C-5: The Turfgrass Science Division of the American Society of Agronomy

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Turfgrass science is booming everywhere! Nineteen ninety-seven was an unprecedented year in terms of activity in turfgrass programs at universities and private companies. This year we saw several states either create new turf programs (Montana, South Dakota) or add additional faculty positions to existing turf programs (Washington State, Arkansas, Missouri, Rutgers, Kentucky, Colorado, Kansas State, Nebraska, etc.). Other states were kept busy refilling vacant positions (Wisconsin, Michigan State, and Massachusetts; Florida State tried but failed). Currently, 47 states have turf programs. The only states without turf programs are North Dakota, West Virginia, and Wyoming. Even Alaska and Hawaii have turf programs: I'm not sure, but I would suspect their main turf management problems are related to polar bears and lava flows, respectively.

Did you know Wisconsin ranks 10th in the nation in the number of golf courses? I learned these and many other turf facts at the American Society of Agronomy (ASA) national meetings last month. The conference began Sunday October 26 and went through Thursday October 30. The meetings lasted from 7:45 a.m. until usually 7-8:00 p.m. and consisted largely of oral and poster research presentations. By the way, the meetings were held at the Anaheim Convention Center in California, giving me a preview of where to eat (and where not to eat!) during the GCSAA convention in February.

The ASA was founded in 1907 as a forum for researchers in agronomic fields to develop new relationships, exchange ideas, and present their research. A turf committee was formed in 1946 which was composed of H.R. Albrecht, M.E. Farnham, H.B. Musser, and F.V. Grau. Today, these early turfgrass science pioneers are remembered by turfgrass societies: the Musser Fellowship is awarded annually to a Ph.D. candidate in turf, while the Fred V. Grau Turfgrass Science Award goes to a prominent turfgrass researcher (past recipients have included Dr. James Beard, Dr. James Watson, and Dr. Reed Funk). In 1952 a Turfgrass Management Division of ASA was formed. Seven turf research papers were presented that year: 1) Potash and nitrogen fertilization of fescues and bentgrasses, 2) Lime and compost on velvet bentgrass greens, 3) Soil acidity and the Japanese beetle, 4) Aerification and fertilizer penetration, 5) Combinations of cool- and warm-season grasses, 6) Problems of national turf trials, and 7) Clover control. It's interesting that so many of the topics covered then are still of interest today (although I'm not sure of who has velvet bentgrass greens anymore).

Currently there are three primary divisions in ASA: the American Society of Agronomy (Education, agroclimatology, environmental quality, international agriculture, etc.), the Soil Science Society, and the Crop Science Society. In 1963, Division C-5, Turfgrass Management, was reorganized under the Crop Science Society. Today, while total ASA membership is declining (probably a reflection of fewer farms), membership in C-5 is rapidly growing. At the meetings, the number of people in any given turfgrass presentation was usually over 200 with standing room only. This is pretty good considering there are probably less than 400 turf researchers in North America, including graduate students and turfgrass scientists from private companies (e.g., breeders) and other organizations (e.g., the USGA). The research from these programs is applied to over 13,000 golf courses, 1,400 sod growers, some 5,500 lawn care companies, approximately 50 million single family homes, between 30,000 to 40,000 school and park systems, perhaps 2,000 strictly athletic field facilities, and of course all the seed, fertilility, chemical, irrigation, equipment, journals, architect/construction, and consulting companies (Watson et al., 1992).

Research presentation topics ranged from turfgrass genetics to root zone construction of putting greens. Several symposia were held with papers presented on very specific topics, followed by lengthy discussion. Symposia for this year were: 1) Environmental impact of turf,

2) Applications of biotechnology to turf management, and 3) Graduate student training for future turfgrass research scientists.

Dr. Beard started the presentations in the environmental turf symposium. Dr. Beard reminded the audience of how much turf chemicals have changed compared to products once deemed suitable for turf use: gasoline (ant control), carbolic, hydrochloric, and nitric acids (dandelion control), carbon bisulfide and sodium cyanide (ant and earthworm control), lead arsenate (earthworm and disease control), copper sulfate (diseases) and of course the cadmium and mercury compounds. One USGA member discussed the potential environmental dangers associated with pesticide and fertilizer application near surface waters. Also discussed were the dangers to the golf industry of the trend of many new courses (including many municipal courses) being developed which cater exclusively to wealthy clientele. There was a tremendous amount of concern expressed that this trend will exclude the majority of the population from golf, thereby eliminating a substantial population base as a political ally during future legislation actions. As one participant stated, as a boy he would sling a bag of clubs over his shoulder and bicycle down to the locally owned mom and pop golf club, and pay $1 for a round of golf: where are those types of courses now?

