HERBICIDE COMBINATIONS FOR VELVETLEAF IN CORN

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Velvetleaf (Abutilon theophrasti Medic) has become a common broadleaf weed problem in corn in Massachusetts. It has been an "escape weed" for one year and subsequently poses a severe threat to corn production for the next decade. The objective of this trial was to evaluate various herbicide combinations and various methods of thier application for thier efficacy. This experiment was conducted on a cooperators farm, Spencer, Massachusetts. The area was heavily infested with velvetleaf, fall pancium (Panicum dichotomiflorum Michx) and large crabgrass [Digitaria sanguinalis (L.) Scop].

Seedbed preparation included spring discing twice. All herbicides were applied with a backpack CO_2 sprayer at 22 psi in 40 gpa. Preplant incorporated treatments (PPI) were applied May 11, 1982. Herbicide incorporation was accomplished by double discing and corn (NK PX-35) was planted in 30-inch rows. Preemergence treatments were made on May 13. Early postemergence treatments were applied June 2, 1982, when the velvetleaf was at the 2-true leaf stage and the grasses were at the 2-3 leaf stage. A randomized complete block design with four replications was used. Control ratings (0 to 100%) were made on July 9, 1982.

Herbicide treatments shown in Table 1 provided good to excellent velvetleaf control. Thiocarbamate herbicides in combination with atrazine gave 70 to 85% velvetleaf control. No significant differences between 4 and 6 lbs/ac of thiocarbamates were observed. Alachlor or Metolachlor treatments with atrazine at 1.5 + 1.0 lb/ac when applied in preemergence gave poor to moderate velvetleaf control. Excellent velvetleaf control was obtained with the treatment combinations of either alachlor or metolachlor at 1.5 lb/ac, applied preemergence, followed by early postemergence application of dicamba at 0.25 lb/ac. Cyanazine or pendimethalin (1.5-2.0 lb/ac or 1.0 lb/ac) combinations, when applied in preemergence followed by early postemergence application of dicamba (0.25 lb/ac), gave best velvetleaf control (95%) without any corn injury. Similar velvetleaf control was obtained with treatment combinations of alachlor or metolachlor in preemergence followed by bentazon in early postemergence.

All treatment combinations also provided excellent control of fall panicum, large crabgrass, and common lambsquarters. None of the treatment combinations exhibited crop injury follwoing either preplant incorporated, preemergence or postemergence applications. The results show crop safety and the efficacy of various herbicide combinations that can be effectively used for velvetleaf control in corn. Risk of residue carryover in the following growing season from any of these combinations is very little. However, the best choice for any herbicide combination remains to be determined by the growers based on the weed problems, cropping sequence, and the price of any given combination of herbicides.

Table 1 Effects of Preplant Incorporated, Preemergence and Early Postemergence Herbicides on Velvetleaf, Common Lambsquarters, Fall Panicum and Crabgrass Control

	Treatment	Rate (lb/A)	Method of Application	Control VELE[a] (%)	Control COLQ[a] (%)	Control FAPA/LACG[a] (%)	Phytotoxicity (%)
1.	(Butylate + R-25788) + Atrazine	4 + 1	PPI	80	93	91	0
2.	(Butylate + R-25788) + Atrazine	6 + 1	PPI	84	95	93	0
3.	(Butylate + R-25798 + Extender) + Atrazine	4 + 1	PPI	73	96	95	0
4.	(Butylage + R-25788 + Extrender) + Atrazine	6 + 1	PPI	85	95	95	0
5.	(EPTC + R-25788) + Atrazine	4 + 1	PPI	70	94	58	0
6.	(EPTC + R-25788) + Atrazine	6 + 1	PPI	74	98	91	0
7.	(EPTC + R-25788 + Extender) + Atrazine	4 + 1	PPI	79	95	89	0
8.	(EPTC + RC-25788 + Extender) + Atrazine	6 + 1	PPI	73	96	93	0
9.	Alachlor + Atrazine (Tank mix)	1.5 + 1	Pre	28	99	93	0
10.	Alachlor + Atrazine (Premix)	3.5	Pre	30	95	90	0
11.	Metolachlor + Atrazine (N-O) (Tank mix)	1.5 + 1	Pre	50	98	91	0
12.	Metolachlor + Atrazine (Premix)	4.5	Pre	73	99	99	0
13.	Alachlor + Dicamba	1.5 + 0.25	Pre	35	93	91	5
14.	Alachlor + Dicamba	1.5 + 0.5	Pre	50	94	84	0
15.	Alachlor + Dicamba	1.5 + 0.25	Pre + EP	91	96	86	0
16.	Alachlor + Dicamba II[b]	1.5 + 0.25	Pre + EP	93	95	73	5
17.	Metolachlor + Dicamba	1.5 + 0.25	Pre + EP	90	98	71	4
18.	Metolachlor + Dicamba II[b]	1.5 + 0.25	Pre + EP	85	95	93	3

cont.

(Table 1 cont.)

Treatment	Rate (lb/A)	Method of Application	Control VELE[a] (%)	Control COQ[a] (%)	Control FAPA/LACG[a] (%)	Phytotoxicity (%)
19. Cyanazine + Dicamba	1.5 + 0.25	Pre + EP	95	96	94	4
20. Cyanazine + Dicamba	1.5 + 0.5	Pre + EP	95	98	95	0
21. Cyanazine + Dicamba	2.0 + 0.25	Pre + EP	95	95	95	0
22. Cyanazine + Dicamba	2.0 + 0.5	Pre + EP	94	96	96	5
23. Pendimethalin + Dicamba	1.5 + 0.25	EP	95	98	95	0
24. Pendimethalin + Dicamba	1.5 + 0.5	EP	95	96	95	0
25. Pendimethalin + Dicamba	1 + 0.25	Pre + EP	86	90	93	0
26. Pendimethalin + Dicamba II[b]	1 + 0.25	Pre + EP	83	85	95	0
27. Alachlor + Bromoxynil	1.5 + 0.38	Pre + EP	78	75	80	0
28. Alachlor + 2,4-D	1.5 + 0.25	Pre + EP	70	73	73	0
29. Alachlor + 2,4-D	1.5 + 0.5	Pre + EP	86	86	90	0
30. Alachlor + Bentazon[c]	1.5 + 1.0	Pre + EP	94	98	94	0
31. Metolachlor + Bentazon[c]	1.5 + 1.0	Pre + EP	93	95	91	0
32. Untreated Check	-	-	0	0	0	0
LSD 0.05	-	-	28	18	21	7

[a] VELE = Velvetleaf; COLQ = Common lambsquarters; FAPA = Fall Panicum, LACG = Large Crabgrass
[b] Dicamba = Sodium salt
[c] Oil concentrate used at the rate of 1 qt/A.