

## PGR ‘over-regulation’ often confused with disease

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I’ve received several calls over the past few weeks about strange patches on greens. While we’ve seen a fair amount of leaf spot, brown patch, and *Pythium* with the warm and wet weather, affected areas have a slightly different appearance. The turf has a blue-brown color and putting greens have a patchy appearance. On closer inspection, the leaves are generally free of lesions but have a worn appearance with brown shredded leaf tips. Occasionally, leaves will have leaf spot lesions.

Typically, this isn’t a disease but a result of frequent PGR applications. Lately, it seems that mixing trinexapac-ethyl (Primo Maxx) with Class B PGRs (paclobutrazol and flurprimidol) has intensified the effect. What we’re seeing is segregation of different biotypes of creeping bentgrass (especially ‘Penncross’ and other blends) and annual bluegrass. Different biotypes can respond differently to PGRs. Some may turn lime-green while others appear blue-brown. Leaf tiller density also increases with PGRs. This intensifies biotype segregation and causes the putting green to have a patch-like appearance. Annual bluegrass may also appear sunken and near death, especially annual biotypes. It is more sensitive to class B PGRs than creeping bentgrass. Finally, growth suppression limits the plant’s ability to recover from traffic and disease. Over-trafficked leaves have a worn appearance and can easily get secondary disease infection. These diseases take advantage of dying leaf tissues.

Re-application frequency has more of an effect on PGR performance than application rate. This is especially true on golf putting greens. PGRs need to be applied more frequently when it is warm than they do during cooler weather. However, re-applying too frequently (even at the lowest labeled rates) can cause PGR accumulation within the plant and lead to high levels of growth suppression. Mixing PGRs confounds this issue as Class A PGRs (trinexapac-ethyl and prohexadione-Ca) break down faster than Class B PGRs. Consider using our [GDD Tracker](#) to help schedule PGR application during different weather conditions. [Click here](#) to read more about PGR breakdown and GDDs.

For greens with too much growth suppression, consider extending your re-application interval. GDD models are a great way to make well timed applications. Also, consider applying one PGR at a time during the mid-summer. Use of DMI fungicides with PGRs can also intensify growth suppression and turf discoloration. We don’t recommend applying products containing GA to counteract the PGR. With time, the PGR will breakdown and the turf will resume normal growth.

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Figure 1. Frequent PGR applications can lead to biotype segregation on golf putting greens. It can easily be confused as a disease like brown patch or leaf spot.



Figure 2. The foreground shows an annual bluegrass/creeping bentgrass green treated with both Trimmit (2 oz/A) and Primo Maxx (6 oz/A) every 5 to 10 days. The background section of the green had the same maintenance but did not receive the PGR mix. Plots in the background have been receiving Primo Maxx or Trimmit every 200 GDD with no signs of discoloration. Interestingly, there are very few seedheads in the front of the photo and a ton in the back of the photo.



Figure 3. Segregation of creeping bentgrass and annual bluegrass is very obvious when PGRs are frequently applied. These can give the illusion of more annual bluegrass compared to a green with no PGRs.