USGA Davis

MIKE DAVIS PROGRAM FOR ADVANCING GOLF COURSE MANAGEMENT

GUIDELINES
2025 CALL FOR PROPOSALS

PURPOSE

The USGA Davis Program develops and supports non-biased research for a healthier environment, community, and playing conditions for the game of golf. Research that advances scientific knowledge or provides agronomic, economic, or environmental solutions to golf's stakeholders will be considered. Proposals will be prioritized based on the 2025 Call for Proposals on our website (https://greensectionresearch.smapply.org/prog/mike_davis_program_for_advancing_golf_course_management/), the following strategic initiatives, and the list of additional research priorities and considerations on pages 2-4 of this document.

STRATEGIC INITIATIVES

1. Conserve and Protect Water Resources

Deliver optimal course conditions while conserving and protecting water resources with new strategies and technologies. Specifically, proposed research should:

a. Quantify water savings and the return on investment from the combination of new technologies, cultivars, and management strategies.
b. Develop novel management programs and tools to mitigate the stresses of poor-quality irrigation water.
c. Develop best management practices to protect surface and ground water quality.

2. Optimize Sustainable Golf Course Management and Playing Conditions

Create environmentally sound golf course agronomic programs that enhance golfer experience and protect the environment. Specifically, proposed research should:

a. Develop technologies and management strategies that improve resource efficiency and mitigate stress.
b. Optimize maintenance efficiency by reducing golf course disruption and reliance on resources.
c. Quantify ecosystem services and community benefits provided by golf courses.

3. Identify and Develop Plant Materials for Golf Courses

Develop plant materials for golf courses. Specifically, proposed research should:

a. Identify and improve low-maintenance plant materials for major climatic regions.
b. Deliver cultivars that optimize region-specific growing conditions and mitigate stresses for all playing surfaces.
c. Foster the development of best management practices and technologies for rapid establishment of improved plants.

4. Advance the Adoption of Underutilized Strategies and Technologies

Demonstrate and quantify the agronomic, economic, environmental, and golfer experience costs and benefits of adopting scientifically proven, but underutilized technologies or strategies at scale. Water conservation and labor efficiency are of particular interest. Specifically, proposed research should:

a. Develop rigorous case studies by documenting important metrics before and after the adoption of scientifically proven strategies with replicated plots on cooperating golf courses. Cooperation with a golf facility is required.
b. Use existing literature to conduct meta-analyses to clarify existing science and better quantify the benefits of best management practices.

ADDITIONAL RESEARCH PRIORITIES

Important Research Topics

USGA leadership and our Davis Program advisory committee have suggested the following specific priorities to help investigators refine proposals to this call. Note that the priorities in blue text also are called out as our key priority research areas in the accompanying call for proposals. Beyond this exception, these priorities do not replace the call for proposals or the previous strategic initiatives. Rather, they should help develop specific hypotheses and research objectives that fit within the four initiatives.

Table 1. Examples of important research topics.

Topic	Description
Turfgrass persistence under multiple stresses	Intensively evaluate the establishment and durability of important turfgrass species and newer cultivars under various soil water potentials (and with other interacting environmental stresses). Projects would ideally include multiple locations with diverse environmental conditions, and potentially utilize large, replicated plots on golf courses.
Improve the adoption of resource-efficient cultivars	Demonstrate compelling reasons to adopt (or not to adopt) new turfgrass cultivars. Potential projects could seek to define the traits consumers most desire or to improve establishment strategies to ensure a successful renovation to a resource-efficient cultivar over a shorter timeframe.
Integration of decision support tools to advance outcome-based turfgrass management	Develop and demonstrate the resource conservation and playability benefits of the integration of existing and emerging technologies (e.g., sensors and sensor networks, remote sensing platforms, predictive modeling, automation, etc.). Water, fertilizer, and pesticide conservation are especially important, as is better scheduling disruptive practices such as cultivation.
Common garden experiments focused on phenotypic plasticity	Advance consortia to phenotype sequenced genotypes of important turfgrass species over different environments to advance the identification of genetic bases of important and adaptive traits.
Pre-breeding for stress tolerances	Evaluate germplasm of important turfgrass species to identify new sources of stress-tolerance traits and subsequently develop new breeding lines to advance the incorporation of wild germplasm into turfgrass breeding programs.
Cool-season grass breeding	Advance key traits for species important to golf (e.g., heat, drought, salinity, shade, and disease tolerances for Kentucky bluegrass and creeping bentgrass).
Labor efficiency	Finding and retaining skilled labor is an enduring challenge for golf course superintendents. The USGA is interested in research that advances the efficient use of labor, especially by quantifying labor needs and the benefits associated with adopting new strategies or technologies.
Agronomic components of golfer expectations	Precisely defining the ways agronomic decisions affect golfer experiences will help golf course superintendents optimize playing conditions and the use of resources such as labor, water, fertilizers, pesticides, and energy.

