

1987 POSTEMERGENCE CRABGRASS CONTROL RESULTS

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As of January 1987, Acclaim 1 EC herbicide has been registered for turfgrass usage. It is effective in controlling such annual grasses as crabgrass, goosegrass, and Johnsongrass. The following studies were initiated in the summer of 1987 to test Acclaim in various situations.

FENOXAPROP ALONE AND IN COMBINATION WITH PREEMERGENCE HERBICIDES

A 1986 experiment was expanded and repeated in 1987 to evaluate fenoxaprop (Acclaim) alone and in combination with preemergence herbicides. The objectives were to determine the best pre/post herbicide combinations for effective season-long crabgrass control.

This experiment was performed at the Hancock Turfgrass Research Center (HTRC), in East Lansing, MI on an area without an established turf. The site was treated with glyphosate to eliminate broadleaf weeds and undesirable grasses to allow for greater crabgrass pressure. The area was verticut .5 inches deep with a Ryan's "Ren-o-Thin" and then overseeded with large crabgrass (*Digitaria sanguinalis*) on 5-4-87 to establish a dense population. The experimental design consisted of a randomized complete block (RCB) using 4 by 6 foot plots and three replications. The preemergence herbicides used were pendimethalin, bensulide, and DCPA. Split applications of Acclaim at two rates were also evaluated for season-long control of crabgrass.

Results (Table 1) indicate that Acclaim alone effectively controlled crabgrass, but four weeks after treatment, new plants germinated throughout the area lowering the percent control ratings. Split applications of Acclaim applied on June 2 and July 1 provided excellent control throughout most of the season. Bensulide tank mixed with Acclaim (7.5 + 0.18 lb/A) provided significantly better season-long control than did Acclaim with DCPA or pendimethalin, results similar to those observed in 1986.

FENOXAPROP ON KENTUCKY BLUEGRASS VARIETIES

An experiment from 1986 was repeated this year to evaluate phytotoxicity of Kentucky bluegrass (*Poa pratensis*) caused by fenoxaprop (Acclaim). The study was performed at the HTRC to a Kentucky bluegrass variety trial established in the summer of 1981. The area was mowed at 1.75 inches and fertilizer, irrigation, and fungicides were applied as needed throughout the

season. The experiment was designed as a two factor factorial with a split, and each treatment replicated three times.

Table 2 contains the Kentucky bluegrass varieties ranked in order from least injured to most damaged. Phytotoxicity evaluations were recorded at one week intervals until four weeks after treatment. Enmundi, in both years, was the only variety unaffected by Acclaim at the 0.25 lb/A rate. The variety America has shown the most phytotoxicity from Acclaim over both years. The results obtained in 1987 show much less injury to the Kentucky bluegrass, all with acceptable injury (above 6.0 on a scale of 9 to 1), possibly indicating the influence of environmental conditions at the time of application and one month thereafter. In general, all plots recovered after four weeks from the date of application.

#### TOLERANCE OF CREEPING BENTGRASS TO FENOXAPROP

Fenoxaprop (Acclaim) has been shown to severely injure creeping bentgrass (*Agrostis palustris*). This study was initiated to evaluate the phytotoxic effects of three rates of fenoxaprop on a creeping bentgrass variety trial. The bentgrass trial was established in 1981 at the HTRC and has been managed as a golf green, mowed at .19 inches, and treated with fertilizer and fungicides as needed. The experimental design was a two factor factorial with a split, and treatments were replicated three times. The applications were made on July 31st using a single 8002 nozzle delivering 51 gallons per acre, and each bentgrass plot (2 X 3 meters) was divided into four subplots to receive the herbicide treatments.

Table 3 ranks the bentgrass varieties in order from least affected to most damaged. Phytotoxicity ratings were taken at one week intervals until four weeks after treatment. Carmen, Penncross, and Penneagle were the least injured while Toronto was severely damaged. The 0.08 and 0.12 lb/A rates generally produced phytotoxicity considered to be acceptable (6.0 and above on a 9 to 1 scale) while 0.18 lb/A was unacceptable and caused injury far beyond four weeks after treatment.

