



CRABGRASS CONTROL STUDIES

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Four studies were initiated in the spring of 1984 to examine pre and postemergent control of crabgrass (Digitaria spp.) in an annual bluegrass turf.

The first study was begun in an attempt to determine if cultivation practices such as aerification and vertical mowing affect the performance of preemergent annual grass control herbicides. The results of this study are shown in Table 6. The study consisted of three preemergent herbicides DCPA at 10.5 lbs/A, bensulide at 10.0 lbs/A, Benefin at 2.0 lbs/A, and a check to which four cultivation variables were applied at treatment and 3 weeks after treatment. The four cultivation variables consisted of vertical mowing, core cultivating with one or three passes using a Ryan's greensaire, and a check. The data in Table 6 would suggest that a cultivation operation after application of a preemergent herbicide has little effect on the efficacy of the preemergent herbicide.

A second study concerning preemergent herbicides was initiated to look at lower rates and combinations of preemergent herbicides. While the use of herbicide mixtures is commonplace in broadleaf weed control, the use of mixtures in preemergent herbicides is not practiced.

The treatment combinations and the results are shown in Table 7. The first thing to notice from this study is that DCPA alone at 8.0 lbs AI/A provided very good control whereas treatments with an initial application of 7.5 lbs AI/A of bensulide did not provide as good as control as the DCPA. A higher initial rate of bensulide seems warranted.

One idea which didn't seem to work was the use of a second application of benefin at a rate of 1.0 lb AI/A 45 days after initial application of DCPA or bensulide. Because benefin is relatively short residual, it was thought that a second application of benefin would provide an extension of control given by either DCPA or bensulide. Examination of the data shows this not to be the case.

A third study on the postemergent control of crabgrass in an annual bluegrass turf was begun on July 26. There are three new postemergent crabgrass materials under development by Dow, American Hoechst, and Union Carbide. Two that were tested in this study were Acclaim from American Hoechst and XRM 4763 from Dow Chemical. Both of these herbicides should be available next year. The results are shown in Table 8 and are listed as the percent crabgrass control. Treatments 1-10 were applied on 7/26 while treatments 11-18 were applied on 8/8. Both compounds look very efficacious at the high rates, although XRM 4763 is a slow acting herbicide and the percent control values may improve with time. The material EH 795 is an experimental mixture of Trimec plus MSMA from PBI/Gordon. Rates used were 1.6 gals/A in one application and split applications of 0.8 gal and 1.0 gal/A applied 7/26 and 8/8.

In Table 9 the results on injury to the annual bluegrass from the various chemicals is shown. The data shows that the XRM 4763 injured the annual bluegrass quite severely at all rates. The injury takes some time to develop and become more severe with increasing rate. While XRM 4763 is injurious to annual bluegrass, tests on Kentucky bluegrass have shown that XRM 4763 is relatively safe. Thus XRM 4763 could be used to selectively remove annual bluegrass from Kentucky bluegrass. XRM-4763 is, unfortunately, relatively injurious to creeping bentgrass.

The results from Acclaim appear quite good with no injury to the annual bluegrass. Both of these herbicides need higher rates to achieve acceptable control as the crabgrass matures; thus, the highest application rate for Acclaim was 0.25 lb/A on the 7/26 application and 0.35 lb/A on the 8/8 application.

Both herbicides promise to improve our ability to control crabgrass, with each finding a slightly different niche in the turfgrass industry. Acclaim is strictly a postemergent herbicide whereas XRM 4763 has both a pre and postemergent activity.

In Table 10 you will find the results of the 1984 preemergent trial.

Table 6. Preemergent herbicide cultivation interaction.

Begun: 5-2-84
 Evaluated: 8-15-84

<u>Relative Rank</u>	<u>Treatment</u>	<u>% Crabgrass</u>
1.	DCPA 10.5 lb/A CC 1X at Trmt.	0
2.	DCPA 10.5 lb/A no cultivation	0
3.	DCPA 10.5 lb/A vert mow 3 wk A.T.	0
4.	DCPA 10.5 lb/A no cultivation	0
5.	Bensulide 10 lb/A CC 1X at Trmt.	1.7
6.	Benefin 2.0 lb/A CC 1X 3 wk A.T.	1.7
7.	DCPA 10.5 lb/A CC 3X at Trmt.	1.7
8.	Bensulide 10 lb/A CC 3X at Trmt.	3.3
9.	DCPA 10.5 lb/A CC 1X 3 wk A.T.	3.3
10.	Bensulide 10 lb/A CC 1X 3w A.T.	3.7
11.	Benefin 2.0 lb/A Vert now 3 wk A.T.	4.3
12.	Benefin 2.0 lb/A CC 1X at Trmt.	5.0
13.	Benefin 2.0 lb/A Vert. mow at Trmt.	5.0
14.	Bensulide 10 lb/A no cultivation	5.0

<u>Relative Rank</u>	<u>Treatment</u>	<u>% Crabgrass</u>
15.	Bensulide 10 lb/A CC 3X 3 wk A.T.	5.3
16.	Benefin 2.0 lb/A no cultivation	6.7
17.	Bensulide 10.0 lb/A Vert. mow at Trmt.	6.7
18.	Benefin 2.0 lb/A no cultivation	6.7
19.	Benefin 2.0 lb/A CC 3X 3 wk A.T.	6.7
20.	Bensulide 10 lb/A Vert. mow 3 wk A.T.	7.7
21.	Bensulide 10 lb/A no cultivation	8.3
22.	Benefin 2.0 lb/A CC 3X at Trmt.	16
23.	DCPA 10.5 lb/A CC 3X 3 wk A.T.	20
24.	Check Vert. mow at Trmt.	26.7
25.	DCPA 10.5 lbs/A Vert. mow at Trmt.	28.3
26.	Check CC 3X at Trmt.	28.3
27.	Check no cultivation	31.7
28.	Check CC 1X 3 wk A.T.	33.3
29.	Check CC 1X at Trmt.	33.3
30.	Check no cultivation	46.7
31.	Check CC 3X 3 wk A.T.	46.7
32.	Check Vert. mow 3 wk A.T.	58.3

Table 7. Preemergence combination study.

