

Effect of PGR's on Mowing Reduction in a Mixed Annual Bluegrass/Creeping Bentgrass Turf

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Two studies were initiated on 2 May 1990 to study the effects of PGR's on mowing reduction and clipping reduction on a mixed annual bluegrass/creeping bentgrass turf. The first study, which is completed, examined the effect of a single PGR application on turf growth. The purpose of this study was to determine the duration and intensity of growth reduction from currently available PGR's. Products examined were Cutless 50 W at 0.25, 0.38, and 0.50 lbs AI/A; Scott's Turf Enhancer (paclobutrazol w/o fertilizer) 50 WP at 0.09, 0.18, 0.35, and 0.53 lbs AI/A, and Scott's TGR (paclobutrazol plus fertilizer) at 0.35 and 0.53 lbs AI/A. The TGR rates are equivalent to 84 and 126 lbs product/A, respectively.

Both studies were conducted in the same manner. PGR treatments were applied on 2 May and watered in the next day. Fertilizer was applied on 15 May at 1.0 lb N/M, 25 May at 0.5 lb N/M, and 19 June at 1.0 lb N/M. Each plot was measured three times per week (M, W, F) for height. If a plot reached 0.75" in height then it was mowed and the clippings were collected, dried, and weighed. Thus the data displayed represent reduction in clipping weight and frequency of clipping.

The data in Figures 1-3 show the clipping weight reduction for Cutless (Figure 1), paclobutrazol (Figure 2), and Scott's TGR (Figure 3). The control line in each drawing represents a plot receiving no PGR and should be used to compare each treatment.

The Cutless treatments reached maximum growth suppression at two weeks after treatment (WAT) for the 0.25 and 0.38 lb AI/A rates and at three weeks after treatment for the 0.5 lb AI/A rate. All treatments returned to normal clipping production at 5 WAT.

The lowest rate of paclobutrazol showed maximum growth suppression 1 WAT and rose gradually until reaching the control value at 5 WAT. Higher rates gave more suppression with the 0.53 lb AI/A rate providing significant growth suppression through 6 WAT.

The Scott's TGR (paclobutrazol plus fertilizer) treatments were very similar to the paclobutrazol alone treatments except that the TGR treatments showed some growth at week 4. In addition, visual quality ratings of the TGR product were higher than paclobutrazol alone (data not shown).

A second study was conducted in the same manner as the above study, however, applications were repeated three times during the summer. The highest rates used in the preceding study were not used because they would be too injurious. Rates used in this study were Cutless at 0.25, 0.30, and 0.38 lbs AI/A; paclobutrazol at 0.09, 0.18, and 0.26 lbs AI/A; and an untreated control. PGR applications were made on 2 May, 30 May, 17 July, and 17 August of 1990. Clipping production will continue to be monitored until mid-September. The response of the turf to repeated applications of paclobutrazol is shown in Figure 4 (arrows denote repeat applications). Notice that the reduction in clippings is greatest from the early application and tapers to the point where there is little response from the 3rd application of paclobutrazol. Cutless exhibited a similar response to repeated applications. However, this must be interpreted with caution since the values for untreated plots showed little growth during the two weeks following the third PGR application.

FIGURE 1.

