Turf and Ornamental Growth Regulators

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Find out which method of controlling plant growth is right for you

For lawn care operators, managing plant growth usually involves encouraging more, not less. However, there are times when less is more. If this sounds like a green industry take-off on the old Abbott and Costello routine of “Who’s on First?”, rest assured that we’re not joking.

Ornamentals should be planted where they obtain their natural shade, landscape pros are often tasked with controlling surge growth by pruning them or using PGRs.

PHOTOS BY JOHN C. FECH.

Turf and ornamental plant growth regulators are one of the many tools available to the turf and grounds manager. Working them into your application schedule, at least on an experimental basis, is a reasonable consideration. As with most tools or techniques, there are many facets to consider.

Problems associated with growth surges

Cool-season grasses such as Kentucky bluegrass, perennial ryegrass and tall fescue produce surges of growth in spring and fall under conditions of cool temperatures, abundant rainfall and medium to high fertility. These surges of top growth correspond directly to a deep root system, at least deeper than in the summer. In most situations, the response is a predictable bell-shaped curve.
The common expectation of trimmed, lush green growth in all seasons is in direct conflict with this phenomenon. If your company has the mowing contract for these properties, mowing once a week usually won’t produce satisfactory results. The all-too-common result of a fixed/predetermined schedule is that it usually isn’t often enough during the spring surge and is too frequent in the heat of the summer when growth slows down.

Ornamentals surge as well. Take the all-too-common yew plant. Wouldn’t it be nice for them to produce a sustained growth pattern instead of a surge of growth in spring and another in early summer? Or better yet, not produce excessive growth at all? Unfortunately, many clients feel that the best way to deal with this pattern is to simply “shear off” the growth. In many minds, regularly sheared hedges and shrubs are the sign of a well-maintained landscape.

Obviously, a “paradigm shift” needs to occur with regards to shearing. Somehow, someway, the customer needs to come to understand that if a plant is growing in a location where it’s larger than they want it to be, it’s the wrong plant in the wrong place. Several approaches to enlightenment can be attempted; showing them pictures, explaining in descriptive terms, directing them to a website, but the best overall approach is simply taking the client by the hand and leading them to an overly sheared shrub and pointing out the “knotty growth” that develops at the point of regular shearing, the sparse base that develops due to shading and the wider top/narrower base that is created.

Badly overgrown shrubs are not an uncommon sight when landscape companies take over neglected properties.

**Control with cultural practices**

As mentioned above, fertilizer, irrigation/rainfall and
temperature have a significant effect on the growth rate of turf and ornamentals. Adjustments to these inputs (not much with temperature, not much under our control!) can produce the result of evening out the growth rate into steady and sustained instead of accelerated and declined. Many adjustments can be made in order to influence the growth rate of turf and ornamentals; three of the most impactful are fertilizer use, mowing frequency and irrigation system efficiencies.

Though turf is commonly thought of as a nitrogen hog, the “feeding and growing” is much less noticeable when a high percentage of slow-release nitrogen is utilized. The fraction attributed to controlled release sources such as IBDU, sulfur-coated urea, urea formaldehyde or natural organics is a good predictor of response following application. When considering the result of even, sustained growth, a fraction of 50 percent or more slow-release formulation is desirable.

Mowing frequency is another area for adjustment. Using the one-third rule – never removing more than a third of the aboveground vegetation with any one mowing operation – is a good method for regulating turf growth with cultural practices. Normally, using the one-third rule dictates that more frequent mowing is necessary during the surges of growth and less frequent during periods of less-than-optimal growing conditions.

A third adjustment is an audit of the irrigation system. Let’s face it, most systems are broken. They deliver too much water in some areas and not enough in others. The common occurrence for these systems is a natural human tendency to water until the areas that don’t receive enough water turn from brown to green, or stay green all year long. The result of this practice is over-abundant growth in the areas that receive too much water as a result of leaking valves, misaligned heads or clogged orifices. Convincing the client that an irrigation system audit is necessary, conducting it and fixing the
problems that are identified will go a long way towards avoiding growth surges of turf and ornamentals in the landscape.

**Control with the use of growth regulators**

A plant growth regulator (PGR) can be broadly defined as any substance that influences plant growth and development. This includes both stimulating and inhibiting growth. Growth-promoting PGRs or biostimulants may include organic acids, hormones, microorganisms or mineral nutrients and may be most effective in sand-based systems. They are often applied in concert with grow-in or aerification to increase nutrient uptake and rooting. Two common products are seaweed extracts and humic acids.

Growth-inhibiting PGRs have been used primarily to reduce mowing frequency and suppress seadhead production by undesirable grasses such as Poa annua. More recently it has been utilized in overseeding and mixing with fungicides to enhance activity. Most PGRs are synthesized chemicals, with some derived from herbicides (such as glyphosate).

There are three distinct groups of PGRs commonly used today:

- **Type I PGRs**, or cell-division inhibitors, inhibit cell division and differentiation in meristematic regions, inhibit shoot extension and suppress seedhead development. These include Embark (mefluidide), Royal Slo-Gro (maleic hydrazide) and Limit (amidochlor).
- **Type II PGRs**, or Gibberellin inhibitors, inhibit biosynthesis of gibberellin needed for cell elongation. Three common products are Primo (trinexapac-ethyl), Trimmit or TGR (paclobutrazol) and Cutless (flurprimidol).
- One additional PGR is Proxy (ethephon), which promotes ethylene production within the leaves, which inhibits cell elongation.
PGRs are most effective when applied to actively growing plants. This means spring and fall applications are best for cool-season turf, and after spring green-up for warm-season varieties. It must be noted that improper use of PGRs can result in burning of leaves, poor recuperation to injury, and a reduced ability to compete with weeds for turfgrass.

There are many methods to control plant growth and all have their unique benefits. Consider using multiple methods or practices to achieve the goals for your situation. Don’t be afraid to experiment in small areas if needed.

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