RESEARCH REPORT 03-7

A TRIAL WITH METSULFURON METHYL ON A SANDY, LOW ORGANIC MATTER SOIL

by
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INTRODUCTION

The herbicide metsulfuron methyl (Escort®) is registered for use in loblolly pine, slash pine and yellow poplar plantations. Often Escort® is included in a tank-mix to increase the spectrum of weed control. When applied in a tank-mix, Escort® is applied at rates ranging from 0.33 to 2 ounces of product per acre. This herbicide is also marketed at lower use rates under the name Ally® for control of weeds in fallow areas and on wheat, barley, pastures and rangelands. On fallow land for example, rates of 0.1 ounce of product per acre (1.7 grams a.i./a) controls chickweed, purslane, lambsquarters and pigweed. Rates of 0.3 ounce of product per acre (5 grams a.i./a) can control dogfennel. Weeds should be treated when less than 4" tall and effectiveness may be reduced if rainfall occurs less than 4 hours after application. The cost per acre will vary, but when applying Ally® at 1.7 grams a.i./a, the cost of the herbicide might be $2.50 per acre.

Trials with this herbicide were conducted in 2001 on *Pinus taeda* and *Pinus elliottii* (VanderSchaaf et al. 2002). If treated 9 weeks after sowing, seedlings were tolerant of metsulfuron methyl even at 3.4 to 6.8 g a.i./a. Control of spurge (*Euphobia* spp.) was excellent at the Shubuta Nursery when metsulfuron was applied at 12 g a.i./a. A follow-up test was conducted in 2002 to determine if spurge could be controlled at lower rates.

METHODOLOGY

A study was installed at the Shubuta Nursery during the 2002 growing season. Loblolly pine seeds were sown on April 10 and the seedlings were treated on May 14 (5 weeks after sowing). The study was installed as a randomized complete block design with five replications. Plot size was 10-feet long and one bed wide. Each study involved three herbicide treatments plus an untreated control. Herbicides were applied using a CO_2-backpack sprayer calibrated to apply 28.4 gallons per acre. Treatments included rates of 0.1, 0.2 and 0.3 ounces of product/acre. Seedling densities (i.e. number of seedlings per square foot) were recorded in December using a 1' x 4' counting frame. Seedling samples were hand-lifted from the center of each plot and were transported to Auburn for analysis. Heights and root-collar diameters were measured on 25 seedlings per plot. Oven-dry weights of shoots and roots were recorded for each 25-seedling sample. Treatment effects were compared using linear, and quadratic contrasts.

RESULTS

Soil texture at the Shubuta Nursery is classified as a sand (97% sand, 2% silt) with an organic matter content of 0.7% and a pH of 5.4. No stunting of seedlings resulted from applying metsulfuron methyl to seedlings but a reduction in seedling density was observed at the rate of 0.3 ounce of product per acre (Table 1).

Table 1. Morphological characteristics for loblolly pine seedlings lifted in December at the Shubuta Nursery.

Metsulfuron Rate g ai/acre	Density (#/sq.ft.)	RCD (mm)	Height (cm)	Shoot (g)	Root (g)	Spurge (% cover)
0	22.0	5.1	39.0	4.67	0.73	80
1.7	22.8	5.2	39.9	5.21	0.81	8
3.4	21.6	5.4	40.0	4.82	0.74	7
5.1	18.3	5.2	40.0	5.46	0.83	1
Linear	*0.0050*	*0.2342*	*0.0463*	*0.0242*	*0.1944*	*0.0001*
Quadratic	*0.0304*	*0.0245*	*0.1364*	*0.7833*	*0.9342*	*0.0001*
Lack-of-fit	*1.0000*	*0.3535*	*0.5673*	*0.0264*	*0.0783*	*0.0003*
(LSD)	*2.5*	*0.22*	*1.0*	*0.53*	*0.12*	*10*

MANAGEMENT IMPLICATIONS

Ally® can be applied to fallow land at a rate of 0.1 ounce of product per acre (1.7 g a.i./acre). This rate (equivalent to 1.7 g a.i./acre) will have some activity on spurge plants that receive irrigation. However, young seedlings (e.g. 5-weeks from sowing) may be injured when growing on sandy, low organic matter soils and treated with 0.3 ounce of product per acre. To avoid seedling injury, nursery managers who manage sandy soils (with low organic matter content) should take precautions to minimize drift when applying Escort® or Ally® to fallow areas adjacent to newly emerged pine seedlings.

REFERENCES

VanderSchaaf, C., D.B. South and T. Hill. 2002. Trials with metsulfuron-methyl on loblolly and slash pine. Auburn University Southern Forest Nursery Management Cooperative. Research Report 02-05. 5 p.