



*Rooted in Science*

## Dr. Tom's Corner



### **Biostimulants: In Before the Cold GCI Article**

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[www.golfcourseindustry.com/bionutrition-111111-tom-watschke-penn-state-turfgrass.aspx](http://www.golfcourseindustry.com/bionutrition-111111-tom-watschke-penn-state-turfgrass.aspx)

Biostimulants are well-regarded for dealing with summer stress. Dr. Tom Watschke, formerly of Penn State, discusses how they help during the season's wind-down.

Do biostimulants do anything differently in fall than during other times of the year?

Knowing what we know about biostimulants and managing carbohydrates and looking at plants as they move away from more stressful seasons and toward lower soil temperatures and all the associated environmental stresses, I think one can argue that the principal role isn't that much different. There could be a difference, of course, in the choices of what one uses. When the soils are heating up, in late spring and summer, they're essentially in a physiological state when they can't produce new root growth. That's where having the biostimulants and carbohydrates make a difference. In the fall, soil temperatures are coming down and biostimulants can aid in the development of new roots.

The most that can be derived from the research with biostimulants is that they're most impactful when they are applied prior to stresses of any kind. This is pre-stress conditioning philosophy, which is very sound.

If we fast forward then through the summer to the fall and whatever has happened has happened, the positioning of the application of biostimulants is again important prior to the onset of cold temperatures so they're available before the soil temperatures go significantly down and re-rooting occurs. You want the biostimulants down so they are there when the soil temperature's low enough to trigger new rooting. Those new roots are going to come out and need to have things in position so they can access it as quickly as possible and have the impact you want to have.

When is the best time to apply biostimulants in the fall?

It really should've already been done, if you plot soil temperatures in this latitude, at least. It's going to peak in late July to early August and then as the days shorten and the direct solar radiation heat load is starting to wane. It should be done by Sept. 1 in most years. This year's been a bit of an anomaly. My own judgment is when the soil temperature in the upper inch is in the low 70s F for most of the day, things are going to start happening. This year in the Midwest, soil temperatures stayed up in the 80s for a long time – summer just didn't want to give it up.

What benefits can biostimulants bring during this season?

For the balance of this growing season, their presence will not be that visual because it's addressing physiological needs. By that, I mean keeping hormones and auxins in balance and storing carbohydrates for winter – we're talking about physiological changes for winter that we aren't able to see. The health of the plant is subjected to the kind of physiological status it possesses. The processes that are connected to good growth and health and avoidance of stresses are those things that are helped by biostimulants, things that can be subtle i.e. your fungicide apps might last longer. Not necessarily more clippings in the basket or a deeper green color – the biostimulant is helping make the plant more healthy.

It does, in fact, help next year in the sense that the plants as they progress toward dormancy that have had biostimulant apps do handle winter conditions better and they're well-positioned in the spring to break dormancy and commence growth.