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Turfgrass Advances in the 21st Century

James B Beard

Prior to a crystal ball gaze into the next millennium it is important to have a proper perspective as to the major turfgrass advances that have occurred during the last century. Point in fact, most technical advances have occurred since 1945 as summarized in the following table.

Evolution of Turfgrass Advances Since 1945.

Time period	Key areas of research emphases and achievements
1945–55	<ul style="list-style-type: none"> • Selective broadleaf weed control: phenoxy-herbicides. • Insecticides developed for efficacy and persistence.
1950–60	<ul style="list-style-type: none"> • Equipment: powered coring, slicing, spiking, and vertical cutting machines. • Mowing practices—heights and frequencies specific to species.

- Culture of turfgrass communities: mixtures and blends.
- 1955–65 • Post- and pre-emergence grassy weed control through selective herbicides.
- Turf-type fertilizer ratios and formulations.
- Warm-season cultivar development: bermudagrasses and zoysiagrasses.
- 1960–70 • Root zone modification, Perched-Hydration Method.
- Turfgrass establishment techniques, improved mulching methods.
- 1965–75 • Cool-season cultivar development: Kentucky bluegrasses, perennial ryegrasses, and tall fescues.
- Sod production cultural practices and speciality equipment.
- 1970–80 • New disease characterizations, plus systemic fungicides.
- New nutritional practices, emphasizing potassium and iron plus autumn fertilization.
- 1975–85 • Turfgrasses stress tolerance enhancement: cold, heat, drought, wear, and shade.
- Plant growth inhibitor advances.
- 1985–95 • Cultural practices and cultivars that conserve water, energy, and nutrient resources.
- Prediction modeling for ET and pests.

As shown in the table, there have been dramatic advances in the science of turfgrass management during the 20th century. Equally dramatic changes will occur in the 21st century as well. The following sections on turfgrass advances for the 21st century involve a considerable amount of crystal ball gazing, which is a high risk endeavor. Some may prove correct and some innovations will not be mentioned. This is to be expected. The main focus is to stimulate the thought processes of our readership as to what changes may occur and how these changes may affect their own professional activities.

New Turfgrass Species and Cultivars

There will be a number of new species introduced for turfgrass use in North America. Most will be low maintenance turf-

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