Reprinted with permission from: Leafy Spurge Symposium and Proceedings. Lincoln, NE. July 22-24, 1992. 2:41.

Leafy spurge propagation and herbicide-insect interaction for leafy spurge control

C. A. MIHELICH and R. G. LYM

Crop and Weed Sciences Department, North Dakota State University, Fargo, ND 58105

Propagation of leafy spurge in the greenhouse for insect biocontrol agents was evaluated. Leafy spurge plants grew best at 27˚C, fertilized when 20 days old using a balanced fertilizer at a rate of 70 kg N/ha weekly or 135 kg N/ha biweekly in a potting media at pH 7 and a 16-hour photoperiod. Leafy spurge can be propagated to a size adequate for use in chemical and/or biocontrol experiments in approximately 6 weeks.

Aphthona spp. larvae failed to complete development to pupation when propagated with greenhouse-grown leafy spurge. Delayed development may be due to an imbalance or deficiency in the root nutrient content. Greenhouse-grown leafy spurge had a similar starch reserve to field grown plants but only 50% of the water-soluble carbohydrate (sucrose) content. Greenhouse-grown plants that were senesced naturally or artificially had similar carbohydrate concentrations to field grown plants.

It has been hypothesized that biocontrol agents brought from Europe may not establish on North American biotypes. *Aphthona* spp. was exposed to one Austrian and six North American biotypes. No feeding preference was observed and eggs were found in pots of each biotype. Larvae development and adult emergence will be monitored. The effect of herbicide treatment on insect feeding was evaluated. The treatments were 2,4-D at 140 g/ha, picloram + 2,4-D at 70 plus 150 g/ha, and girdling the stem to deplete the latex. *Aphthona nigriscutis* and *A. czwalinae* were placed in separate cages and feeding behavior was monitored for 2 weeks. Insects fed on the herbicide treated plants until the leaves desiccated and only stems remained. Eggs have been found in pots of treated, girdled, and control plants. Larvae development and adult emergence will be monitored.

Reprinted with permission from: Leafy Spurge Symposium and Proceedings. Lincoln, NE. July 22-24, 1992. 2:41.

Sponsored by: United States Department of Agriculture, Agriculture Research Service, University of Nebraska, Lincoln, NE, DowElanco, Nebraska Leafy Spurge Working Task Force.

Leafy spurge propagation and herbicide-insect interaction for leafy spurge control

C. A. MIHELICH and R. G. LYM

Crop and Weed Sciences Department, North Dakota State University, Fargo, ND 58105

Propagation of leafy spurge in the greenhouse for insect biocontrol agents was evaluated. Leafy spurge plants grew best at 27˚C, fertilized when 20 days old using a balanced fertilizer at a rate of 70 kg N/ha weekly or 135 kg N/ha biweekly in a potting media at pH 7 and a 16-hour photoperiod. Leafy spurge can be propagated to a size adequate for use in chemical and/or biocontrol experiments in approximately 6 weeks.

Aphthona spp. larvae failed to complete development to pupation when propagated with greenhouse-grown leafy spurge. Delayed development may be due to an imbalance or deficiency in the root nutrient content. Greenhouse-grown leafy spurge had a similar starch reserve to field grown plants but only 50% of the water-soluble carbohydrate (sucrose) content. Greenhouse-grown plants that were senesced naturally or artificially had similar carbohydrate concentrations to field grown plants.

It has been hypothesized that biocontrol agents brought from Europe may not establish on North American biotypes. *Aphthona* spp. was exposed to one Austrian and six North American biotypes. No feeding preference was observed and eggs were found in pots of each biotype. Larvae development and adult emergence will be monitored. The effect of herbicide treatment on insect feeding was evaluated. The treatments were 2,4-D at 140 g/ha, picloram + 2,4-D at 70 plus 150 g/ha, and girdling the stem to deplete the latex. *Aphthona nigriscutis* and *A. czwalinae* were placed in separate cages and feeding behavior was monitored for 2 weeks. Insects fed on the herbicide treated plants until the leaves desiccated and only stems remained. Eggs have been found in pots of treated, girdled, and control plants. Larvae development and adult emergence will be monitored.