

WEED CONTROL FOR POPLAR TREE ESTABLISHMENT

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Introduction

Research was conducted at the Malheur Experiment Station to evaluate herbicides for weed control during poplar establishment.

Methods

Poplar trees (*Populus deltoides* x *P. nigra* 'OP 367') were planted using sticks 25 to 30 cm long spaced 3.5 feet apart in rows 14 feet apart. Treatments were oriented along the center of the tree row with four replications. Herbicide treatments were applied preplant incorporated (PPI) or preemergence (PRE) with PRE treatments being sprayed over the top of newly planted sticks in plots that were 14 feet by 28 feet. Treatments were applied with a CO₂-pressurized backpack sprayer delivering 20 GPA at 28 psi. Incorporation of PPI treatments was accomplished by a single pass with a field cultivator. Tree planting and treatment applications were accomplished May 8. Trees were watered as needed with sprinkler irrigation. Poplar injury and weed control were visually evaluated May 30 and June 6. A late rating of weed control was taken February 16, 1998. Poplar height was taken June 6, September 8, and October 28. Poplar diameters at 20 cm and 4.5 ft from ground level were measured September 9 and October 28.

Results

Treatments containing Goal injured poplar trees; however, the trees grew out of the Goal injury as the season progressed. Trees treated with Goal were among the tallest and had among the largest diameter because of season long weed control. Injury from Goal may have resulted from early bud break or from sprinklers splashing the herbicide back onto newly developing leaves. All herbicide treatments reduced the number of redroot pigweed and barnyardgrass plants. Treflan and Sonalan alone did not adequately control hairy nightshade and common lambsquarters. Common lambsquarters was the dominant weed at this site. Prowl provided weed control similar to Goal treatments, but control decreased toward the end of the season. Weed competition reduced poplar tree height and diameter in plots where weeds were not adequately controlled. Tree height and diameter were increased by application of all herbicides with the greatest tree growth occurring in plots treated with Prowl or Goal. In the untreated check plots, competition from weeds resulted in the death of over 75 percent of the poplar trees.

Table 1. Weed control in OP 367 poplar trees with soil-applied herbicides, Malheur Experiment Station, Oregon State University, Ontario, Oregon, 1997.

Treatment	Rate	Timing	Weed density ¹				Overall weed control ²		
			Pigweed	Lambsquarters	H. nightshade	Barnyardgrass	5-30-97	6-5-97	2-16-98
	lb ai/acre		No./ft ²				%		
Treflan	1	PPI	0.1	1.1	1.5	0.9	79	68	4
Goal	2	PRE	0	0	0	0	98	100	89
Treflan + Goal	1.0 + 2.0	PPI + PRE	0	0	0	0	98	100	93
Prowl	2	PRE	0	0	0	0	98	98	41
Sonalan	1.5	PRE	0	1.8	1.8	0	75	64	6
Untreated			0.8	6.8	2.1	2.4	0	0	0
LSD (0.05)			0.4	1.3	1	1.1	11	10	12

¹Weed densities taken June 6, 1997.

²Late weed control was evaluated February 16, 1998.

Table 2. Growth and injury of OP 367 poplar trees in response to soil-applied herbicides, Malheur Experiment Station, Oregon State University, Ontario, Oregon, 1997.

Treatment	Rate	Timing	Poplar ¹					
			Injury	Height		Diameter		Dead trees
				6-6-97	10-28-97	20 cm	4.5 ft	
	lb ai/acre		%	--in--	--ft--	-----mm-----	%	
Treflan	1	PPI	0	9.2	6.6	17	9	14
Goal	2	PRE	48	6.4	9.3	33	17	4
Treflan + Goal	1.0 + 2.0	PPI + PRE	46	5.9	8.5	29	15	4
Prowl	2	PRE	0	8.3	8.6	28	15	4
Sonalan	1.5	PRE	0	8.5	6.4	17	9	7
Untreated			0	8.3	2.2	5	2	76
LSD (0.05)			7	2.1	2.4	8	5	21

¹Poplar injury taken June 6, 1997. Poplar diameter and mortality recorded on October 28.