

# Better Turf Thru Agronomics

UCRTRAC Newsletter, January 2002

## New UC Riverside Turfgrass Research Site in the Coachella Valley Will Benefit Industry



*Overseeding studies are underway at the Coachella Valley Agricultural Research Station.*

The UC Riverside Turfgrass Research Program has established a new research site in the Coachella Valley primed to do important work for the region's \$2 billion turf industry.

Already underway are studies on 10 new grasses for fairways and general use turf in the desert and two overseeding studies on golf course fairways. In the planning stages are an irrigation study and research on bermudagrass, said **Steve Cockerham**, Superintendent, UCR Agricultural Operations. His department includes the Coachella Valley Agricultural

Research Station (CVARS) in Thermal where the new turf research site is located.

Industry partners include West Coast Turf, Textron/EZ-Go/Jacobsen, and Toro Irrigation.

The Dean of the College of Natural and Agricultural Sciences (CNAS) at UCR provided start-up capital and UCR's Agricultural Operations Department provided labor for plot construction. At present, more than 32,000 square feet of turf are established at CVARS.

The research program at CVARS will be coordinated with education activities provided by UC Cooperative Extension and the College of the Desert, a community college in Palm Desert.

Members of UCRTRAC will benefit from the additional turf research at UCR's Coachella Valley facility, said **Robert Green**, UCR Turfgrass Research Agronomist and UCRTRAC delegate.

### Coachella Valley Overseeding Studies

Both overseeding studies focus on reducing the spring transition period – the time when the perennial rye overseed grass competes with bermudagrass – which will facilitate a more rapid bermudagrass takeover on golf course fairways and putting greens, said **Steve Ries**, UCR Staff Research Associate.

One overseed study modifies irrigation regimes and the other manipulates spring-applied cultural practices (vertical mowing, scalping, nitrogen fertilization, and a plant growth regulator treatment) to determine which mix favors a more rapid spring transition from the cool-season perennial rye blend to the warm-season bermudagrass on fairways in the Coachella Valley.

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## UCRTRAC Turfgrass Research Golf Tournament

May 9, 2002

SCGA Members' Club  
Murrieta

Tournament Office

(800) 500-7282

email:

[golf@turfCouncil.org](mailto:golf@turfCouncil.org)



Contact **Steve Porus** at the Tournament Office for a registration form. Proceeds benefit turf research and education.

# Nitrogen and Potassium Are Significant Inputs for Traffic Tolerance on Creeping Bentgrass Putting Greens

In an ongoing three-year study to evaluate the influence of cultural practices – nitrogen and potassium fertilization, core cultivation, and vertical mowing – on the traffic tolerance of an experimental creeping bentgrass (*Agrostis palustris* var. 'Cobra') putting green established on a sand root zone at the UC Riverside turfgrass research plots, preliminary, first-year results indicate the following:

- Equal fertilization rates of nitrogen (N) and potassium (K) at 8 lb/1000 ft<sup>2</sup>/yr divided into monthly treatments provided the best traffic tolerance, significantly better than nutrition treatments that omitted K. N fertilization had the predominant effect, but N alone did not rate highest for visual quality or clipping yield, the two measures of traffic tolerance used.
- Combining the four cultural practice treatments gave the best performance in January - June. Vertical mowing should probably not take place in August, the UCR researchers said.
- Under low N fertilization (2 lb/1000 ft<sup>2</sup>/yr divided monthly), the plots receiving mechanical treatments, especially core cultivation, were ranked lowest for visual quality in the July to January period, probably due to slow recovery from injury.

To simulate the pattern of actual wear and tear on Southern California golf courses, traffic was applied with a self-propelled golf traffic simulator custom designed at UCR to provide the equivalent of 50,000 rounds of golf/yr, with two-thirds occurring during April-October.

The traffic simulator is constructed of differential sliprollers textured with scarified steel hemispheres (notched carriage bolt heads). (UCR's first putting green traffic simulator was featured in the March 1997 issue of *Better Turf Thru Agronomics*.)

