by phone at (701) 237-5771, ext. 5449.

Other studies have shown that leafy spurge is adapted readily to tissue culture for studies on plant growth and control. Studies of pigment production and organogenesis have been successful. Identification of chemical constituents of whole plants is being pursued at the USDA laboratory in Berkeley, California, by the use of plant materials provided from the USDA laboratory at Fargo.

Wyoming

Leafy spurge shoot control evaluations

A field study to evaluate the efficacy of the liquid and dry formulations of Tordon (picloram) and Banvel (dicamba) and retreatment combinations was initiated in 1980 on a sandy loam alluvial bench of the Belle Fourche River. Included in the study were the original, treatments of 6 and 8 lb ai/A of Banvel 4L and 5G and 1.0 and 2.0 lb ai/A of

Tordon 22K and 2K. Retreatments consisted of Tordon 22K at 0.5 and 1.0 lb ai/A, Banvel 4L at 2.0 lb ai/A, 2,4-D amine at 2.0 lb ai/A (spring and fall). Two years after the original applications, Banvel 4L and 5G were maintaining 68 to 84% live shoot control. Original treatments of Tordon 22K and 2K at 1.0 and 2.0 lb ai/A were maintaining 88 to 100% shoot control. With one retreatment application, Tordon 22K at 1.0 lb ai/A was the most effective across all original treatments resulting in 99 to 100% live shoot control. Following in decreasing order of retreatment effectiveness were Tordon 22K at 0.5 lb ai/A, spring and fall application of 2,4-D amine at 2.0 lb ai/A, Banvel 4L at 2.0 lb ai/A and 2,4-D amine at 2.0 lb ai/A (spring applied).

Evaluation of growth regulators in combination with Tordon and Banvel

Greenhouse screening trials and field studies were initiated during the summer of 1982 to evaluate the effects of various plant growth regulators in combination with relatively low rates of Tordon and Banvel on leafy spurge control. The growth regulators being evaluated are ProGibb 2% (gibberillic acid), PP333 (antigibberellin) 50WP, Cytex (cytokinin), ABG-3034 (cytokinin), Fruitone (1-aphthleneacetic acid), 2, 4-D and Roundup. The purpose of the studies is to determine if plant growth regulators will aid herbicides presently being used in controlling leafy spurge.

No significant data from either the greenhouse or field trials are available at this time.

1983 Leafy Spurge Symposium

The 1983 Leafy Spurge Symposium will be held in Sundance, Wyoming, June 21 and 22. Circle your calendars now.

Biological control:

Rust attacks spurge

Two isolates of *Melampsora* sp., spurge rust, were found to attack leafy spurge. To date infected ecotypes originate from Montana, Nebraska, Nevada, Michigan, and Minnesota. The rusts were collected last summer from Hungary and Austria. Sherry Turner is currently screening other leafy spurge ecotypes and related plants to determine the specificity of the pathogens. This research is conducted at the Plant Disease Research Lab in Frederick, Maryland, in a containment facility for plant pathogens. Before release of the spurge rust takes place, host range studies must be completed.

Leafy spurge pathogens in Canada

In 1981 a survey was conducted for plant pathogens on leafy spurge in Saskatchewan. All the stands surveyed were in good condition and none of the isolates were found to be pathogenic. The survey was continued through this year.

A bacteria was found on leafy spurge seeds collected at Jameson, Sask. and was found to be weakly pathogenic on leafy spurge plants in a greenhouse. The bacteria was tested in the field but no pathogenic affect was observed.

If anyone would like extra copies of this newsletter, to be added to the mailing list or more information on leafy spurge, please contact:

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