Turf Growth Regulation

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Turfgrass Slide Monograph
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Introduction

- Plant growth regulators (PGRs) have been used on turfgrass areas for more than 50 years. Slowing turfgrass vertical growth and seedhead suppression on low-quality turf areas were the initial primary uses of PGRs. There was little PGR use on high-quality turf areas like golf courses because the PGR products initially available could be phytotoxic to the turf.
- PGR use has increased greatly in recent years due to the development of new, safer PGR products, and they are now a key part of many turfgrass management programs.
- The goal of this presentation is to provide an overview of current PGR use with a focus on high quality turf areas.
Our understanding of PGRs is the result of extensive university research and practical applications discovered by turf managers. Several research projects have investigated PGR effects on plant physiology and morphology, which may be beyond the scope of this slide set.

All of the PGR uses in this overview have been tested scientifically and/or evaluated by numerous turf managers. Data will be presented to support some uses but not all.

The goal is to provide an overview of the different PGR uses, with the understanding that results will not always be consistent due to differences in turf management plans, environment, species, and cultivar, etc.
Information Sources


• Plant Growth Regulator Society of America (PGRSA)
Other PGR Information Sources

- University research reports
- Scientific publications
- Trade publications
- Info from manufacturers and distribution sales reps
- Discussions with other turf managers
- Internet chat rooms and websites
- The TGIF is an excellent central resource for all areas of turfgrass research and management.
In today’s turf management, growth regulators are used in an array of turf settings.
What is a Turf Growth Regulator?

An organic compound, natural or synthetic, that when present (or applied) in small amounts results in a change in plant growth and/or development.

Change = Better color, increased density, fewer clippings, no seedheads, enhanced establishment, improved recuperative potential, deeper roots, larger food reserves, etc.
Growth regulators for turf have been used since the 1950s.
Pre-1980s: Mefluidide developed—it slows turf growth by slowing cell division.
1980s: Flurprimidol and paclobutrazol developed—they slow cell elongation by slowing the production of all forms of gibberellic acid (GA).
1990s: Trinexapac-ethyl developed—slows turf growth by slowing the production of GA1, the final form of GA. All other 120+ forms of GA that lead to formation of GA1 are not affected.
1990s: Ethephon research on turf initiated—slows turf growth by generating the plant hormone ethylene.
2000s: Experimentation with mixing different PGRs initiated.