The fertilizer nutrients N (urea, CO(NH<sub>2</sub>)<sub>2</sub>, 45-0-0) and K (potassium sulfate, K<sub>2</sub>SO<sub>4</sub>, 0-0-50) are applied monthly. Core cultivation and vertical mowing are performed three times/yr.

Treatments began on July 5, 2000 and will continue for three years. Visual quality is measured on a scale from 1 to 9, with 1 being extremely poor and 9 being excellent. The putting green was seeded in June 1999.

Putting greens in Southern California are planted to creeping bentgrass, such as the 'Cobra' variety in this experimental study, but in midland and coastal climates, putting greens end up a mixture of creeping bentgrass and annual bluegrass (*Poa annua*) because of the latter's invasive growth habits. Superintendents managing putting greens at Coachella Valley golf courses have fewer problems with *P. annua* because desert heat is a major environmental factor that limits its growth.

Research cooperators are **Steve Ries**, UCR Staff Research Associate; and UCRTRAC delegates **Steve Cockerham**, Superintendent, UCR Agricultural Operations; and **Vic Gibeault**, UCR Cooperative Extension Environmental Horticulturist.

## COACHELLA VALLEY SITE

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### Variety Studies for Fairways and General Use Turf

UCR turf scientists are evaluating the performance characteristics of selected cultivars of bermudagrass, zoysiagrass, and seashore Paspalum using cultural practices that simulate management of golf course fairways and general use turf at schools, parks, and residential lawns in the Coachella Valley. An annual overseeding treatment will be evaluated for performance and transition.

Under study are 6 hybrid bermudagrasses (Tifgreen, Tifway, Tifway II, Bullseye, Tifsport, and an experimental variety), 2 seeded bermudagrasses (Princess, Sultan), zoysiagrass (De Anza), and seashore Paspalum (Sea Isle I).

This is the first time Tifsport and Sea Isle I are being tested together under UC experimental conditions in California, said **Vic Gibeault**, UCR Extension Environmental Horticulturist.

### Putting Green Variety Studies

New and existing cultivars and experimental lines of bermudagrasses and seashore Paspalum are being evaluated for putting green performance under Coachella Valley environmental conditions and management practices. An annual overseeding treatment is being imposed.

Under study are 9 hybrid bermudagrasses (MS Supreme, TifEagle, Tifdwarf, Tifgreen, Mini-Verde, Floradwarf, Champion, and 2 experimental lines) and seashore Paspalum (Sea Isle 2000).

This is the first time TifEagle and Sea Isle 2000 are being tested together in California, Gibeault said.

## Amending Turf Soil for Sports: Optimal Amount of Green Waste Compost Not Clear Yet

**UCR** turf scientists recently completed the first year of a multi-year study to evaluate the optimal amount of green waste compost to amend turf soil on a sports field planted to bermudagrass.

To date, turf quality has improved insignificantly with the amendments applied, but surface impact absorption has increased.

"Research needs to be done to determine the optimal concentration and incorporation depth of compost amendments that will be an asset to sports turf and other turfgrass installations. The turf industry would benefit, as well as the recycling industry and athletes who play on amended fields," said **Steve Ries**, UCR Staff Research Associate. Principal investigator is **Steve Cockerham**, Superintendent, UCR Agricultural Operations.

"Our research can lead to green waste amendment standards for sports field and park construction and renovation. Then, green waste suppliers can respond to turf industry needs," Ries said.

In the UCR study, composted green waste was incorporated into the top 4 inches of the sandy loam soil in early August 2000 at 3 rates (4, 8, and 12 yd<sup>3</sup>/1000 ft<sup>2</sup>). Seeded bermudagrass (*Cynodon dactylon* 'Arizona') was established 2 weeks later. Simulated sports traffic began in May 2001 at a rate of 3 passes/2 wk. Plots are irrigated at 80% ET<sub>o</sub>, with run times adjusted monthly. Fertilizer is applied every 6 wk at a total of 5 lb N/1000 ft<sup>2</sup>/yr. The study includes unamended, no traffic control plots.

Visual turf quality, surface hardness, grass growth, including root mass, surface elevation, and disease incidence are being measured.

