Stop #12

Plant Growth Regulators and Green Speed

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Green speed is a common topic of conversation among golfers and superintendents. Slick greens can foster a golf course and superintendents' reputation, while the lack of green speed can cause a downfall for both. There are different management strategies and risks involved when trying to provide "ultra" fast greens on a daily basis.
Plant growth regulators have been suggested as an alternative way of increasing green speed. The purpose of this study is to evaluate plant growth regulators and the effect they have on green quality as well as on a green speed.

Previous research has been done at Penn State and Michigan State University concerning plant growth regulators and putting green speed. The plant growth regulator used in the Michigan State experiments was Cutless 50W (flurprimidol) applied at .25 lbs. ai/A. Data collected from those experiments showed that while plant growth regulators did not increase green speed on turf maintained at 1/8", significant increases in green speed on turf maintained at 5/32" were seen. These findings led to many questions which are now being addressed at the Hancock Turfgrass Researh Center.

A study was initiated July 15, 1991 on a one-year old stand of "Pennlinks" creeping bentgrass, (Agrostis palustris). The area is maintained as an immature putting green turf receiving topdress applications every 2-3 weeks and rates of fertilizer necessary to establish the plot. The study is a 3x5 factorial with 3 replications. There are 3 cutting heights(1/8, 5/32, and 3/16 inches) and five management strategies(Cutless 50 W at .175 and .25 lbs. ai/A, Scotts TGR Turf Enhancer 50WP (paclobutrazol) at .175 and .25 lbs. ai/A and a control). The two different products and rates are used to help pinpoint the best rate for green speed increase without sacrificing wear tolerance and avoiding phytotoxicity to the turfgrass plant. The plots have been mown six times per week and stimpmeter readings have been taken 2-3 times per week, beginning on July 18, to evaluate green speed. Data being collected is set up to monitor the following:

GREEN SPEED

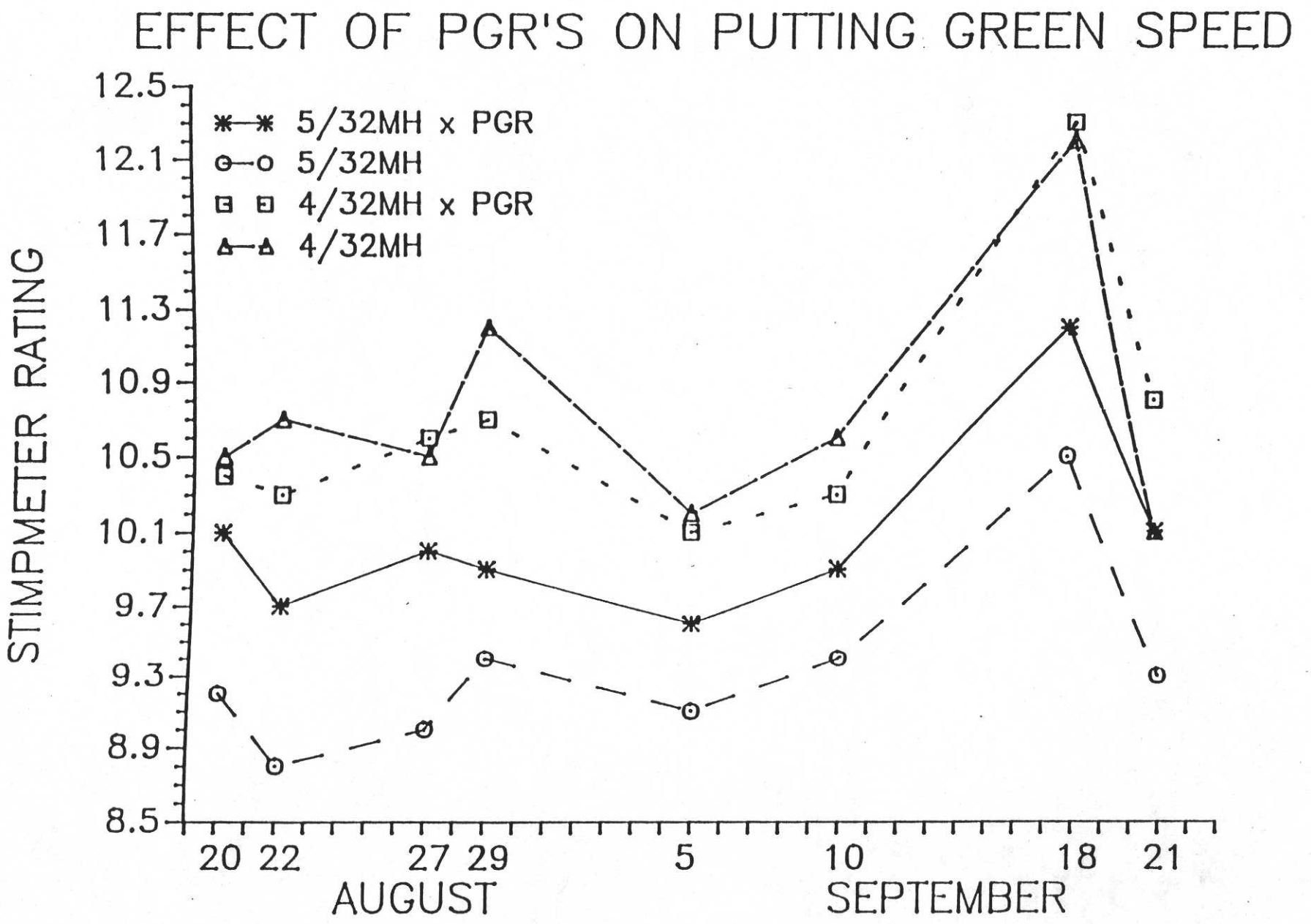
From the previously mentioned experiments we know that a three week increase in green speed is achieved at the 5/32" mowing height after the second monthly application of the plant growth regulator. The first monthly application showed no significant increase in green speed (see figure). This year's data is consistent with those results on the 1/8" and 5/32" plots, however, significant increases have been achieved during the first monthly application on the 3/16" plots with the higher rate of the Cutless 50W and both rates of the Scotts TGR Turf Enhancer 50WP. This is potentially exciting for two reasons. First, it may lead to a management strategy that allows for an increase in mowing height during the hottest summer months without a detectable loss in green speed, and 2) it may provide assistance to our superintendents who maintain their greens at 3/16" year round.

ENVIRONMENTAL FACTORS

Plant growth regulators can be advantageous for the environment because they

reduce clippings on turf maintained on higher heights of cut. We are currently taking clippings on these plots to evaluate if this is the case at these lower heights of cut. It has also been claimed that plant growth regulators on a golf green decrease the need for several fungicide applications. The two PGR's used in this study are also weak fungicides which have been observed to extend the period of control of certain fungicide applications. We are currently maintaining a plot at 5/32" height of cut that has received the previously mentioned products and rates and are monitoring these for disease.
We are also monitoring soil moisture to determine if there is any significant difference between treatments.

PGR treatments have been proven to slow turf growth and thereby decrease friction and thus increase green speed. This study, by taking into account such factors as wear tolerance and phytotoxicity, will help to determine the feasibility of actually using them on a golf course green. A season long rotational mowing height study is planned for next year to better address the management concerns of the golf course superintendent.


EFFECT OF PGR'S ON PUTTING GREEN SPEED
STIMPMETER RATING
12.5
12.1
11.7
11.3
10.9
10.5
10.1
9.7
9.3
8.9
8.5
5/32MH x PGR
5/32MH
4/32MH x PGR
4/32MH
20 22 27 29 5 10 18 21
AUGUST
SEPTEMBER