HERBICIDE COMBINATIONS FOR WEED CONTROL IN SILAGE AND GRAIN CORN

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Weed control plays an important role in crop production. One must control weeds for maximizing crop yields with good quality. Various herbicides are available today for weed control in corn. One must choose right herbicide or herbicides for effective control in a given situation with specific weeds and soil types. The objective of the experiment was to evaluate the performance of various herbicide combinations under Massachusetts conditions.

The experiment was conducted in 1983 at the Massachusetts Agricultural Experiment Station, South Deerfield. The area was heavily infested with both annual grasses and broadleaf weeds. Large crabgrass (Digitaria sanguinalis (L.) Scop.) and fall panicum (Panicum dichotomiflorum Michx) were the dominant grass species. Common lambsquarters (Chenopodium album L.) and redroot pigweed (Amaranthus retroflexus L.) were the broadleaf weeds. All treatments were applied with a backpack CO_2 sprayer at 22 psi in 20 gpa. Preplant incorporated (PPI) treatments were applied May 11 and incorporated immediately in one direction with a disc. Corn "cornell 281" was planted in 36 inch rows on May 11, 1983. Preemergence treatments were applied May 12. Early postemergence treatments were applied June 14 when grasses were at the 3 to 4 leaf stage and corn was at the 5 to 6 leaf stage.

Weed control ratings (0 to 100%) were taken on June 20 and August 15, 1983. Corn was harvested on September 12. One row of corn was harvested for ear and grain yields, while another row was harvested for silage yield determination. Experimental design was a randomized complete block with four replications. Significant effects of weed control treatments were separated by LSD at the 5% level.

All herbicide combinations (Table 1) provided excellent season-long broadleaf control. Large crabgrass and fall panicum control was good to excellent over the entire season. Eradicane and atrazine or eradicane extra and atrazine at 4 + 1 lb/A provided at least 86% control of large crabgrass (Aug. 15 rating), while these combinations gave excellent fall panicum control. The combinations of alachlor (4E) and cyanazine (80W) at 1.5 + 1.5 lb/A provided 75 and 83% control of large crabgrass and fall panicum, respectively. Treatment combinations (No. 1, 9, and 19) also failed to provide season-long crabgrass control.

Silage, ear, and grain yields of corn were significantly improved over the untreated check. All herbicide combinations were effective and increased corn yields.

Table 1. Annual weed control and corn yields as affected by various herbicide combinations

Treatment	Formulation	Rate (lb/A)	Method of Application	Weed Control June 20 RRPW COLQ	Weed Control June 20 LACG FAPA	Weed Control Aug. 15 RRPW COLQ	Weed Control Aug. 15 LACG	Weed Control Aug. 15 FAPA	Yield plants/ 9 ft	Yield Silage	Yield Ears	Yield Grain
				(%)					#	(tons/A)		(bu/A)
1. Butylate+ + Atrazine	6.7E + 80W	4 + 1	PPI	100	93	100	88	91	13.8	18.8	3.7	70.1
2. Butylate+ + Atrazine	6.7E + 80W	6 + 1	PPI	99	94	100	94	95	16.0	20.3	4.2	79.1
3. Butylate+ + Extender + Atrazine	6E + 80W	4 + 1	PPI	100	94	100	93	94	12.5	17.5	3.6	68.2
4. Butylate+ + Extender + Atrazine	6E + 80W	6 + 1	PPI	100	91	100	99	99	14.5	18.8	3.6	68.5
5. Eradicane + Atrazine	6.7E + 80W	4 + 1	PPI	96	88	98	87	90	14.3	18.5	3.8	71.3
6. Eradicane + Atrazine	6.7E + 80W	6 + 1	PPI	100	96	100	93	95	15.5	19.3	3.7	69.2
7. Eradicane Extra + Atrazine	6E + 80W	4 + 1	PPI	99	93	93	86	91	14.5	18.2	3.5	64.4
8. Eradicane Extra + Atrazine	6E + 80W	6 + 1	PPI	100	98	99	99	98	14.3	19.1	3.8	66.6
9. Alachlor + Atrazine	4E + 80W	1.5 + 1	Pre	100	96	100	88	92	15.0	19.4	3.9	72.8
10. Alachlor + Cyanazine	4E + 80W	1.5 + 1.5	Pre	100	93	100	75	83	15.3	20.0	4.1	77.7
11. Alachlor + Cyanazine	4E + 4L	1.5 + 1.5	Pre	100	99	100	97	99	13.0	17.6	3.9	72.9
12. Metolachlor + Atrazine (PM)	4.5L	2.7	Pre	100	100	100	97	99	13.5	18.2	3.8	72.2
13. Metolachlor + Atrazine	8E + N-O	1.5 + 1	Pre	100	99	100	97	96	14.0	18.6	3.8	72.2
14. Metolachlor + Cyanazine	8E + 80W	1.5 + 1.5	Pre	99	99	98	93	95	14.0	19.5	4.0	74.8
15. Metolachlor + Cyanazine	8E + 4L	1.5 + 1.5	Pre	100	98	100	98	98	13.0	17.4	3.3	62.2
16. Pendimethalin + Atrazine	4E + 80W	1.5 + 1	Pre	100	100	100	99	99	14.3	20.5	4.0	76.2
17. Pendimethalin + Cyanazine	4E + 80W	1.5 + 1.5	Pre	100	100	100	100	100	13.5	18.3	3.7	69.7
18. Alachlor + Bromoxynil	4E + 2L	1.5 + 0.25	Pre + EP	100	95	100	92	96	12.3	16.9	3.5	65.1
19. Alachlor + Bentazon + Oil conc.*	4E + 4L	1.5 + 0.75	Pre + EP	100	100	100	85	91	16.3	19.3	3.8	70.8
20. Untreated Check	-	-	-	0	0	0	0	0	14.5	14.0	2.1	38.3
$LSD_{0.05}$				2	5	3	11	8	2.5	3.1	0.8	16.2

* Oil concentrate - used at the rate of 1 qt/A.