

Better Turf Thru Agronomics

UCRTRAC Newsletter, September 1996

UCRTRAC – A New Linkage Between Researchers and Industry Clientele

The new Turfgrass Research Advisory Committee at the University of California, Riverside, known as UCRTRAC, is addressing the research and educational needs of the Southern California turfgrass industries.



The group was established for the purpose of industry betterment, to provide a formal industrywide linkage between the University of California and the turfgrass industries in Southern California. Member organizations contribute to UCRTRAC research and education efforts.

Member organizations represent golf course superintendents, sod producers, general turfgrass interests, professional golfers, and UCR researchers with expertise in turf improvement, physiology, and culture.

UCRTRAC has identified 11 research and education industry needs:

- Irrigation-Water Use Efficiency (includes effluent water)
- Environmental Impact of Turf Chemicals and Fertilizers
- Unbiased, Specific Issue Analysis Reports
- Unbiased Product Testing (fertilizers, pesticides, equipment)
- Unbiased Cultivar Evaluations
- Wear/Traffic Issues -- Safety, Playability
- Production of Quality Putting Greens
 - Annual bluegrass/creeping bentgrass summer decline
 - Managing/controlling annual bluegrass
 - Wear/traffic issues
 - Pest control
 - Soil compaction and salinity issues

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Turfgrass Research Conference and Field Day – Sept. 17, 1996

Technical Session

Morning technical sessions, which begin at 8 a.m. at the University Theatre, provide the most current research results by UC research personnel:

- Black Turfgrass Attenious
- Turfgrass Diseases
- Pesticide Fate
- *Poa*/Bentgrass Summer Decline
- Performance of New Turfgrasses
- Sports Turf under a Retractable Roof for the First Time
- Chemical Edging of Bermuda

Field Session at Turf Plots

Afternoon field sessions at the UCR turfgrass plots will provide a hands-on look at the facility's research:

- Tall Fescue Fertilizer Studies
- Light-Restricted Traffic Research
- Fertility and Aeration on Trafficked Sports Turf
- Buffalograss Evaluations
- Landscape Water Requirements
- Zoysiagrass Response to Mowing and Overseeding

Registration is \$25. Call Susana at (909) 787-4430; fax at (909) 787-5717; or e-mail: susana@ucrac1.ucr.edu. Enrollment closes on Sept. 11, 1996.



Fate of Pesticides and Fertilizers in a Simulated Golf Course Turfgrass Environment

Little potential exists for contamination of ground water and air from fertilizers and pesticides applied to turf in a golf course environment if management practices that minimize detrimental environmental impacts are used.

Fertilizers and pesticides applied to turf on golf course greens and fairways do not contaminate ground water or air if management practices that minimize detrimental environmental impacts are used, according to the results of a simulation study conducted by **Marylynn Yates**, Environmental Microbiology and Ground Water Quality Specialist at the University of California, Riverside (UCR).

Management practices in the study included nitrogen fertilizer applied once every 2 weeks as sulfur-coated urea or urea at rates of 1.0 and 0.5 lb N/1,000 ft² per month to the green and fairway plots, respectively. Irrigation was 100% or 130% ET.

Since fairways are similar to many general turfgrass sites, the results can be extrapolated to general turf situations if similar management practices are used, Yates said.

The 12 putting green test plots were constructed with a typical greens sand with 15% sphagnum peat moss and sodded with Penncross creeping bentgrass. The 24 fairways test plots consisted of 12 sandy loam and 12 loamy sand soils sodded with Tifway II bermudagrass.

Nitrate-N, phosphate-P, 2,4-D, and carbaryl (Sevin) concentrations were analyzed weekly in samples collected from drains and soil-water samplers in each of the 36 plots. The mass of pesticide and nutrients leached and the amounts volatilized were also determined.

Leaching Results

- Little leaching of nitrate-N (<1% of the amount applied) was measured. Neither irrigation amount nor fertilizer type resulted in significant differences in percent leached.
- Leaching of 2,4-D was very low in soils that contained some clay to adsorb the pesticide; however, up to 7.5% leaching was measured in the putting green plots where the soil was too sandy to prevent the movement of a portion of the chemical below the root zone. Irrigation amount did not significantly affect the amount leached.
- Less than 0.1% of the carbaryl (Sevin) leached, regardless of soil type. Irrigation amount applied did not significantly affect amount leached.

The rates of leaching could increase if higher concentrations of fertilizer are used or if more frequent applications are made, Yates said.

Volatilization Results

- Little volatilization of 2,4-D was measured (<1.0%) from any of the plots, although there was a significant difference between the two turfgrass species.