Advancing the Adoption of Proven Strategies that Conserve Irrigation Water (15.30.45)

The use of water resources for golf course irrigation in increasingly scrutinized due to declining availability and increasing cost. The USGA has committed $30 million through the 15.30.45 initiative to help the industry find economically viable strategies to reduce golf's use of water. Although fundamental research will continue to contribute, we believe there are existing, scientifically proven, and underutilized strategies that can also advance this goal. Therefore, our strategy is to demonstrate these proven strategies on golf courses to create rigorous case studies to explicitly detail their costs and benefits. By showcasing the efficacy of new technologies at scale, we will encourage their future adoption in the industry.

Investigators interested in these types of projects should submit proposals through strategic initiative number 4. A complete description of our thinking around the most important strategies in this initiative are available at the link provided above. Although all suitable proposals will be considered, for this call, we are most interested to advance projects in the areas explained in table 2. As opposed to our traditional research grants, we expect that a portion of funding for these projects may need to support costs for the cooperating golf course to implement a strategy (see more information in the funding guidelines section on page 5).

Table 2. Specific research priorities to advance the 15.30.45 water conservation initiative.

Topic	Description
Develop golf course case studies to support the *USGA Water Conservation Playbook*	Modern case studies are needed to demonstrate the return on investment and water conservation potential of the strategies described in our new water conservation playbook. We are most interested to evaluate the following under golf course conditions: • Evaluate fertilizers, soil surfactants, PGRs and colorants, or their combination. • Establish trials on salinity management, such as comparing the practical utility of using leaching requirements vs. reclamation leaching based on portable and in-ground soil sensors. • Developing a comprehensive resource for the regional selection of drought-resistant grasses, forbs, and other plants that might be used to replace turfgrass. Golf course trials are also needed to better document establishment strategies, general management and weed control, and persistence over time.
Irrigation system maintenance	Evaluate the benefits of conducting routine irrigation system maintenance, such as the servicing of sprinkler heads, on a golf course. Projects could quantify potential water savings or improved playing conditions.
Modernization of irrigation system auditing	Irrigation audits are an important part of system maintenance. However, they are time consuming and not performed as often as necessary. Various remote sensing technologies may advance the efficiency of system audits.
Drought tolerant grasses	Demonstrate best renovation practices as well as the benefits from adopting new drought-resistant cultivars of both cool- and warm-season turfgrasses on golf course fairways and rough. We are most interested in large plots subject to play.
Reducing winter overseeding	Water conservation will be obvious when reducing winter overseeding, but there are risks associated with the decision. We need to better quantify these risks (and benefits beyond water conservation), evaluate and better quantify mitigation strategies, and better understand how and where this strategy can appropriately advance water conservation goals or mandates.
Water-use components of golfer expectations	Advance our general understanding of how golfers feel about water conservation and what limits the adoption of new water conservation strategies in golf courses.

IMPORTANT CHARACTERISTICS OF U.S. GOLF COURSES

The following characteristics of U.S. golf courses further influence research priorities. When defining opportunities for resource efficiency or improved golfer experience, investigators should consider the footprint and relative budget share of golf course features and the reach of proposed research on regional and national scales.

Table 3. The median acres and corresponding annual maintenance budget for a subset of land-use features of 18-hole golf courses in the U.S.

Putting greens	Tees	Fairways	Rough	Bunkers	Water features	Natural areas	Total facility
Median facility acres[1]							
3.3	3.1	27.1	49.0	2.2	5.7	23.3	146.0
Average annual maintenance costs per acre[2]							
$68,469	$7,902	$8,604	$1,762	$40,507	-	-	-
Estimated annual maintenance costs							
$225,948	$24,496	$233,168	$86,338	$89,115	-	-	-

[1]Median-acre data source: GCSAA. 2023. *Golf course environmental profile phase III, volume III: Land-use and energy practices on U.S. golf facilities:* gcep-property-report-phase-3-final-update-6-27.pdf (gcsaa.org). Only a subset of facility land-use features are included.
[2]Budget-data source: USGA and R&A. 2020. Distance insights report: DIPR-FINAL-2020-usga.pdf. Data are from a survey of 37 U.S. golf courses and are only meant to illustrate differences in relative maintenance costs among important playing surfaces. Median acreage and per acre annual maintenance costs were multiplied to estimate annual relative costs.