TABLE 1: FENOXAPROP (ACCLAIM) ALONE AND IN COMBINATION WITH PREEMERGENCE HERBICIDES APPLIED TO VARIOUS DIGITARIA SPECIES GROWTH STAGES AT THE HANCOCK TURFGRASS RESEARCH CENTER, E. LANSING, MI. (6-2-87)

TREATMENTS #	RATE(LB/A)	"PERCENT CRABGRASS CONTROL"					
		2WAT	4WAT	6WAT	8WAT	12WAT	16WAT
1. FENOXAPROP (ACCLAIM)	0.12	91	79	65	50	4	17
2. ACC + ACC \$	0.12 + 0.12	91	79	98	96	76	
3. ACC + BENSULIDE	0.12 + 7.5	92	86	87	75	60	42
4. ACC + DCPA	0.12 + 7.5	89	90	61	49	3	12
5. ACC + PEND.	0.12 + 1.5	90	92	67	53	19	27
6. ACCLAIM	0.18	99	95	93	70	10	34
7. ACC + ACC \$	0.18 + 0.18	97	83	99	98	83	
8. ACC + BENSULIDE	0.18 + 7.5	99	95	91	87	63	74
9. ACC + DCPA	0.18 + 7.5	97	91	74	62	30	26
10. ACC + PEND.	0.18 + 1.5	94	97	86	72	23	30
11. ACCLAIM	0.25	95	75	79	46	11	14
12. ACCLAIM	0.35	98	93	68	51	17	19

# (#1-19 APPLIED TO 2 LEAF-1 TILLER DIGITARIA ON 6-2-87.)

\$ (THE SECOND TREATMENTS OF ACCLAIM IN #9 AND #14 WERE APPLIED ON 7-1-87.)

TABLE 2: PHYTOTOXICITY EVALUATIONS OF A KENTUCKY BLUEGRASS VARIETY TRIAL TREATED WITH FENOXAPROP (ACCLAIM) AT THE HANCOCK TURFGRASS RESEARCH CENTER, E. LANSING, MI, ON 7-1-87.

P. PRATENSIS VARIETY	FENOXAPROP RATE (LB/A)	PHYTOTOXICITY RATINGS #			
		1WAT	2WAT	3WAT	4WAT
1. ENMUNDI	0.12	9.0	9.0	9.0	9.0
	0.25	9.0	9.0	9.0	9.0
	CHECK	9.0	9.0	9.0	9.0
2. SYDSPORT	0.12	9.0	9.0	9.0	9.0
	0.25	9.0	8.7	9.0	9.0
	CHECK	9.0	9.0	9.0	9.0
3. CHERI	0.12	9.0	8.7	9.0	9.0
	0.25	8.7	8.7	9.0	9.0
	CHECK	9.0	9.0	9.0	9.0
4. A-34	0.12	9.0	9.0	9.0	9.0
	0.25	9.0	8.3	8.3	8.7
	CHECK	9.0	9.0	9.0	9.0
5. VICTA	0.12	9.0	9.0	9.0	9.0
	0.25	8.7	8.7	8.0	8.3
	CHECK	9.0	9.0	9.0	9.0
6. BONNIEBLUE	0.12	9.0	8.7	9.0	9.0
	0.25	8.7	8.0	8.3	9.0
	CHECK	9.0	9.0	9.0	9.0
7. MYSTIC	0.12	9.0	9.0	9.0	9.0
	0.25	8.7	8.0	8.0	9.0
	CHECK	9.0	9.0	9.0	9.0
8. TRENTON	0.12	9.0	9.0	9.0	9.0
	0.25	8.7	8.0	8.0	8.7
	CHECK	9.0	9.0	9.0	9.0
9. ECLIPSE	0.12	9.0	8.7	9.0	9.0
	0.25	8.3	7.7	8.7	9.0
	CHECK	9.0	9.0	9.0	9.0
10. BARON	0.12	8.7	9.0	9.0	9.0
	0.25	8.3	8.3	8.3	8.7
	CHECK	9.0	9.0	9.0	9.0
11. BRISTOL	0.12	9.0	8.7	9.0	9.0
	0.25	8.3	8.0	8.0	9.0
	CHECK	9.0	9.0	9.0	9.0
12. MERIT	0.12	9.0	8.7	9.0	9.0
	0.25	9.0	8.0	8.0	8.3
	CHECK	9.0	9.0	9.0	9.0
13. MAJESTIC	0.12	8.7	8.3	8.7	9.0
	0.25	8.0	8.0	8.0	9.0
	CHECK	9.0	9.0	9.0	9.0
14. ADELPHI	0.12	8.7	8.7	8.7	9.0
	0.25	8.3	8.3	8.3	9.0
	CHECK	8.7	8.7	8.7	9.0

(TABLE 2 CONT.)