Please see **PESTICIDE FATE**, page 3

Bentgrass Variety Trials

UCR's first creeping bentgrass variety trials are underway at The Springs Club in Rancho Mirage, Industry Hills Golf Course, and Rancho Santa Fe Golf Club.

The three locations provide desert, midland, and coastal sites for unbiased, representative evaluations of creeping bentgrass performance on putting greens.

"We are evaluating 20 of the same creeping bentgrass genotypes and/or blends in the desert, where heat is the major issue and there is generally no annual bluegrass, and in midland and coastal climates where most putting greens are a mixture of creeping bentgrass and annual bluegrass, in which superintendents are managing both species because of the mild climate," said **Robert Green**, UCR Turfgrass Research Agronomist and study leader.

"We hope to add several *Poa* genotypes to the study this fall," Green said.

Genotype x environment interactions may lead to location-specific creeping bentgrass cultivar and/or blend recommendations that golf course superintendents can rely on in the future, Green said.

Standardized visual turfgrass ratings are collected every 4 to 6 weeks and may include overall quality, color, texture, density, stress and pest tolerance, traffic and injury tolerance, and other characteristics.

Results are too preliminary to report. The first year of the three-year study will be completed this fall.

Green's cooperators are UC Cooperative Extension environmental horticulture advisors for five Southern California counties: **Janet Hartin**,

David Shaw, and **Mike Henry**.

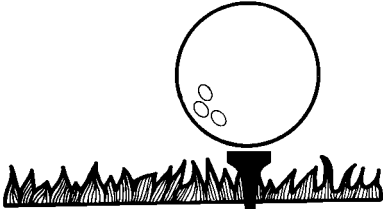
Cooperating golf superintendents include **Bert Spivey**, **Tim Barrier**, **Ross O'Fee**, and **Mike Kocour**. Industry cooperators are **Tracy Barcelona** and **John McShane**.



UCRTRAC Links Researchers, Industry Clientele

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- Accessible, User-Friendly Research/Education Reports
- Pest Control (IPM, Biological Control, Other Methods)
- Ability to Respond to Sudden Research and Education Industry Needs
- Management and Control of Kikuyugrass



Two delegates represent each member organization for a three-year period. Current industry members are the California Golf Course Superintendents Association (**Tracy Barcelona, John**

Pollock), California Sod Producers Association (**Jurgen Gramckow**), Golf Course Superintendents Association of Southern California (**Bert Spivey, Steve Sinclair**), Hi-Lo Desert Golf Course Superintendents Association (**Craig Shafer, Ty Broadhead**), San Diego Golf Course Superintendents Association (**Tim Barrier**), Southern California Golf Association (**John Martinez, Kevin Heaney**), Southern California Section, Professional Golfers Association of America (**Tom Gustafson, Scott Walter**), Southern California Turfgrass Council (**Mark Hodnick, Fred Eckert**), Southern California Turfgrass Foundation (**Neal Beeson, Chuck Wilson**), and United States Golf Association (**Pat Gross**).

UCR members are **Vic Gibeault**, Cooperative Extension Environmental Horticulture Specialist, **Robert Green**, Turfgrass Research Agronomist, and **Steve Cockerham**, Superintendent, Agricultural Operations. Cooperating researchers include their staffs at UCR and at the South Coast Research and Extension Center and UC farm advisors in the Southern California counties.

The Turfgrass Research Facilities and Program at UCR provide resources to accomplish UCRTRAC goals and objectives.

PESTICIDE FATE

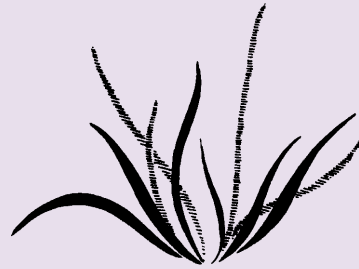
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- Little volatilization of carbaryl was measured (<0.05%) from any of the plots. No significant differences occurred between the treatments.

Public concerns about potential nitrate and pesticide contamination of ground water and air prompted the study, which was funded by the United States Golf Association.

Additional studies are underway at UCR using different fertilization regimes and other management practices to identify even more precisely the best management practices that yield good-looking, high quality turf for putting greens and fairways, while at the same time protecting ground water resources.

Topdressings for Disease Control on Turf



Biocontrol-fortified composted municipal biosolids provided control of dollar spot.

Composted municipal biosolids topdressings applied to Penncross creeping bentgrass provide significant control of *Sclerotinia homoeocarpa*, the fungus that causes dollar spot, says **Marcella Grebus**, Extension Plant Pathologist at UC Riverside.