Thousands of tons of compost are available for use in turf due to the green waste pick-up programs implemented by municipalities all across the state to comply with the solid waste reduction requirements of the Integrated Waste Management Act.

The Act mandated a 50 percent reduction in solid waste that each county and city sent to landfills by the end of last year, using 1990 as the base year, and further specifies that the solid waste reduction be accomplished by (i) composting, (ii) recycling, and (iii) source reduction.

In a related three-year study, UC farm advisors in the Central Valley evaluated green waste topdressings and found consistently higher bermudagrass turf quality ratings and lower weed populations when one-fourth inch of composted green waste was topdressed quarterly on municipal turf, a rate equal to 8 lb N/1000 ft<sup>2</sup>/yr. The site was a lawn area at California State University, Fresno used occasionally as a practice band field. (For details about this green waste topdressing study, please see the January 2001 issue of *Better Turf Thru Agronomics*.)

Funding for the UCR study is provided by the UC Division of Agriculture and Natural Resources, California Biomass, Inland Composting and Organic Recycling, and UC Riverside Agricultural Operations.

Cooperators with Cockerham and Ries are **Janet Hartin**, UC Farm Advisor, San Bernardino and Los Angeles Counties; **Rudy Khan**, UCR Staff Research Associate, and **Vic Gibeault**, UCR Extension Environmental Horticulturist.

## New UCR Urban Plant Pathology Specialist



Frank Wong

**F**rank Wong, a native Californian, is the new UC Cooperative Extension (UCCE) Specialist at Riverside who focuses on turf and landscape pathology in the urban environment. Wong's position represents an expansion of the turf program at UCR. Wong began at UCR on Nov. 1, 2001.

Wong's research program will focus on the practical control of turfgrass and landscape diseases. He has a special interest in chemical control strategies and fungicide resistance.

"I am looking forward to developing a strong turfgrass pathology program and providing as much help as I can for UCCE Farm Advisors, superintendents, and growers," Wong said.

Last month, Wong was a featured speaker at the 43rd Annual Turfgrass and Landscape Institute & Trade Show, jointly sponsored by UCCE and the Southern California Turfgrass Council. His topic was "Fungicides for Disease Control in Turf and Landscape: Use and Resistance Management Strategies."

Wong grew up in Fresno and was educated at UC Davis (B.S. in Biochemistry) and Cornell (Ph.D. in Plant Pathology) and recently completed a post-doctoral position at BASF, sponsored jointly with North Carolina State University.

Wong intends to collaborate closely with UC Farm Advisors and UCRTRAC delegates in conducting research for the betterment of the turf industries in Southern California.

## Buffalograss and Zoysiagrass: Hot Picks for Functional, Low Input Sites

*Buffalograss and zoysiagrass maintained high turf quality ratings at 40% ET (warm-season) and 70% ET<sub>ws</sub>, respectively.*

Buffalograss and zoysiagrass significantly outperformed tall fescue under experimental conditions that simulated low-input management practices suitable for functional turf sites, such as out-of-play areas on golf courses, cemeteries, certain commercial and industrial locations, and some residential lawns, say UC turf scientists who recently completed a three-year study.

Playability, safety, uniformity, recuperative ability, and a gorgeous green turf sward are not the end goals of managing functional turf installations, which means water and nutrient resources can be conserved and reduced, compared to recreational and high-end aesthetic turf sites.

"New warm-season grasses well-adapted to Southern California have been developed over the past decade that can play a role in low input-requiring, functional turf sites. This study was one of the first to evaluate their performance under reduced irrigation and nitrogen nutrition," said **Vic Gibeault**, UCR Extension Environmental Horticulturist and UCRTRAC delegate.

Three irrigation regimes supplied 100%, 70%, and 40% of well-watered warm-season (ws) turfgrass needs (ET<sub>ws</sub>). Nutrition consisted of three low-to-moderate nitrogen (N) levels: 1, 2, and 4 lb N/1000 ft<sup>2</sup>/yr. Monthly ratings of visual turf quality, color, density, and weed activity were taken for three years (1998-2000).