P. PRATENSIS VARIETY	FENOXAPROP RATE (LB/A)	PHYTOTOXICITY RATINGS #			
		1WAT	2WAT	3WAT	4WAT
15. RAM-1	0.12	9.0	8.7	8.7	9.0
	0.25	8.3	7.3	7.7	8.7
	CHECK	9.0	9.0	9.0	9.0
16. GLADE	0.12	8.7	9.0	8.7	9.0
	0.25	8.0	8.0	7.3	8.3
	CHECK	9.0	9.0	9.0	9.0
17. TOUCHDOWN	0.12	8.7	7.7	8.3	9.0
	0.25	8.0	6.7	6.3	8.3
	CHECK	9.0	9.0	9.0	9.0
18. AMERICA	0.12	8.3	7.7	8.3	8.7
	0.25	7.7	6.0	7.7	8.7
	CHECK	9.0	8.7	8.7	8.7
LSD(0.05) =		0.6	0.6	0.6	0.4

#PHYTOTOXICITY RATING SCALE= 9 TO 1, 9=HEALTHY GREEN TURF, 1=DEAD TURF.

TABLE 3: PHYTOTOXICITY EVALUATIONS OF FENOXAPROP (ACCLAIM) APPLIED TO A CREEPING BENTGRASS VARIETY TRIAL. (HTRC, E. LANSING, MI 7-1-87).

BENTGRASS VARIETY	FENOXAPROP RATE (LB/A)	PHYTOTOXICITY RATINGS #				
		0WAT	1WAT	2WAT	3WAT	4WAT
1. CARMEN	0.08	9.0	7.3	7.3	7.7	9.0
	0.12	9.0	6.3	6.3	7.0	9.0
	0.18	9.0	6.0	5.7	7.0	9.0
	CHECK	9.0	9.0	9.0	9.0	9.0
2. PENNCROSS	0.08	9.0	7.3	7.3	7.7	9.0
	0.12	9.0	6.3	6.3	7.0	9.0
	0.18	9.0	6.0	5.7	6.7	9.0
	CHECK	9.0	9.0	9.0	9.0	9.0
3. PENNEAGLE	0.08	9.0	7.0	7.0	8.0	9.0
	0.12	9.0	6.0	6.0	8.0	9.0
	0.18	9.0	5.7	5.7	6.7	8.7
	CHECK	9.0	9.0	9.0	9.0	9.0
4. PROMINENT	0.08	9.0	7.3	7.0	7.7	8.7
	0.12	8.7	6.7	6.3	6.7	8.7
	0.18	9.0	6.0	5.3	6.0	8.3
	CHECK	9.0	9.0	9.0	8.7	9.0
5. EMERALD	0.08	9.0	7.0	7.0	7.3	8.0
	0.12	9.0	6.7	6.3	6.7	8.0
	0.18	9.0	5.7	4.3	5.0	7.3
	CHECK	9.0	9.0	9.0	9.0	9.0
6. SEASIDE	0.08	9.0	7.0	7.3	7.3	8.0
	0.12	9.0	6.0	6.0	6.7	8.0
	0.18	9.0	5.7	5.0	5.7	8.0
	CHECK	9.0	9.0	9.0	8.0	8.0
7. TORONTO	0.08	9.0	5.7	5.7	5.7	7.3
	0.12	9.0	5.3	4.7	5.3	7.0
	0.18	9.0	4.3	3.0	4.7	5.7
	CHECK	9.0	8.7	8.3	7.7	8.3
LSD(0.05)=		NS	0.8	0.9	1.0	0.7

# PHYTOTOXICITY RATING SCALE= 9 TO 1, 9=HEALTHY GREEN TURFGRASS,  
1= DEAD TURF.