The symposium on biotechnology was notable for two main reasons. Dr. Mike Kenna from the USGA proposed the question, "What has biotechnology done for the turf industry?"— his answer, not much (yet). My reaction is that there seems to be a great deal of hope that biotechnology will solve most or all turf management problems, but experience should teach us that rarely, if ever, does a potential product or technique solve all problems. The potential of biotechnology in turf will be discussed further in future articles in *The Grass Roots* as part of the series on turfgrass breeding. The other interesting discussion was on biological chemicals: chemicals which are found in nature (e.g., in plants or microbes) or, more typically, synthetic analogs. Synthetic analogs are produced in laboratories. Synthetic analogs have a chemical structure similar to naturally occurring chemicals but have an additional chemical group(s) or altered atomic bonding. From a company's perspective, synthetic analogs are usually more desirable than naturally occuring compounds because they can be mass produced, often have greater efficacy, and most importantly, can be patented. Patenting is important because it allows the companies to recoup their costs associated with production, testing, and registration over the 8-10 years required to bring a new product to market. "Heritage" fungicide is one such type; many more are in the works at a number of major chemical companies. Exciting stuff!

The final symposium was on graduate student training for future turfgrass scientists. As you would expect, some discussion was focused on the type of coursework required (soil science, plant physiology, chemistry, physics, etc.). To me, the most interesting part of the discussion was the notable lack of training programs/courses to teach graduate students how to run successful extension programs. While there was widespread agreement on this issue, there was no consensus on how to achieve extension training. Typically, graduate students gain extension experience by helping to write extension bulletins and by attending site visits with their major professor.

Your turf representative from UW-horticulture (yours truly!) was coauthor on three presentations. The first, "Statistical Analysis of Qualitative Turfgrass Ratings", was presented by Dr. Oliver Schabenberger, a statistician at Michigan State University (Schabenberger et al., 1997). Although I was a coauthor, I have to admit the actual concept and development of the computer program were developed by Dr. Schabenberger. The paper was important because it discussed a new, probably more accurate way of analyzing turf quality ratings. In the future, this could change the way NTEP data are analyzed and reported, which will directly affect golf course superintendents and other turf managers who use NTEP data to select new varieties.

I had substantially more input on the two other presentations. One was titled "The Effect of Mowing Height and Traffic on Supina Bluegrass" (Stier et al., 1997). This paper discussed the effects of simulated football traffic on Supina bluegrass mowed at 9/16", 1.25", and 2.25". Although the grass did not withstand much football traffic at 9/16" (few grasses would), it provided outstanding density (99-100%) at 2.25" after 26 simulated football games. In the non-football trafficked plots, Supina bluegrass demonstrated outstanding potential as a fairway or tee grass.

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I gave the final presentation on the last day of the conference when people had tired and started to leave for home. Nonetheless, a few dozen hardy souls remained, including a group active in developing the turf for the new Diamondback Stadium (a covered stadium) in Arizona. The title of the presentation was "Nitrogen and trinexapac-ethyl effects on photosynthesis of Supina bluegrass and Kentucky bluegrass in reduced light conditions" (Stier et al., 1997). Our results showed that Supina bluegrass had a significantly higher rate of photosynthesis in shade compared to Kentucky bluegrass. Applications of trinexapac-ethyl, previously shown to enhance turf quality in the shade (Stier and Rogers, 1995; Stier and Rogers, 1996), enhanced the photosynthetic rates of both turf species. The idea here is to use low-rate applications of trinexapac-ethyl throughout the growing season to maintain turf in the shade. We maintained a small (325 ft2) turf stand in reduced light for several years under constant growth regulation, and numerous other plots were maintained for up to 12 months before the plots were dismantled to make room for new studies. One caution: experience has indicated an interaction (sometimes negative, sometimes neutral, sometimes positive) between the onset of cold weather and mid to late autumn applications of trinexapac-ethyl. Obviously this interaction needs to be further investigated to understand the relationship between cold tolerance and plant growth regulators.

Overall the C-5 meetings were quite informative and useful. The ASA meetings, like the GCSAA, are a wonderful forum to exchange ideas, renew and forge new acquantainces, and stimulate creative thinking!

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