Grebus recently completed three years of study comparing a commercial fungicide (chlorothalonil) with various compost topdressings (composted yard waste, leaf humus, and municipal biosolids) and an untreated control for managing dollar spot disease.

When fortified with two biological control agents, the composted municipal biosolids topdressing provided significant disease control ($p=0.05$) as did the chlorothalonil treatment. The two biocontrol agents were *Trichoderma hamatum* 382 and *Flavobacterium balustinum* 299r₂.

Topdressing frequency ranged from quarterly to annually, depending on the specific study.

“Compost topdressings on turf hold promise for facilitating the reduction of chemical use as well as improving overall growth and plant quality,” Grebus said.

Other benefits of organic topdressings include reduced input costs and decreased health and environmental hazards, Grebus said.

Public concerns about pesticide efficacy and regulation are prompting research on the use of organic amendments to reduce or replace the use of synthetic pesticides, Grebus said.



National Turfgrass Evaluation Program

UC Riverside's Turfgrass Research Program contributes to the development of a nationwide database of unbiased information on cultivar performance.

Through its participation in the National Turfgrass Evaluation Program (NTEP), a not-for-profit cooperative effort of the United States Department of Agriculture and the Turfgrass Federation, Inc., the UC Riverside Turfgrass Research Program is contributing to the development of a nationwide database of unbiased, independent information on cultivar performance.

Currently, more than 150 varieties of turf are being evaluated at UCR for spring green-up, density, drought tolerance, disease or weed activity, color, and overall quality. The trials include

- 96 tall fescues
- 19 zoysiagrasses
- 27 bermudagrasses
- 14 buffalograsses



NTEP links the private and public sectors of the industry through the common goals of improving grasses, developing new cultivars, and establishing uniform evaluation standards. NTEP trials, which usually last 5 years, are replicated at many locations throughout the country and include most of the available varieties of each of the subject species.

Results from UCR and other university research facilities nationwide are collated, analyzed, and disseminated by NTEP annually. Seed companies and plant breeders use the NTEP information to determine grass adaptation and quality ratings.

Grasses in the UCR trials are mowed weekly during the growing season, fertilized, and irrigated according to CIMIS, the California Irrigation Management Information System. No secondary management practices are used. Quality ratings are taken monthly and reported to NTEP yearly.

UC Riverside has participated in the NTEP program since its inception. Results of the studies are released at the annual Turfgrass Research Conference and Field Day in September and in semitechnical reports.

Better Turf Thru Agronomics is prepared for the delegates and membership of UCRTRAC. The intent is to present summaries of turfgrass research results and topical information of interest to the Southern California turfgrass industries. The newsletter is edited by Vic Gibeault and Deborah Silva and designed by Brad Rowe, UCR Publications.

Improved Winter Color of Warm-Season Turfgrasses – NTEP Variety Trial Results

Newly patented UCR zoysiagrasses and three bermudagrass cultivars provide improved winter color. Overseeding trials and management studies are continuing for enhanced winter color.

To address industry and consumer demand for green lawns and playing fields year-round, UCR turf researchers have systematically evaluated newly developed experimental lines and existing cultivars of bermudagrass and zoysiagrass for improved winter color.

Traditionally, in Southern California, winter discoloration of dormant warm-season turf is overcome by overseeding, using colorants, fertilizing with higher rates of nitrogen, or by planting cool-season turf, even though warm-season species have lower irrigation water requirements.

Results of a UCR zoysiagrass breeding program and NTEP study showed that DeAnza (UCRZ88-8), Victoria (UCRZ88-14), and a Texas A&M University experimental line consistently held the best color during the fall and winter months at research sites in Riverside and Irvine, said **Vic Gibeault**, UCR Environmental Horticulture Specialist.

The two UCR zoysiagrasses were patented recently and will be commercially available soon.

Of the commercially available bermudagrasses tested, Tifway, Tifway II, and Santa Ana held the best color during the winter months. Tifgreen, Midiron, and Guymon had the longest, most intense dormancy.

Bermudagrass cultivars differed in their dormancy patterns, but average soil temperature below 50°F for more than one week resulted in color loss for all cultivars, due to chlorophyll degradation.

Based on the results of these NTEP variety trials at UCR, consumers can now choose warm-season cultivars with improved winter color.

In addition, perennial ryegrass and *Poa trivialis* overseeding trials for improved winter color on warm-season turf are being evaluated by **Mel Robey**, Bermudagrass Triangle Research Center, with data analysis assistance provided by **Robert Green**, UCR Turfgrass Research Agronomist. Also, recent work by Gibeault shows that substantial winter color can be maintained with late fall and winter nitrogen and iron applications.