Table 4. Percent of projected total acres of turfgrass species on U.S. golf courses.

	Annual bluegrass	Creeping bentgrass	Fine fescue	Kentucky bluegrass	Perennial ryegrass	Tall fescue	Bermuda	Zoysia	Seashore paspalum
	Percent of projected total golf turf acres within regions[1]								
North Central	13	19	3	48	13	4	0	0	0
Northeast	21	20	4	28	18	9	0	0	0
Pacific	43	7	3	2	35	1	8	0	0
Southeast	0	1	0	0	0	0	92	2	4
Southwest	4	3	0	8	10	0	71	0	5
Transition	5	9	1	9	4	20	44	8	0
Upper West/Mountain	17	6	3	50	20	1	2	0	0
	Percent of projected total golf turf acres in the U.S.								
United States	11	11	2	23	11	7	32	2	1

[1]Data source: GCSAA. 2023. *Golf course environmental profile phase III, volume III: Land-use and energy practices on U.S. golf facilities:* gcep-property-report-phase-3-final-update-6-27.pdf (gcsaa.org). Projected-acre data were used to calculate proportions of each turf species within regions and for U.S. totals.
[2]Within columns, blue fill indicates species outperforming in a region compared to U.S. totals.

GUIDELINES FOR PREPARING PROPOSALS

Submit your proposal through our program website (https://greensectionresearch.smapply.org/prog/lst/) by Wednesday, May 14, 2025. An account will have to be created for whomever submits the proposal and it is acceptable for a university grants officer to submit the proposal on an investigator's behalf. Email submissions or proposals that do not meet the following guidelines will not be considered.

Research Proposal Format and Timetable

Page 1: Use the accompanying "2025 USGA Davis Program CFP Executive Summary Template" to provide a one-page summary of the full proposal. Projects that document measurable implementation of results for economic, environmental, or playability benefits will be given a higher priority. Address the following:

- *Project Description*. Introduce the research problem, rationale for the research, and a summary of the research objectives for the proposal.
- *Potential Benefits for the Golf Industry*. Summarize the scientific knowledge this research will produce and how you think results will affect golf course management. Identify the target audience and explain how this research could be implemented to produce *measurable* economic, environmental, or playability benefits.
- *Deliverables*. *Specify measurable deliverables for how research results will affect the previously listed strategic initiatives and improve the golf industry*. Examples include improved sustainability or management techniques, decision-support tools, peer-reviewed journal articles, trade magazine articles, other educational materials, plant varieties, improved germplasm, interesting genes, etc.
- *Budget Summary*. Complete the annual funding request and the total amount for the research project. Note specific requirements in the 'Funding Guidelines' section below. Indicate the status (i.e., *Requested* or *Secured)* and level of support the project will receive from other organizations.

Pages 2 through 6: Format up to five pages with one-inch margins and minimum font size of 12 points. Include the following:

- A description of the research question and scope of the problem, including a brief literature cited section for relevant previous research.
- The objectives of the project, research methodology, available research and field facilities, reasonably expected results by the end of the project, and a brief timeline. Ensure data collection methods are suitable for research objectives (e.g., visual estimates of disease incidence at two-week intervals are unlikely to be useful for accurately modeling disease risk).
- A table that contains the project budget. Note specific requirements in the 'Funding Guidelines' section below.
- A brief, one-paragraph biographical description of the principal investigator and cooperating researchers.

Summary Slide: Use the accompanying "2025 USGA Davis Program CFP Summary Slide Template" to summarize your project for the research committee. The slide will be used during the review meeting when the committee discusses proposals. You must follow the template and include the project title, principal investigator name, project objectives, funding request, number of affected golf courses, and one *optional* image, table, or figure.

Funding Guidelines

Proposals will be prioritized for funding based on the potential to advance our research priorities and initiatives and the validity of methodology. Funding may be requested for one to three years, and the project budget must clearly justify requested funding.