EFFECT OF CUTLESS ON CLIPPING WEIGHTS

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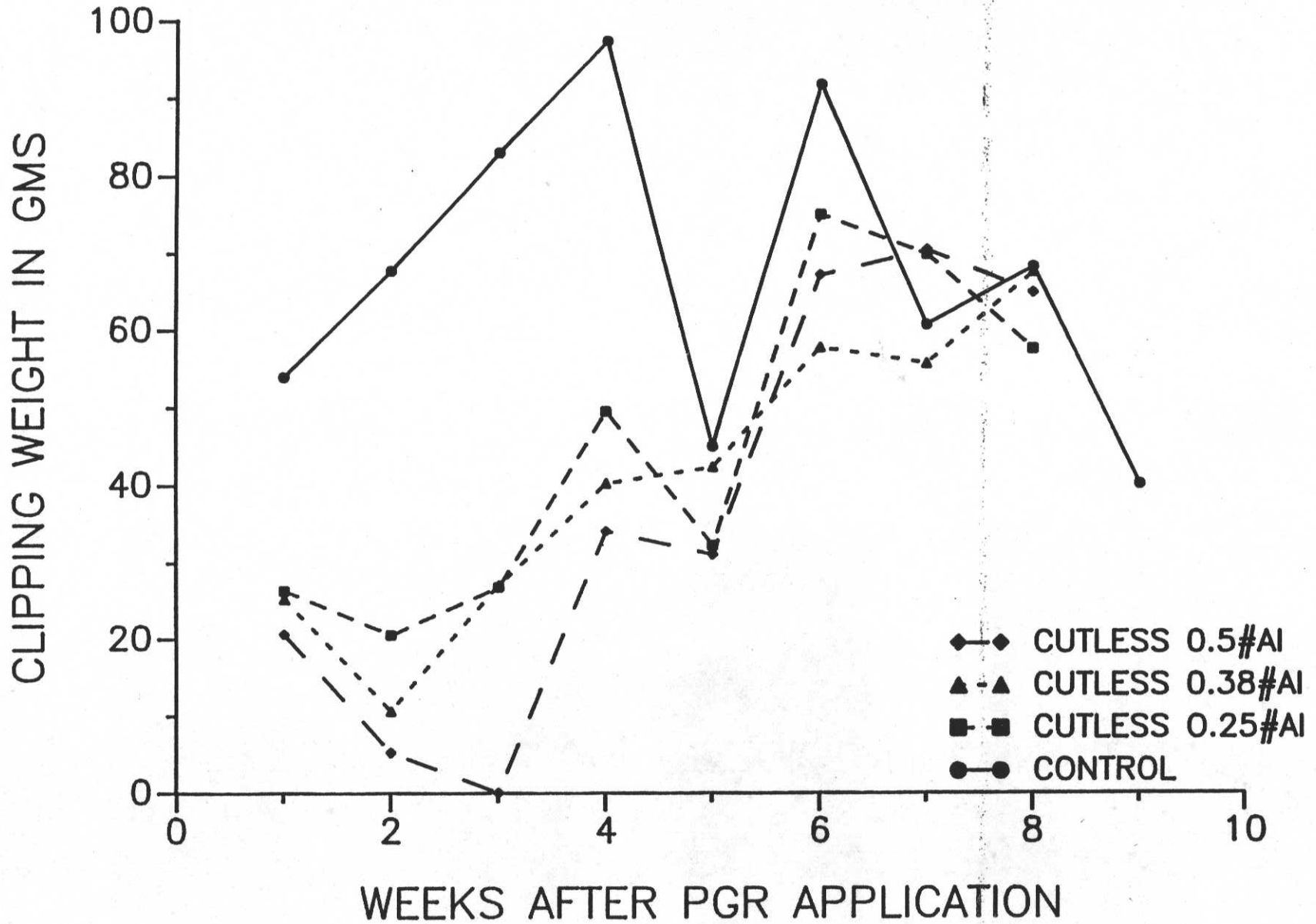


FIGURE 2.

