

1990 TURF WEED CONTROL, PGR, AND MANAGEMENT UPDATE

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Research was conducted in 1990 in several areas but focused on the use of PGR's for fairway and greens management. In addition, several other studies were conducted on the effects of watering in preemergence herbicide applications, a general evaluation of preemergence annual grass control herbicides, and evaluations of turf variety trials for the selection of improved varieties for Michigan. Finally, a progress report will be given on the use of soil lysimeters to determine the leaching potential of fertilizers and pesticides used in turf.

Plant growth regulators have been used in turf management for a number of years to regulate growth and suppress seedheads. Their use has never been widespread because of the reduction in quality associated with their use. This reduction in quality can range from mild to severe and generally increases with increasing rate of PGR application. These products were primarily positioned for use in the roadside turf and homeowner market. They have been reasonably successful in the roadside turf market but have never caught on in the homeowner market. The homeowner market has always been approached from the viewpoint of getting 4-8 weeks of total growth stoppage. The rates of PGR's needed to achieve this kind of growth suppression generally result in unacceptable turf quality. However the golf turf market, one which was never initially considered for PGR use, is realizing that low rates of these PGR's can result in significant reductions in mowing frequency and clipping volume.

In order to measure the effect of PGR applications on clipping reduction, a study was initiated on May 2nd of 1990 to determine the effect of low rates of commonly available PGR's on clipping weights of a mixed stand of annual bluegrass and creeping bentgrass turf. Rates of Cutless (common name - flurprimidol), Scott's TGR, a granular fertilizer plus PGR product (common name of active ingredient - paclobutrazol), and Scott's Turf Enhancer (common name - paclobutrazol), a sprayable formulation without fertilizer. After application, individual plots were measured on Monday, Wednesday, and Friday of each week for turf height. When a plot reached 3/4" in height it was mowed at 1/2" and the clippings were collected, dried, and weighed.

All PGR rates and treatments reduced clipping weights significantly when reported as a percentage of the control weight (Figures 1-3). Cutless was tested at rates of 0.25 - 0.50 lbs AI/A and showed increased clipping reduction with increasing rate. All rates of Cutless provided four weeks of growth suppression with normal rates of growth returning by 5 weeks after treatment (WAT) (Figure 1). Rates of Scott's Turf Enhancer showed similar reductions in clipping weights (Figure 2) although this product was tested over a broader rate (0.09 - 0.53 lbAI/A) range than was

Cutless. The highest rates of the Scott's product gave complete growth suppression from 3 to 5 WAT. Clipping weights did not return to the control level until 7 WAT for the 0.53 lbAI/A. The two highest rates of the Scott's Enhancer product were chosen because they are the same as the currently labeled rates of Scott's TGR except that the Turf Enhancer product has no fertilizer.

The two active ingredients in Cutless and Scott's Enhancer (common names are flurprimidol and paclobutrazol) have similar modes of action and in my observations the Scott's product is about twice as efficacious as Cutless on an active ingredient basis. Thus the two lowest rates of Scott's Turf Enhancer provided similar growth suppression as did the two lowest rates of Cutless.

Each of these products can cause some phytotoxicity or discoloration to the turf. The effects of these products can be seen in Table 1. Increasing rates of these products cause increasing turf discoloration. Notice the effect of fertilizer when comparing Scott's TGR to Scott's Turf Enhancer, which have the same active ingredient except that Scott's TGR is formulated on a fertilizer carrier.

EFFECT OF PGR'S ON PUTTING GREEN SPEED

The putting green speed study examined the effects of mowing height, plant growth regulator use, and grooming reels on putting green speed. The four treatments were Cutless at 0.25 LB/A, grooming reels once per week, Cutless at 0.25 LB/A and grooming reels once per week, and an untreated control. These four treatments were studied at mowing heights of 5/32" and 4/32". Results showed that the PGR treatments did show an increase in green speed but only at the higher height of cut (Figure 4). The data in Figure shows only four of the eight treatments that were studied. However, these treatments most clearly show the benefit of using a PGR to increase putting green speed. At the lower height of cut, 4/32", no benefit is seen. At the 5/32" height of cut, a consistent increase in putting green speed of 6-10" is seen for a period of 3 weeks following PGR application. This is quite beneficial since it is desirable to keep heights of cut higher while gaining the type of green speed normally only seen from lower heights of cut.

