CONTROLLING ANNUAL BLUEGRASS WITH TGR(R)

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TGR(R) is an acronym for Turfgrass Growth Retardents. The term retardants applies to the class of plant growth regulators that act by blocking gibberellic acid (GA) biosynthesis, a plant hormone influencing cell elongation, among other functions. Retardant activity results in shortened stem internodes and reduced leaf and rhizome elongation. Diversion of photosynthate and altered hormone levels may be responsible for increased tillering and subsequent improved turf density observed with TGR applications. These effects are overcome by applications of GA. The retardant utilized in Scott TGR is paclobutrazol (pp-333) from ICI Americas.

Activity of growth retardants is dependent on a number of factors including plant species. Some of this differential activity on grasses can be attributed to greater uptake by shallow-rooted species such as annual bluegrass. Paclobutrazol is mobile only in the xylem (upward movement only), so root uptake is necessary for the pp-333 to reach the basal growth points. On mixed stands of annual bluegrass and bentgrass, growth control and discoloration of annual bluegrass will occur within one to two weeks following a TGR application at the recommended rate. The Poa annua plants will appear stunted but remain alive. Bentgrass will continue to grow at a reduced rate, but in a more prostrate manner under regulation. Poa regreening occurs 5 to 10 weeks after application. The combination of TGR plus fertilizer stimulates growth and enhances greening of the bentgrass for 4 to 8 weeks after application. On a program basis, the suppression of Poa and enhancement of bentgrass over annual bluegrass (Table 1).

Poa annua seedheads can be a problem on greens, collars and fairways to a point where playability may be affected. Although pp-333 is not a seedhead inhibitor, it will suppress the expression of seedheads if the application of TGR is timed properly (Table 2). Seedhead suppression is obtained by regulating stalk elongation, greatly reducing seedhead visibility. After the Poa comes out of regulation, some seedheads may become visible but it is a much smaller percentage and should not seriously impact playability.

Control of Poa annua with TGR is a gradual process requiring sequential applications as part of a managmenet plan to control annual bluegrass. Applications should be made twice a year in late spring and late summer/early fall until desired level of Poa is attained, which may take two to three years. Once desired levels are attained, yearly applications may be applied to keep Poa in check. Programs that apply lighter application rates with greater frequency will reduce extent of Poa discoloration; however, they are less successful in reducing Poa populations.

Other benefits of using TGR's include labor savings in mowing and handling of clippings in spring and fall due to reduction of plant growth. A significant enhancement of turf color due to the synergism between the fertilizer and TGR is observed and lower water requirements of a bentgrass stand versus annual bluegrass are important benefits from control of Poa

annua.

We see Poa Control with TGR as a sophisticated management tool for controlling annual bluegrass. Superintendents need to be informed of the proper application timing and rates plus what to expect from the product. It may be essential to inform the greens committee and membership of the visual results and what your objectives are in using TGR. It is also a good idea to begin a TGR program on a limited basis to understand what to expect and what progress can be made in reducing Poa annua on your course. With your own trials, you can decide if TGR-Poa Control fits into yur managment plans for control of annual bluegrass.

Table 1. The influence of paclobutrazol + fertilizer treatments on population levels of bentgrass and annual bluegrass. (Kageyama, et al. 1989. 6th International Turfgrass Conference, Japan).

Treatment		Percent Annual Bluegrass			Percent Bentgrass[1]		
lbs ai/acre	lbs N/1000 sq ft	5-28-86	8-14-86	4-13-86	5-28-86	8-14-86	4-13-87
0.30	0.50	93	38 A	38 AB	7	40 AB	61 AB
0.40	0.70	93	38 A	34 AB	7	41 AB	58 AB
0.50	0.90	93	34 A	19 A	7	55 A	81 A
-	0.90	93	71 B	45 AB	7	20 B	48 B
-	-	93	66 B	50 B	7	20 B	46 B

[1] Means within the same column followed by the same letter are not significantly different by Duncans Multiple Range Test (p = 0.05).

Table 2. The effect of paclobutrazol + fertilizer treatments on the visibility of annual bluegrass seedheads. (Kageyama et al., 1989. 6th International Turfgrass Conference, Japan).

Treatment		Percent Annual Bluegrass Seedheads[1]	
lbs ai/A	lbs N/1000 sq ft	6-5-86	5-18-87
0.30	0.50	11 B	27 AB
0.40	0.70	10 B	18 BC
0.50	0.90	11 B	8 C
-	0.90	45 A	34 A
-	-	48 A	32 A