EFFECT OF PACLOBUTRAZOL ON CLIPPING WEIGHTS

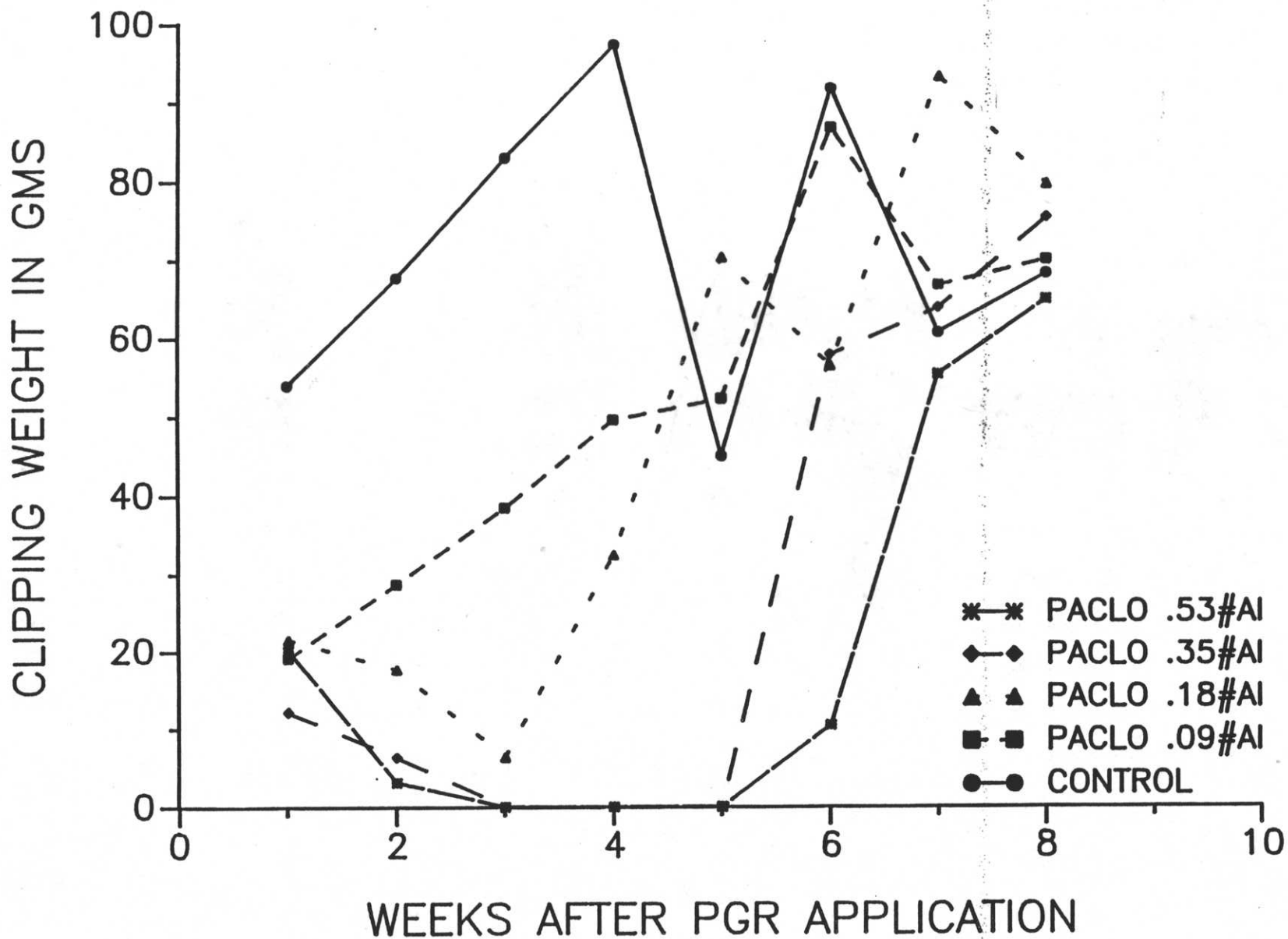


FIGURE 3.