PREEMERGENCE HERBICIDE STUDIES

A concern of the lawn care industry is the increasing legislation with which they must deal. A potential concern is the watering in of preemergence herbicide applications. Technically speaking, if a lawn care operator does not ensure that an application is watered in, then they may be considered in violation of the herbicide label. In order to determine the effect of watering in preemergence herbicides, we tested eight preemergence herbicides at two or three rates of application by watering in one set of treatments immediately after application and keeping water off the other set of plots for 14 days. This is the second year of this test and the results again have indicated that there is no measurable benefit to watering in preemergence herbicides (Table

TABLE 1. EFFECT OF A SINGLE PGR APPLICATION ON FAIRWAY TURF QUALITY

PGR TREATMENT	RATE(LBAI/A)	COLOR RATING 1-9,9=DARK GREEN					
		DATES					
		5/11	5/18	5/24	5/29	6/12	6/21
CONTROL		6.0	7.2	6.3	7.5	8.0	7.8
CUTLESS 50W	0.25	5.5	6.7	5.3	5.8	7.7	8.0
CUTLESS 50W	0.38	6.7	5.7	4.7	6.2	7.7	7.5
CUTLESS 50W	0.5	4.3	5.0	3.5	5.2	7.5	8.7
PP-333 50WP	0.0875	4.3	6.0	6.2	6.0	8.2	8.8
PP-333 50WP	0.175	6.3	5.8	5.0	5.3	7.8	8.7
PP-333 50WP	0.35	5.7	5.7	2.3	3.5	6.8	8.7
PP-333 50WP	0.53	4.7	4.0	1.7	2.0	4.7	6.8
SCOTT'S TGR	0.35	7.7	7.5	6.2	4.3	7.8	8.8
SCOTT'S TGR	0.53	8.0	7.7	5.7	3.7	7.0	8.3
CONTROL		6.7	6.8	7.0	7.3	8.2	7.8
LSD (P=0.05)		1.5	1.4	2.0	2.0	1.2	0.6

Figure 1.

