

Q&A: Green notes irrigation progress

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The take-home message for superintendents is, if they wish to conserve water, their focus should be on managing the turfgrass for rooting, irrigation to replenish water in the root zone and extending the time between irrigation events.

GCN: Has there been any less emphasis on conserving water in California now that rainfalls are back to normal or even above-normal amounts?

RG: Yes and no. Yes, water is available and I am not currently aware of situations where water availability is a limiting factor for the maintenance of golf courses.

However, even during these "good times," the environmental horticultural industries, including the golf industry, are working with water districts and local and state water agencies to define fair and responsible water use.

Working together for the good of all, and the respectful communication process is an important step, along with general agreement that water allocations should be on the basis of ETO and land area.

Fortunately for California, we have a statewide system of weather stations that determines ETO for most major locations in the state.

The expanded use of effluent is also noteworthy in terms of conservation.

GCN: Can you describe the work you are doing on summer stress on bentgrass and bluegrass varieties on Southern California courses?

RG: Our research focuses on the major factors involved in the summer decline of creeping bentgrass and annual bluegrass putting greens: long-term exposure to air and soil temperatures above the optimum range for growth, with the most serious result being root dysfunction; the lack of control of the root-zone soil, air and water relationship with the most serious result being poor soil water infiltration/percolation and soil aeration; and the more situational factors, such as diseases, nematodes and insects that attack weakened, stressed-out greens, salt accumulations within the root zone due to limited soil water drainage or improper leaching practices and cultural practices that are not helpful to the plants' ability to tolerate summer stress syndrome.

GCN: You studied wood alcohol as a possible carbon source to help putting surface plants survive under harsh growing conditions. What were the results?

RG: We did not observe positive nor negative effects, in terms of visual turfgrass quality or clipping yields, when methanol solutions were applied on a

creeping bentgrass putting green during the summer in Palm Springs. It would be unfair to conclude carbon fertilizations have no merit.

We do not have sufficient data and I would be interested in conducting similar research.

GCN: Can you briefly describe your work involving varying concentrations of iron and water injection aerification methods?

RG: The iron fertilizations and summer cultivations with a Toro Hydroject have a common theme: practices to help alleviate root-related problems associated with the summer decline of creeping bentgrass/annual bluegrass putting greens.

Though it is not new, we have shown iron applications are beneficial for increasing the visual turfgrass quality of a bentgrass putting green located in Palm Springs during summer. This was especially true for foliar applications of iron, which may support the concept of root disfunction and uptake during hot summers.

There was a solid trend for increased root mass density and turfgrass stand persistence during summer due to iron applications and/or biostimulants.

The Hydroject work is aimed at maintaining soil water infiltration and percolation and soil aeration. Constant high soil water levels in the vicinity of the plant crowns can indirectly weaken and kill plants.

Scientific reports suggest increased soil aeration may help roots compensate for high soil temperatures. We completed one study.

Unfortunately, field infiltration rates and soil aeration porosity were too good to improve via summer cultivations.

We will initiate a two-year study on a more representative location and the irrigation water will have a relatively high salt content.



GCN: What have you learned from the three UC-Riverside bent-grass evaluation plots scattered around Southern California?

RG: Last fall, we established the same, three-year creeping bentgrass culti-

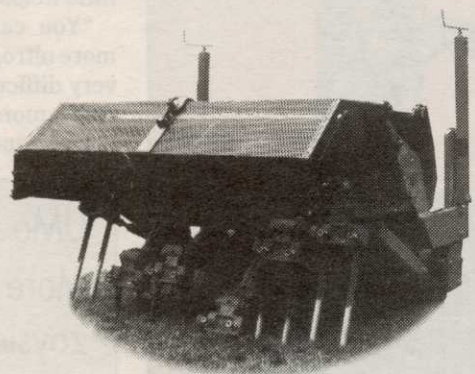
var putting green trials at The Springs Club in Rancho Mirage (desert location), Industry Hills Golf Course (midland location) and Rancho Santa Fe Golf Club (coastal location).

We are evaluating 20 of the same creeping bentgrass genotypes and/or blends in the desert climate where heat is the major issue and there is generally no annual bluegrass; in a midland climate where most putting greens are a mixture of creeping bentgrass and annual bluegrass, which suffers greatly in summer; and coastal climate where most greens are a mixture of creeping bentgrass and annual bluegrass and superintendents can manage annual bluegrass because of the mild climate.

The data are too preliminary to report, but it will be interesting to observe the genotype x environment interactions which may lead to location-specific creeping bentgrass cultivar and/or blend recommendations.

GCN: What other research are UC-Riverside researchers involved in?

RG: We are doing additional research on best-management practices for groundwater protection for both putting greens and fairways; NTEP trials for bermudagrass, zoysiagrass and buffalograss; N product evaluations for fairway bermudagrass; improved practices for transitioning overseeded bermudagrass putting greens; physiological investigations involving Primo applications; the molecular, physiological and whole-plant basis for leaf-firing resistance due to drought among bermudagrasses; and research involving weed, disease, insecticide and nematode management and control.



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Zoysiagrasses the emphasis of UCal-Riverside scientists

The University of California, Riverside has been one of the leading universities in turfgrass research with particular emphasis on zoysiagrass, according to Turfgrass Research Agronomist Robert Green.

Environmental Horticulture Extension Specialist Dr. Vic Gibeault and Superintendent of Agricultural Operations Steve Cockerham are primarily responsible, Green said, for the evaluation and release of two new patented, hybrid vegetatively propagated zoysiagrass cultivars, DeAnza and Victoria, Green said.

Dr. Vic Younger, a former UC Riverside researcher, was responsible for the original cross and progeny and selected for fall color retention and a desirable leaf texture.

Gibeault and his associates recently evaluated 28 zoysiagrass genotypes at Riverside and Irvine for fall color retention. DeAnza and Victoria rated highest along with DALZ 8052, according to Green.

DeAnza and Victoria have poten-

tial to be used on fairways and tees and should possess a lower overseeding requirement than bermudagrass (where overseeding is practiced).

DeAnza and Victoria management requirements will most likely be similar to the management requirements typical of Zoysia spp.

Cockerham and his associates are doing additional research, subjecting turfgrass to sports traffic under light restrictions such as shade.

Perennial ryegrass is the cool-season grass and zoysiagrass the warm-season grass with the highest combination of durability and shade tolerance, Green said.

New UC-patented zoysiagrasses have high potential with the needed growth rate necessary for recovery from sports traffic injury to go along with the shade tolerance, according to Green.

Research is continuing on the optimum culture and management of turf for use in light-restricted sports situations.