- The USGA typically allocates $2 million annually to support approximately 70 ongoing and new projects. Approximately $400,000 per year is budgeted to support new projects in 2026, 2027, and 2028 (i.e., $1.2 million over the next three years).
- We anticipate investing 50% of this funding in 1-2 projects to advance at least one of the three priority research areas identified in the 2025 Call for Proposals. Priority research proposals may request up to $100,000 per project year, and requested funding may be split over multiple institutions.
- Remaining funding will support our traditional open call for proposals that is guided by the strategic initiatives and research priorities listed in this document. These proposals may request up to $50,000 per project year. Projects over multiple institutions may request up to $75,000 per year.
- Projects submitted to advance the 15.30.45 initiative may be considered through either funding pool.

USGA funding:

- May be used for graduate student research support, graduate student tuition, technician salaries, and other labor costs. Reasonable principal investigator salary support also is allowable.
- Shall not be used for capital expenditures or construction costs. The exception is 15.30.45 demonstration projects, which we expect to potentially include these costs.
- Will not support overhead or administrative costs exceeding 16% of total direct costs. Indirect costs for collaborative projects over multiple institutions should be calculated separately in the budget and not exceed 16% of the annual budget for each institution.
- Will not support overhead or administrative costs for grants of $10,000 per year or less. The USGA is a not-for-profit, [501(c) 3] association and is vitally interested in providing the maximum direct support to research from available funds.

All investigators will be updated about proposals in September. This initial decision will notify the authors of unsuccessful proposals and indicate to others when a final decision is expected for their proposal. Final funding decisions likely will not be communicated until January 2026 (Figure 1). Agreements for approved projects will be written for one to three years; however, a

continuation of the project shall be determined annually, and written notice shall be given. The decision to continue will be subject to performance and progress toward meeting the stated project objectives. After a signed agreement is completed, funding will begin in the project year of January 1, 2026 through December 31, 2026.

Figure 1. Timeline for the 2025 Call for Proposals. *NOTE:* Should funding announcements be delayed for any reason, you will be notified in September 2025 and updated regularly until funding is announced.

PROPRIETARY RIGHTS

USGA policy is that all technology, inventions, and writings developed or first made in the performance of the research project and any patents, plant variety protection, and copyrights therein shall become the property of the university. However, the USGA, in effect, shall have the right of first refusal if the university elects not to file a patent or plant variety protection application on any invention conceived or reduced to practice during the research project. It is the policy that the USGA receives up to 50% of all royalties (less patenting and licensing costs) or the monetary equivalent of any other consideration received by the university or the USGA from the sale, licensing, or sub-licensing of proprietary rights. Negotiations shall consider financial support, intellectual contributions, resources committed, and other relevant factors in the development and mutual agreement on the sharing of royalties. All royalties received by the USGA are used to perpetuate turfgrass and environmental research.

REPORTING REQUIREMENTS

The following reports and articles are due by the dates indicated. Failure to fulfill reporting requirements will result in the withholding of funding. Templates will be provided for annual reports, final reports, and summary presentation slides described below.

1. An annual report and summary presentation slide are due by December 1st of each project year. Annual reports should be two to three pages and describe in reasonable detail the research initiated, progress, and results to date. The information in this report will be used in the USGA's "Davis Program Progress Reports" published each year on the USGA website. All reports also will be available online as part of the Turfgrass Information File.

2. A final report is due at the conclusion of the project. The final report should summarize the entire project, include examples of how results will be implemented, and estimate the potential economic impact of the research on the golf course industry. Final reports may be published on a USGA website. If a graduate student thesis or dissertation is a result of the funded research, a copy must be submitted to the Turfgrass Information Center at Michigan State University.

At the conclusion of the project, a manuscript must be submitted to a scientific journal for peer-review and consideration for publication. A copy of this manuscript also should be sent to cthompson@usga.org. If accepted, the USGA requires investigators to pay the necessary fees for the article to be open access.

The USGA has the first right of refusal to trade articles published on USGA-funded research. During the research project or at the conclusion of the project, at least one article for the *Green Section Record* or an acceptable trade magazine is required.

CONTACT INFORMATION

Daniel O'Brien, Ph.D.
Research Manager, Green Section
479.861.1796 | dobrien@usga.org

Cole Thompson, Ph.D.
Director of Research, Green Section
908.396.1562 | cthompson@usga.org

Matteo Serena, Ph.D.
Senior Manager, Irrigation Research and Services
575.932.9645 | mserena@usga.org