

A call to action

A new initiative spearheaded by industry leaders offers hope for basic turfgrass research. BY KEVIN N. MORRIS

The annual value of the turfgrass industry in the United States is estimated to be between \$40 billion to \$60 billion. This figure includes the cost of establishing and maintaining turfgrass on golf courses, athletic fields, parks, home lawns, roadsides, sod farms and grounds of commercial buildings. Turfgrass covers an estimated 50 million acres in the United States, making turf the fourth largest U.S. crop. There are more than 31 million acres of irrigated turfgrass in the country, making turfgrass the largest irrigated U.S. crop.

U.S. research

Turfgrass research in the United States is almost exclusively conducted by state universities or private, for-profit companies. Private companies conduct research on fertilizers, new grass cultivars, pest control products, etc., for their own internal use. The information obtained from for-profit companies' research is proprietary and most often not released to the public. However, for-profit companies supply funding to university researchers to test products and help develop recommended rates and uses.

There are several nonprofit organizations such as the U.S. Golf Association, Golf Course Superintendents Association of America, National Turfgrass Evaluation Program and Turfgrass Producers International that also fund turfgrass research at state universities. The USGA has the largest research-funding program, averaging about \$1 million annually. NTEP, GCSAA, and TPI collectively fund about \$1 million in turfgrass research annually. There also are various state and local turfgrass organizations that provide funding to state university research programs. Private companies and not-for-profit organizations support an estimated \$10 million in turfgrass research annually.

Many states have at least one university with a turfgrass research program to serve the needs of the citizens and the turfgrass

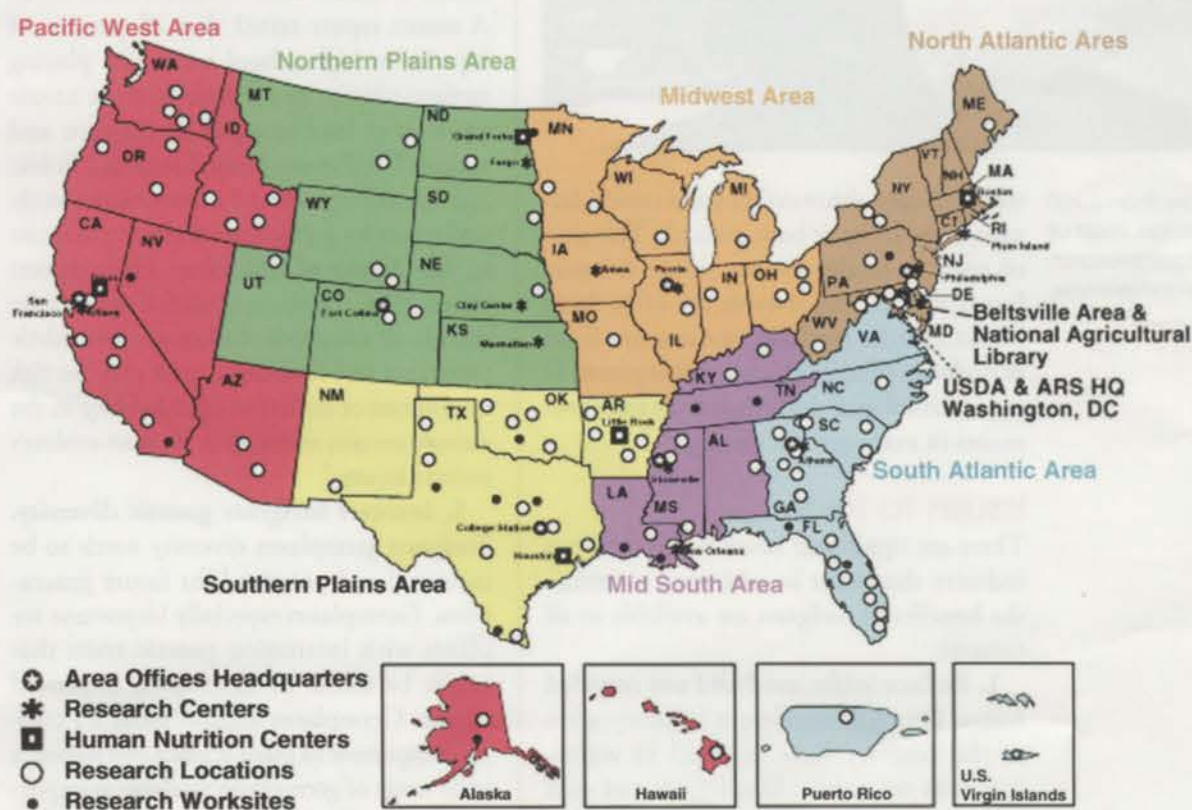
industry in that state. Funds for those research programs come from the aforementioned entities; state government funding; and through the federal government's Department of Agriculture, Cooperative State Research, Education and Extension Service. CSREES, which has an annual budget of \$1 billion, provides funding to state universities for agricultural research, education and extension related activities. These funds are directed to scientific disciplines and crops, including turfgrass; however, most of that funding is used for faculty salaries or extension activities. Little, if any, CSREES funding is directed to turfgrass research. Therefore, the activities of state university researchers are limited to what the states, private industry and organizations are willing to fund.