Date Begun: 5-10-84
 Date Evaluated: 8-16-84

<u>Treatment Name</u>	<u>% Crabgrass</u>
DCPA 8.0 lb/A 2 app DCPA 4.0 lb/A	0 A
DCPA 8.0 lb/A	0 A
DCPA 8.0 lb/A 2 app Balan 1.0 lb/A	0 A
DCPA 8.0 lb/A 2 app Bens 3.75 lb/A	0 A
Bens 7.5 lb/A 2 app DCPA 4.0 lb/A	3.4 AB
DCPA + Bens 4 + 3.75 lb/A 2 DCPA + Ben 2 + 1.9 lb/A	7.7 AB
Bensulide 7.5 lb/A	8.3 AB
Bens 7.5 lb/A 2 app Ben 3.75 lb/A	10.0 AB
Bens 7.5 lb/A 2 app Balan 1.0 lb/A	16.7 B
Check	43.3 C

Treatments having the same letter are not significantly different. Mean separation by Duncan's Mrt. (5%). Standard error = 4.7, F = 8.11.

Table 8. Post emergent crabgrass.

Date Begun: 7-26-84
 Date Evaluated: 8-16-84

<u>Relative Rank</u>	<u>Treatment Name</u>	<u>Highest Rating Indicates Most Crabgrass Control</u>
1.	Acclaim 0.18 lb/A 7/26	99 A
2.	Acclaim 0.25 lb/A 7/26	99 A
3.	XRM 4763 1.5 lb/A 7/26	89.7 A
4.	XRM 4763 1.0 lb/A 7/26	73.3 A
5.	Acclaim 0.12 lb/A 7/26	66.7 A
6.	Acclaim 0.35 lb/A 8/8	33.4 B
7.	Acclaim 0.25 lb/A 8/8	27.7 B
8.	Acclaim 0.18 lb/A 8/8	23.4 B
9.	XRM 4763 0.5 lb/A 7/26	16.7 B
10.	EH 805 .8 gal/AX2 7/26	16.7 B
11.	XRM 4763 0.75 lb/A 7/26	13.4 B
12.	EH 795 .8 gal/AX2 7/26	8.4 B
13.	XRM 4763 0.75 lb/A 8/8	4.7 B
14.	EH 795 1.6 gal/A 7/26	0 B
15.	XRM 4763 0.5 lb/A 8/8	0 B
16.	XRM 4763 1.0 lb/A 8/8	0 B
17.	XRM 4763 1.5 lb/A 8/8	0 B
18.	Check	.0 B

Treatments having the same letter are not significantly different. Mean Separation by Duncan's Mrt. (5%). Standard error = 10.6, P = 11.86.

Table 9. Post emergent crabgrass.

Date Begun: 7-26-84
 Date Evaluated: 8-16-84

<u>Treatment Name</u>	<u>Highest Rating Indicates Least Injury to Poa Annua (range 1-9)</u>
Acclaim 0.12 lb/A 7/26	9.0 A
Acclaim 0.18 lb.A 7/26	9.0 A
EH 795 1.6 gal/A 7/26	9.0 A
EH 795 .8 gal/AX2 7/26	9.0 A
XRM 4763 0.5 lb/A 8/8	9.0 A
XRM 4763 0.75 lb/A 8/8	9.0 A
Acclaim 0.18 lb/A 8/8	9.0 A
Acclaim 0.25 lb/A 8/8	9.0 A
Acclaim 0.35 lb/A 8/8	9.0 A
Check	9.0 A
Acclaim 0.25 lb/A 7/26	8.7 A
XRM 4763 1.0 lb/A 8/8	8.7 A
EH 79.5 1.0 gal/AX2 7/26	8.3 A
XRM 4763 1.5 lb/A 8/8	8.0 A
XRM 4763 0.5 lb/A 7/26	6.2 B
XRM 4763 0.75 lb/A 7/26	5.7 BC
XRM 4763 1.0 lb/A 7/26	4.7 C
XRM 4763 1.5 lb/A 7/26	3.3 D

Treatments having the same letter are not significantly different. Mean separation by Duncan's Mrt (5%). Standard error = .4, F = 23.24

Table 10. Preemergent trial.

Date Begun: 5-2-84
 Date Evaluated: 8-15-84

<u>Treatment Name</u>	<u>% Crabgrass</u>
DCPA 10.5 + 7.5 lb/A	1.7 A
Benefin 1.6 + 1.6 lb/A	5.0 AB
Lecben 2.0 + 1.6 lb/A	5.0 AB
DCPA 10.5 lb/A	5.0 AB
Benefin 1.6 + 1.6 lb/A	8.3 ABC
Bensulide 10 lb/A	8.4 ABC
Benefin 2.0 lb/A	15.0 ABCD
Lecben 2.0 lb/A	18.3 ABCD
Oxadiazon 4.0 lb/A	18.3 ABCD
Bensulide 7.5 lb/A	20.0 ABCD
Oxadiazon 2.0 lb/A	23.3 BCD
Pendimeth 3.0 lb/A	26.7 CD
Pendimeth 1.5 lb/A	33.3 D
Check	51.7 E
Check	66.7 E

Treatments having the same letter are not significantly different. Mean separation by Duncan's Mrt (5%). Standard error = 6.0, F = 9.22.