Do PGRs Fit Your Sports Field Program?

By Dr. Michael Goatley Jr.

The concept of applying chemicals for suppressing foliar growth and seedhead formation of turfgrasses goes back to the 1950s. But there has probably never been as much interest in plant growth regulators (PGRs) on turf as in the last couple of years.

This is especially true for sports fields because of potential reduction in maintenance costs from less mowing and the potential for improved playing-surface quality. However, there are things you need to consider about PGRs before selecting one.

First, be aware of how the chemical enters the plant. This will indicate to you whether or not irrigation or rainfall is necessary or even desirable following chemical application.

Second, be aware of the strengths or limitations of the growth regulating effects. Some PGRs provide only seedhead or foliar suppression while others are capable of both.

Strengths and Weaknesses

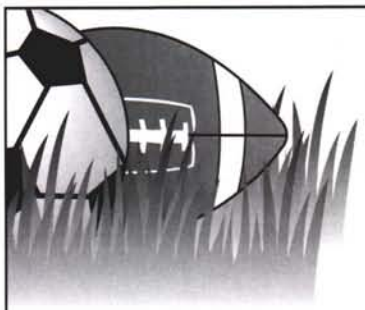
There are three classes of PGRs according to their mode of action.

Class A PGRs interfere with the production of gibberellins (plant hormones that influence cell elongation, photoperiod response and chilling tolerance) late in their production pathway. These PGRs are useful on intensively managed turf areas, usually result in less phytotoxicity, and provide shorter periods of growth suppression activity. An example of this compound is Primo.

Class B PGRs interfere with gibberellin biosynthesis, but at earlier stages in the production pathway. They generally provide longer periods of growth regulation, but there is usually more concern with phytotoxicity on higher maintenance turf. Two examples of Class B materials are Cutless and Scotts TGR.

Class C compounds are mitotic inhibitors. They arrest new growth for a limited time and are noted for outstanding seedhead suppression, but they can initially cause significant turfgrass discoloration. Common Class C PGRs are Embark and Limit.

The growth regulating effect of these PGRs can vary from site to site based on the particular turfgrass treated, maintenance level of the turf, chemical-use rate, and degree of turf discoloration that is or is not acceptable for your situation. If used properly, some materials, such as Primo, can provide at least a 50% reduction in clippings over a 3 to 4 week period and minimal (if any) initial turf discol-



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oration. Over time, a Primo treatment will actually result in a darker green turf. Embark, on the other hand, also reduces foliar growth for similar time periods, but is probably best noted for seedhead suppression. There is more initial concern with phytotoxicity from Embark applications, but it too can ultimately provide a dark green color response over time.

Whatever PGR you select, treat it with the same respect you give a pesticide or other chemical application and always closely follow label instructions. *Never* apply PGRs to grasses that are under stress. This increases the chance of turfgrass phytotoxicity; is a waste of time, money and manpower; and is environmentally irresponsible.

Selected Benefits

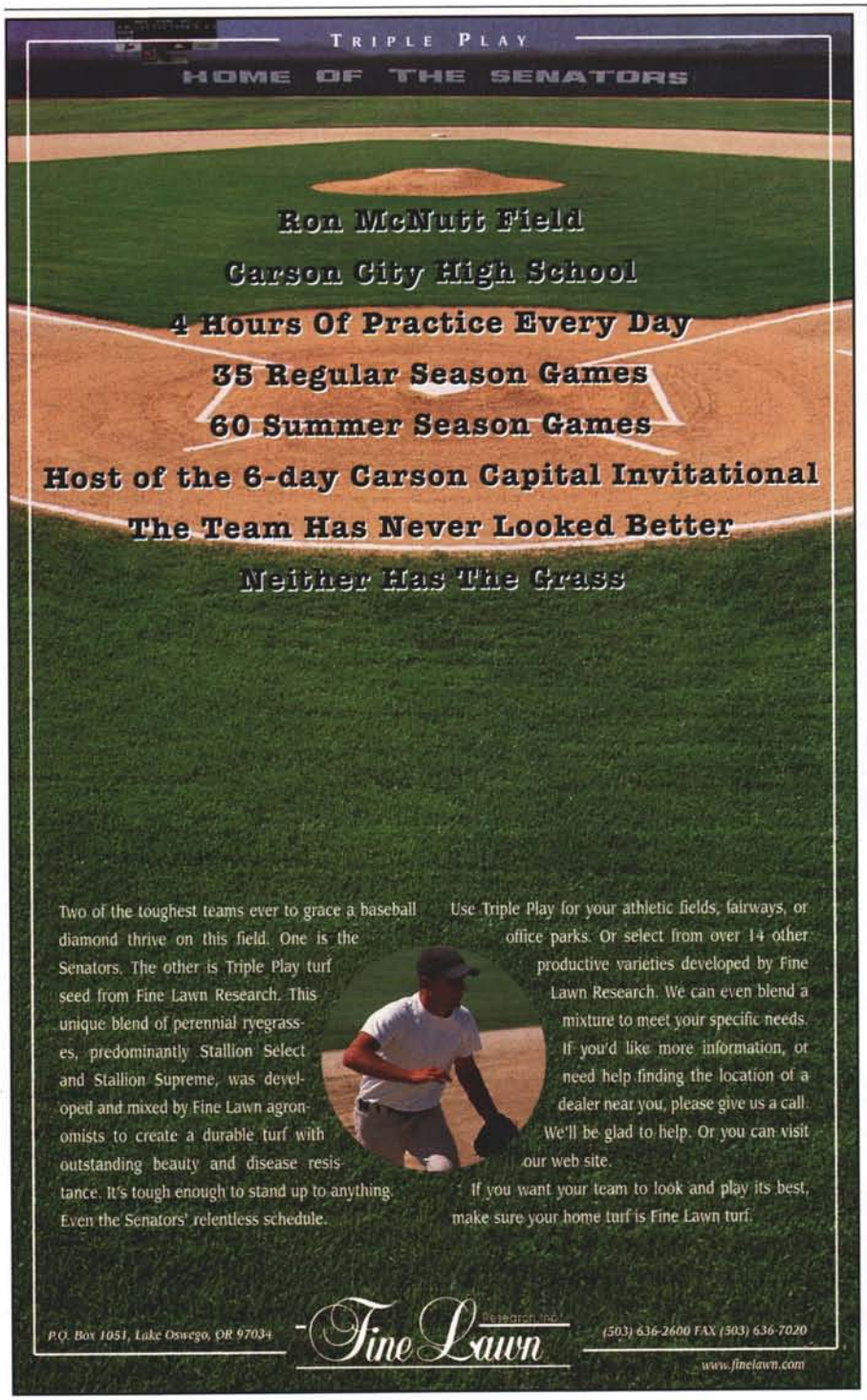
Undoubtedly, much of the current interest in PGRs is due to the success of Primo, and while not wanting to come across as a Primo salesman, I am definitely impressed with the overall performance of this PGR in the mid-South on bermudagrass turfs. Within a week's time, the visible growth response to Primo becomes quite obvious as the internode spacing on the stolons is reduced, resulting in a thicker, tighter playing surface.