Applied research

Almost all turfgrass research dollars are provided by the turfgrass industry or industry associations to fund applied research rather than basic research. Applied research involves solving problems that are seen in the field by end-users such as golf course superintendents or agronomists. The shortcoming of applied research is its reliance on short-term problem solving.

Basic research tackles the tough problems. For example, basic research unlocked the secret that day length significantly affects plant growth and development. Basic research resulted in the development of hybrid seed corn, a huge advance in corn production. And more recently, the Human Genome project, a successful effort to identify the location of genes for disease

*Photos and chart courtesy of the
National Turfgrass Federation*



The U.S. Department of Agriculture's Agriculture Research Service has scientists at 100 locations in the United States. Many of those scientists are housed at or close to state land-grant universities.



ARS has more than 2,100 scientists nationwide, most of which conduct basic research on crops and animals.

susceptibility, abnormalities and critical human traits, is classic basic research. This type of research might not pay future rewards, but if it does, the rewards are often large breakthroughs resulting in quantum leaps of understanding problems, development of new technologies and important improvements in management strategies.

Issues to face

There are significant issues in the turfgrass industry that must be addressed to ensure the benefits of turfgrass are available to all citizens:

1. Reduce water used and use recycled water. Drought conditions in many areas of the country have resulted in watering bans on lawns, landscapes and golf courses, as well as restrictions on planting turfgrass by local jurisdictions. Because of incredible population growth in the drier, Western states, many areas have instituted lawn watering restrictions, including cities such as Las Vegas and Denver. Even the

wetter, Midwestern and Eastern states have enacted watering bans, or are considering doing so.

2. Reduce pesticide use and develop biological controls. Concerns about the impact of pesticides on human health have resulted in pesticide bans in some local communities. Toronto banned the use of pesticides on lawns, parks, golf courses and commercial properties. Additionally, more jurisdictions in Canada and the United States have enacted partial bans or are considering banning the use of pesticides on turf.

3. Reduce fertilizer use and protect surface water and groundwater. Nitrate and phosphorus pollution of waterways and groundwater supplies have prompted some states and jurisdictions to require reduced fertilization of turfgrass. Minnesota recently passed regulations restricting the use of phosphorus on turf because of the possibility of surface water and groundwater contamination. To improve and protect the quality of Chesapeake Bay water, the Maryland legislature passed nutrient management guidelines for turf. Other states are considering adopting similar proposals to regulate turfgrass fertilization.

4. Safety concerns on athletic fields and in parks. Overuse of athletic fields and budget cuts for maintenance have resulted in unsafe conditions on some fields. A recent report stated that 25 percent of injuries in high school soccer are playing surface-related. In some cases, these unsafe conditions lead to parental concern and action. The Parents United for D.C. Public Schools commissioned a law firm to study and report on public school athletic facilities in the District of Columbia. Their reports states: "D.C. public schools fail to meet the most basic standards of adequacy for athletic programs and facilities ... and run the risk of millions of dollars in legal liability in the almost certain event of a student-athlete's serious injury."

5. Increase turfgrass genetic diversity. Turfgrass germplasm diversity needs to be increased and preserved for future generations. Germplasm especially important are plants with interesting genetic traits that might be useful in developing improved grasses. Germplasm improvement is a critical component of plant science and having a wide range of germplasm available is important for breeding better grasses. Unlike most other crop species, little turfgrass germplasm is collected and placed into public germplasm banks. Having less germplasm in the public domain also increases the potential of a major disaster, such as a new disease or

insect wiping out turfgrass stands.