Zoysiagrass quality and biomass production were the same at 100% and 70% ET<sub>ws</sub>, an unexpected finding that zeros in on zoysiagrass utility for functional sites, Gibeault said. Statistically, the same turf quality resulted from the 70% ET<sub>ws</sub> irrigation level and 2 lb N/1000 ft<sup>2</sup>/yr compared to 100% ET<sub>ws</sub> and 4 lb N/1000 ft<sup>2</sup>/yr. They did not differ.

At the 40% irrigation level, buffalograss performed the best of all grasses tested. It held 100% of its stand, unlike the others. Buffalograss quality ratings did not differ significantly when irrigated at 100%, 70%, or 40% ET<sub>ws</sub> and combined with 2 lb or 4 lb N/1000 ft<sup>2</sup>/yr.

Buffalograss irrigated at 40% ET<sub>ws</sub> and fertilized with 4 lb N had the same turf quality ranking on an annual basis as buffalo at 100% ET<sub>ws</sub> and 4 lb N.

A severe bermudagrass mite (*Eriophyes cynodontiensis* Sayed) infestation forced elimination of 'NuMex Sahara' seeded bermudagrass results, due to thinning, stunting, and browning that masked treatment responses.

The study was conducted at UC's South Coast Research and Extension Center in Irvine. Cooperating with Gibeault were **Mike Henry**, Farm Advisor, Riverside and Orange Counties; and **Richard Autio**, UCR Staff Research Associate.

The Metropolitan Water District of Southern California provided start-up funding. Equipment was supplied by Hunter Industries, San Marcos, Rainbird Industries, Azusa, and Irrrometer Company, Riverside, which also supplied logistical and coordination activities.

## Functional Turf Sites: Buffalograss Had Best Dry-down Response and Drought Recovery

By imposing simulated, drastic drought conditions, UCR turf scientists recently tested the dry-down responses and recoveries of buffalograss, zoysiagrass, and tall fescue to assess their utility for functional turf sites in Southern California.

Buffalograss performed the best under the harsh experimental drought conditions imposed. For 10 weeks, from June 1, 2001 until August 15, 2001, irrigation water was cut off.

**Recovery.** When irrigation resumed, buffalograss responded very quickly, with a rapid green-up in a few weeks, compared to zoysia and tall fescue, which were still brown the week of September 10, 2001.

**Dry-Down.** Buffalograss had a slower loss of green color, compared to zoysiagrass and tall fescue, which both lost color at about the same rate.

These results are unimportant for high-end sports turf facilities, which must maintain safe, playable, and visually beautiful turf, said **Vic Gibeault**, UCR Environmental Horticulturist, but at functional turf sites, where the goal is to stabilize soil and provide a low-input, cost-effective turf cover, buffalograsses have beneficial features for possible use in Southern California.

*(Editor's Note: Prior UC research on buffalograss was featured in the March 1997 issue of **Better Turf Thru Agronomics**. Buffalo, zoysia, and tall fescue grasses used in this experiment were previously part of a five-year study (1996-2000) conducted at UCR's Turfgrass Research Facility to assess cultivar performance in Southern California for the National Turfgrass Evaluation Program (NTEP), a not-for-profit agency developing a nationwide database of unbiased information about cultivar performance. NTEP results can be accessed at [www.ntep.org](http://www.ntep.org).)*

**Better Turf Thru Agronomics** is prepared for the delegates and membership of the University of California, Riverside Turfgrass Research Advisory Committee (UCRTRAC). Member organizations are the Southern California Golf Association; California Golf Course Superintendents Association (GCSA); GCSA of Southern California; San Diego GCSA; Hi-Lo Desert GCSA; California Sod Producers Association; Southern California Section, Professional Golfers Association; Southern California Turfgrass Council; Southern California Turfgrass Foundation; United States Golf Association; and UCR. The intent is to present summaries of turfgrass research results and topical information of interest to the Southern California turfgrass industries. The newsletter is written by Deborah Silva and edited by Dr. Vic Gibeault and Dr. Robert Green and designed by Jack Van Hise, UCR Printing and Reprographics.