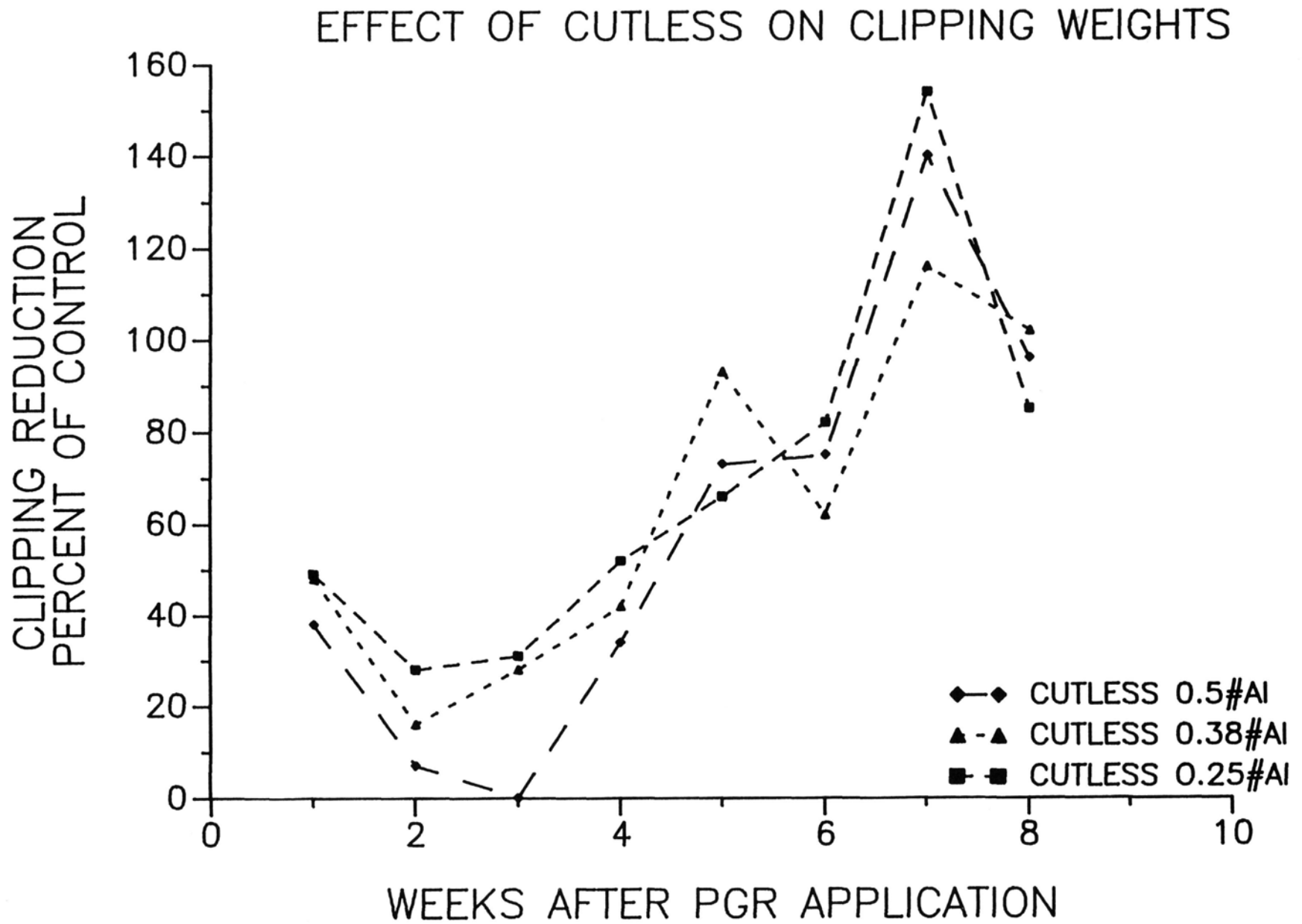


Figure 2.

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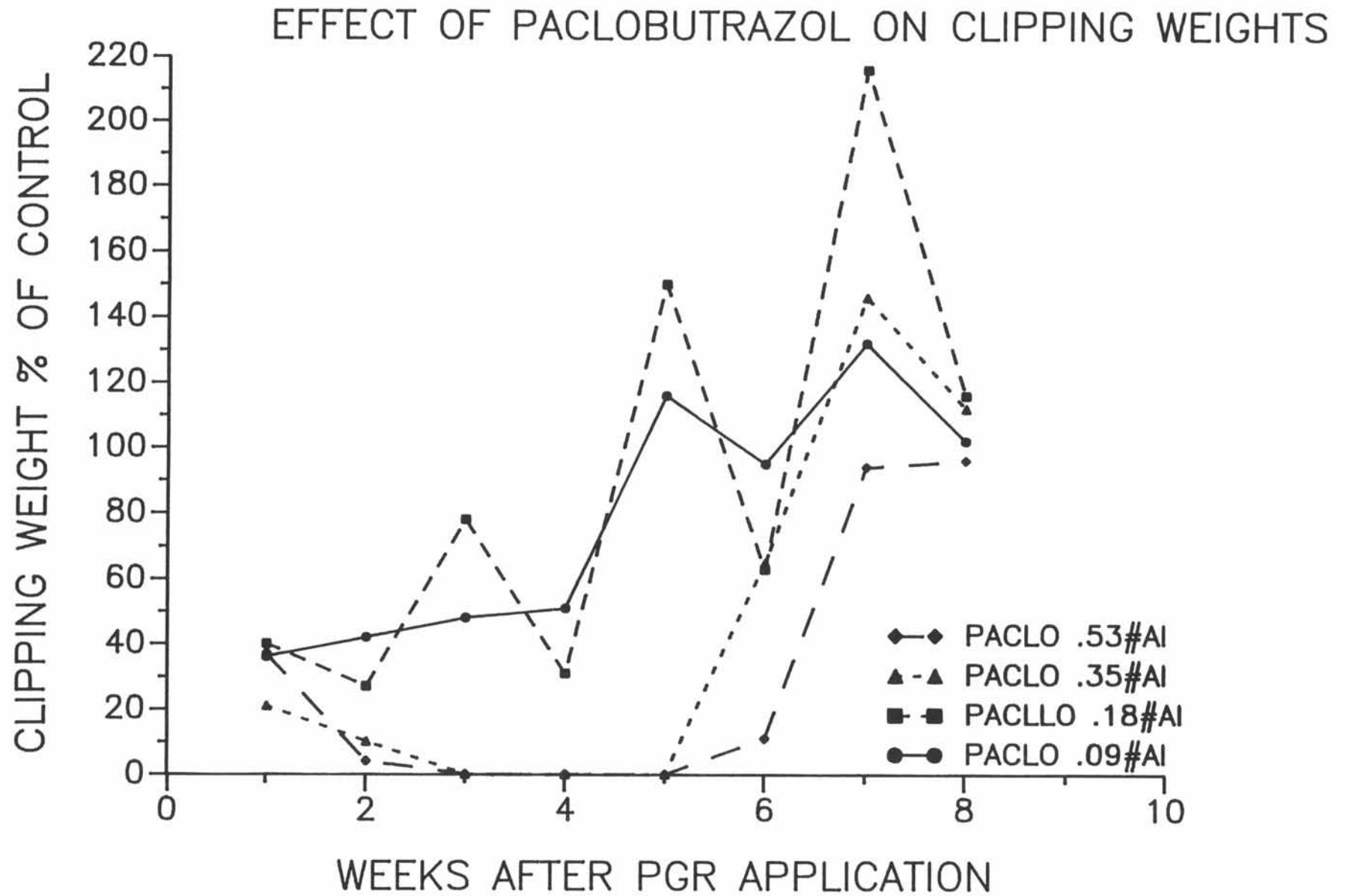


Figure 3.