EFFECT OF SCOTTS TGR ON CLIPPING WEIGHTS

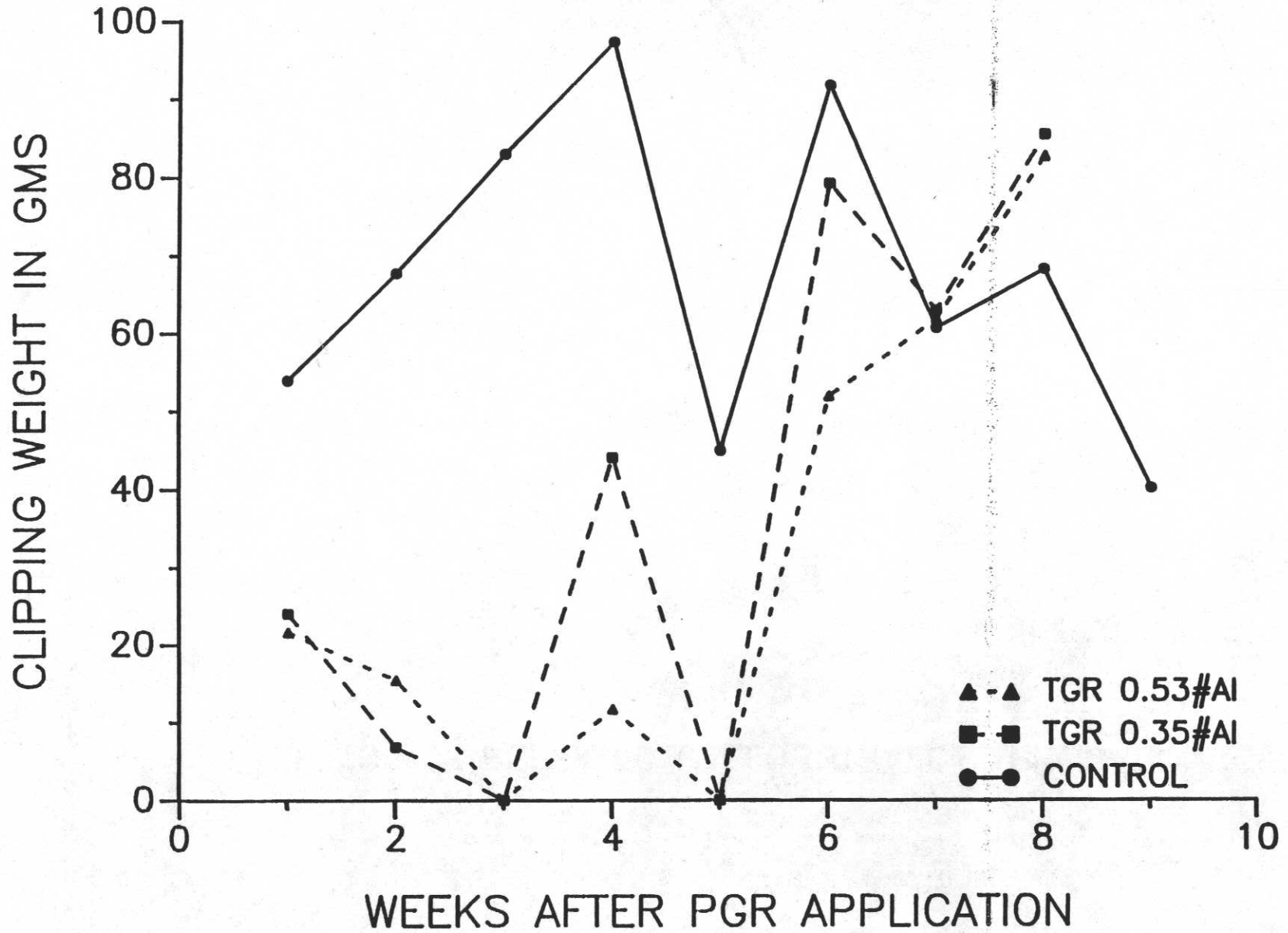
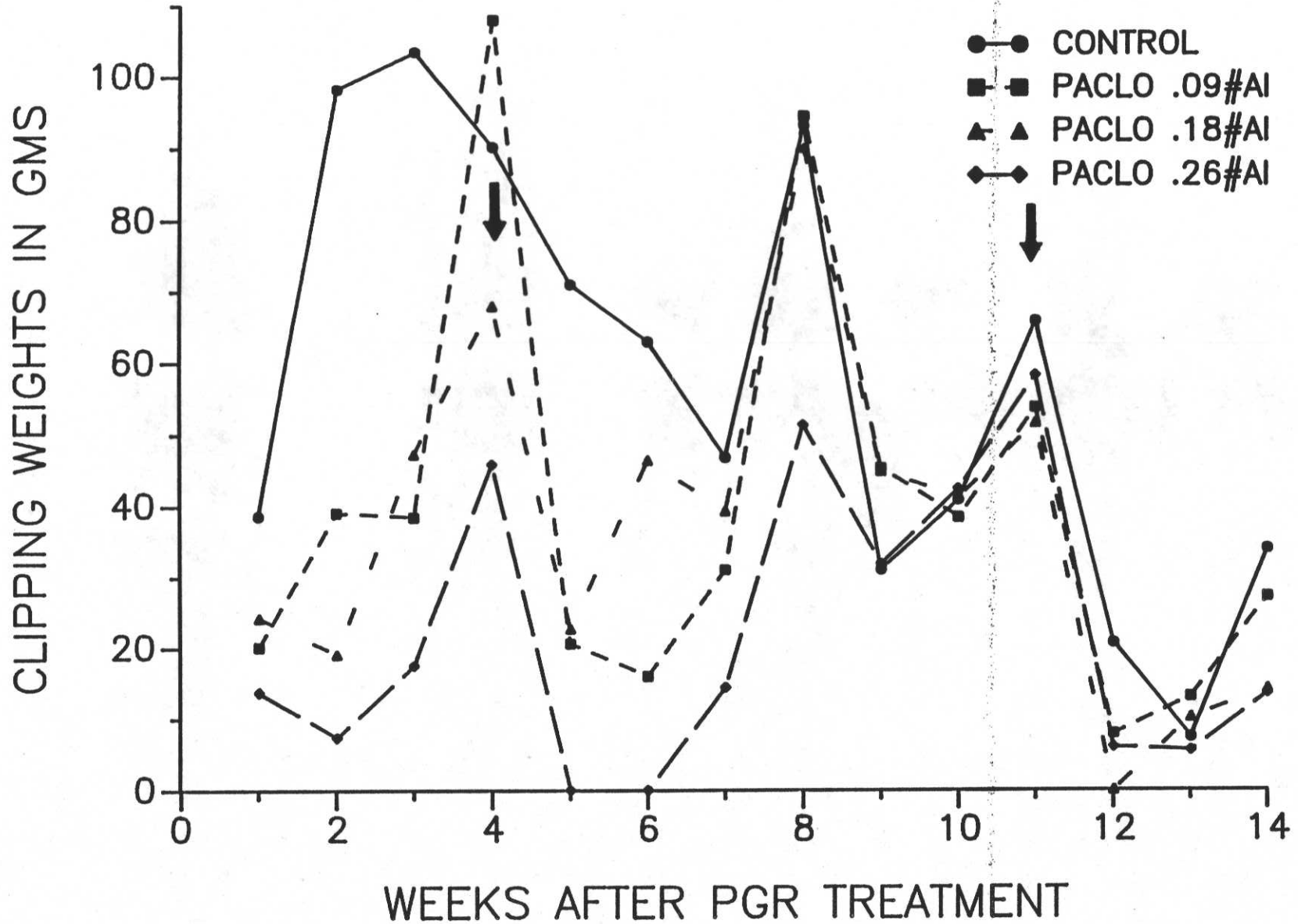


FIGURE 4.

EFFECT OF REPEATED PACLOBUTRAZOL APPLICATIONS



All rates caused some periods of noticeable turf discoloration even from the lowest rates tested. Turf quality was consistently reduced by PGR treatment although the lightest rates were often close to the control plot in visual quality.

Data in Table 4 show the change in bentgrass populations over the summer.

Table 4. Effect of Repeated PGR Applications on Bentgrass Encroachment in a Fairway Turf.

<u>PGR</u>	<u>Rate</u>	<u>Initial Bentgrass %</u>	<u>Final Bentgrass % (8/14/90)</u>
Cutless	0.25	6	29
Cutless	0.30	15	52
Cutless	0.38	13	45
Paclobutrazol	0.09	13	51
Paclobutrazol	0.18	9	36
Paclobutrazol	0.26	9	31
Control		7	26
LSD(P=0.05)			NS

Clearly, the bentgrass populations increased dramatically over the summer. However, statistically there was no difference between any of the PGR's and the control. The rate of increase also seems to depend upon the initial bentgrass population.

These PGR's are interesting management tools, but more research is needed to understand how to use them. Because bentgrass and annual bluegrass respond so differently to these products, it would be interesting to compare growth regulation across species.