This material is quite expensive, though, and many turf managers indicate to me that budgetary constraints keep them from considering Primo in their management programs. However, a PGR like Primo offers more than just growth suppression, so it might be wise to see how Primo or a similar PGR can pay for itself in a short time. Some of the additional benefits that have been realized from Primo applications include:

1. *Better conversion programs when interseeding or overseeding one turfgrass into another one.* Primo has been successfully used to slow the growth of one turfgrass and allow for better establishment of another.

2. *Control of your mowing program even during inclement weather.* A big problem sports turf managers faced this year in our area of the mid-South was the inability to cut grass regularly because of excessive rainfall. Area managers that used Primo on their bermudagrass fields were able to work around the rain and maintain adequate mowing heights without watching their sports fields turn into hay pastures before their eyes.

3. *Improved turf quality and playability without sacrificing recuperative potential from divoting or other damage.* Part of the improved quality comes from the tightening and thickening effects previously mentioned, and some of it is due to the color response. In particular, *common* bermudagrass sports turfs treated with Primo take on many characteristics of the higher quality, vegetatively established bermudagrasses (i.e. Tifway, MS-Choice, etc.). The recuperative or grow-in rates of Primo-treated bermudagrasses have been shown to be equal to if not better than untreated bermudagrasses. This eliminates a lot of the concern that has been expressed with older PGR chemistry, which regulated growth so completely the turf did not recuperate quickly after damage.



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4. *Reduced mowing of difficult areas.* Obviously you can benefit from treating difficult-to-mow areas, or edging baselines and fenced areas.

5. *Improved cold tolerance and rooting.* Preliminary research indicates that Primo improves the cold tolerance of turfgrasses, promotes rooting, improves water-use efficiency, and makes for tighter-knit sods that are more resistant to wear and easier to handle during installation.

Drawbacks

Does a PGR like Primo have its drawbacks? As with anything, the answer is definitely yes.

- Cost is no doubt a concern for many.
- I have also observed an increase in overall incidence of the disease dollar spot on Primo-treated turf.
- A third concern is that when you use a PGR like Primo you really need to commit to a complete program. Otherwise, you'll encounter the "coiled spring" effect, a phenomenon that will occur with almost any PGR. The analogy goes something like this: much of the lateral and upward growth potential of the plant following PGR treatment is held in check — the spring is compressed — and when the compression is removed, the plant growth (and the spring) is quickly released. We have observed tremendous surges in growth on Primo-treated bermudagrass turf about four weeks after treatment with high-end label rates.

Universal Benefit

A way that I believe everyone can find a place for Primo in his or her program is for field marking with turf paint.

I read in *sportsTURF* a few years ago about researchers in California combining Primo with paints. We have evaluated Primo mixed with white athletic field paint (3:1 dilution of water:paint) for field striping with a CO2-powered sprayer at painting rates delivering what amounts to 1, 2 or 3 oz of Primo per 1,000 square feet. The turf was Tifway bermudagrass mowed three times weekly at 7/8 inch. Our preliminary results indicate that line striping can be reduced at least 50% for 1 to 2 week periods (i.e., you can cut the need for painting roughly in half) and the line integrity improved with the increasing Primo rates.

Incorporating Primo into your field striping program will not remove the necessity to stripe the fields again, but will save time in future markings since the lines can easily be seen for remarking and will not likely require stringing-off again. Moreover, using Primo in combination with the paint instead of mixing with one of the many non-selective chemicals commonly used in field marking (some of which are illegal) will not result in strips of dead turf that will affect field playability, safety, and quality. ❑

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