6. Better documentation of turfgrass's benefits. There's little understanding among the general public about the importance of turfgrass in protecting soil and water, heat reduction, dust control, etc., even though there is data to support these claims. One avenue to obtaining and releasing information about turf's benefits is through large, coordinated research programs.

Government help

The federal government, through the USDA, funds basic and applied research on many crops and for many agricultural industries. The USDA's Agricultural Research Service is the in-house research arm of the USDA and has a \$1 billion annual budget and 2,100 scientists at 100 locations. ARS has significant programs for corn, wheat, soybeans, fish farming, and floral and nursery crops. Could the same be done for the turf industry?

Turfgrass research initiative

The National Turfgrass Research Initiative is the blueprint for a coordinated national research program to be funded through USDA-ARS and conducted through a coalition including the USDA, the university research community and the turfgrass industry. NTRI discusses the industry and the crucial need for this research and identifies priority research goals and key programs.

Federal attention to the issues and research goals identified in NTRI is critical to the continued success of the turfgrass industry. A basic premise of NTRI is that federal research dollars should be directed toward programs that can't be funded adequately by states or industry, particularly for programs where the federal government can play a coordinating role not possible for any other entity. Certain research such as increasing the understanding of basic biological processes is too risky or long-term for private industry to fund. Other types of research, such as environmental research, are appropriate for government support because they clearly benefit society at large.

For NTRI to get off the ground, funding has to be appropriated by Congress. NTRI proposes \$450,000 be appropriated for each research scientist position within USDA-ARS — \$300,000 to hire a researcher and staff and purchase equipment at an ARS location, and \$150,000 for that researcher to conduct cooperative research with universities. If NTRI is fully funded (\$32.4 million),

(continued on page 57)

(continued from page 52)

this will allow ARS to hire 72 turfgrass researchers and allocate more than \$10 million annually to universities through cooperative research.

NTRI will be implemented by research teams that will frequently involve multiple research locations spread throughout several states to ensure the right mix of scientific skills is available for a systematic research strategy. The research dollars will be coordinated by and through the ARS budget. In turn, ARS will work with university and private industry researchers to establish research teams.

NTRI envisions that research should seek to adapt results from other agriculture or biological research areas, rather than starting anew for each project. In addition, all aspects of grassland agriculture will benefit from a coordinated, national effort to collect, evaluate and preserve grass germplasm.

NTRI consists of six broad research areas: water, germplasm, pests, environment, soil

and integrated turf management. Within each component are several research priorities. For instance, in the water component, there's a need to improve turfgrass water-use efficiency and irrigation efficiency and to investigate the use of recycled or saline irrigation water. The germplasm component focuses on collecting valuable germplasm, developing a better understanding of the genetic systems and genes in turfgrass species, and using this material and knowledge to develop and release improved germplasm leading to improved turfgrass cultivars.

Progress to date

Throughout the past five years, the National Turfgrass Federation had many meetings and contacts with many government officials. It has stressed the size and scope of the turfgrass industry, the important issues facing the industry and the need for federal research dollars to solve these problems.

The NTF convinced Congress to allocate funding for ARS to hire a research scientist in Maryland, conduct cooperative research

in Utah and hire a full-time research scientist in West Virginia. And in the ARS budget proposed by President Bush for fiscal year 2007, an additional \$1.88 million has been allocated for turfgrass research. If the additional funding is still in the final budget passed by Congress later this year, this will allow ARS to hire three to four researchers and develop cooperative projects with universities focusing on turfgrass water use issues. The NTF also is asking Congress to include funding for five additional research positions.

To learn more about NTRI, visit www.turfresearch.org or www.turfinitiative.org.

Contact your senators and representatives in Congress to let them know the importance of federal funding for turfgrass research by USDA-ARS. Ask them to support funding for the National Turfgrass Research Initiative. Ask your local and state turfgrass associations and supplier companies to make a contribution to the National Turfgrass Federation. The future of the turf industry is at stake. GCN



Agricultural engineer Kevin King examines discharge water from a turfgrass system in central Ohio as part of a research program designed to assess how land uses and management affect water quality.

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