

Better Turf Thru Agronomics

UCRTRAC Newsletter, November 1997

El Niño May Affect Best Management Practices and Nitrogen Leaching on Overseeded Bermudagrass Fairways

The predicted El Niño weather patterns later this fall and winter mean turf managers should give special attention to fertilization practices due to the possibility of heavy rainfall.

Under typical weather conditions, sound turfgrass fertilization practices present a negligible potential for nutrient elements to pass through the root zone into the groundwater or to be transported by runoff water into surface waters, but when heavy rainfall is predicted, such as this coming winter, turf managers do need to give special attention to fertilization practices and may need to modify them, says **Robert Green**, UCR Turfgrass Research Agronomist.

Some forecasters predict that this winter's rainfall could be more than double the average, making it the wettest season in 15 years, bringing floods, mudslides, and property damage.

"The truth is, in an overseeded situation, the soil and bermudagrass have been disturbed; the perennial rye is immature; air and soil temperatures are cool; and relatively large amounts of fast-release nitrogen are being applied. My guess is this situation will always require special attention, but especially when El Niño weather patterns are predicted," Green said.

Green has recommended some modified practices that should reduce the potential for NO₃-N leaching during periods of heavy rainfall.

- Try not to fertilize if rain is forecasted.
- Use fertilizers with a higher percentage of slow-release N. These products produced good, season-long visual color ratings in the UCR study reported in this issue (pg. 2-3).
- Apply smaller amounts of N more frequently.
- Irrigate only as needed. Try to keep a soil water content below field capacity.
- Use perennial ryegrass cultivars with greater amounts of genetic color, which should reduce the N requirement.
- Make foliar iron applications. They have been reported to increase visual color of perennial ryegrass, which should result in a lower N requirement to maintain the same color quality. High traffic areas may require more growth and recuperative ability and thus more N.

Reducing Yard Waste in California: Grasscycling May Have an Important Role

Grasscycling reduces solid waste going to landfills and helps to reach the goals of the state's Integrated Waste Management Act.

California's Integrated Waste Management Act mandates a 50 percent reduction in waste that each county and city send to landfills by the year 2000, using 1990 as the base year.

If widely adopted by homeowners, grasscycling could reduce California's urban solid waste by 5 to 10 percent - a significant drop - since 20 percent of solid waste dumped in landfills is estimated to be yard (green) waste, say UC turfgrass researchers.

Grasscycling -- returning clippings to the turf after mowing -- has been practiced by parks and golf courses for years, but homeowners seeking a manicured lawn usually bag and dump clippings at landfills.

Grasscycling is not recommended when an exceptionally uniform surface is required, such as putting greens, sod farms, major league sports fields, and other athletic facilities, but it is practical for home lawns and has environmental and financial benefits:

- Saves time and energy. No need to bag, remove, or haul clippings.
- Saves landfill space. Could reduce statewide yard waste by 5-10%.

(Please see **GRASSCYCLING**, page 4)

Nitrogen Fertilizers Evaluated on Tall Fescue for Two Years

At equal annual nitrogen (N) rates, the N source and number of applications significantly affected fertilizer performance. On tall fescue, an annual rate of 6.0 lb N/1000 ft² resulted in good quality turf during the two years of study.

Results of two one-year nitrogen (N) fertilizer studies on a mature stand of 'Bonsai' tall fescue at UCR showed that at equal annual nitrogen (N) rates, the type of N source and the number of applications significantly affected visual turfgrass quality ratings of fertilizer performance. Fast- and slow-release products were evaluated and performed well in both studies.

Tall fescue (*Festuca arundinacea*), a heat- and drought-tolerant, cool-season turf with good color year-round, is used widely in Southern California.

An annual rate of 6.0 lb N/1000 ft² produced good quality tall fescue, receiving an average visual quality rating of 6.4 on a scale of 1-9, with 1=poorest, 5=minimally acceptable, and 9=best tall fescue. Ratings were taken biweekly.

"Tall fescue nitrogen fertilizer strategies should be developed in consideration of seasonal growth patterns, once the annual nitrogen rate has been defined," concluded the UCR researchers, since environmental conditions, particularly seasonal temperatures, influenced visual quality and clipping yield measurements.

The two one-year studies had 16 and 12 N treatments, respectively, with 8 N treatments in common, permitting two-year comparisons, which are summarized in Table 1.

Results showed that clipping yields are a good indicator of turf quality. Treatments with the highest annual visual turfgrass quality ratings on average also had the greatest annual accumulative clipping yields. Clipping yields are an indirect indicator of the amount of nitrogen released by a fertilizer and absorbed by the turf.

Granular fertilizers were applied quarterly to bimonthly at rates ranging from 1.0 to 2.0 lb N/1000 ft² per application. Spray-applied treatments were applied monthly, bimonthly, or quarterly at a total annual rate of 2.0 to 7.7 lb N/1000 ft².

The studies were sponsored by Itronics Metallurgical, Inc.; Greener Pastures, Inc.; Sea Source, Inc.; J.R. Simplot Company; United Horticultural Supply; the Scotts Company; IMC Vigoro; CIC Canola; Pursell, Inc.; and the UCR Turfgrass Research Program.

Investigators included **Robert Green**, UCR Turfgrass Research Agronomist, **Grant Klein**, UCR Staff Research Associate, **Janet Hartin**, Environmental Horticulture Advisor for San Bernardino and Los Angeles Counties, and **Eliseo Baltazar**, UCR undergraduate Student Research Assistant.



Evaluation of 23 Slow- and Fast-Release Nitrogen Fertilizers on Overseeded Common Bermudagrass in the Cool Season

On overseeded common bermudagrass maintained similarly to fairway conditions, 4.0 lb N/1000 ft² yielded good turf color during the 1996-1997 cool season.

Results of a one-season study to evaluate the performance of 23 nitrogen (N) fertilizer treatments applied on a mature stand of overseeded 'Arizona common' bermudagrass maintained similarly to fairway conditions during a five-month cool season from November 1996 to April 1997 have shown that a rate of 4.0 lb N/1000 ft² gave good turf color with an average rating of 6.6 on a scale of 1-9, with 1=brown, 5=minimally acceptable, and 9=darkest green overseeded bermudagrass.

Table 2 summarizes results. Slow- and fast-release products performed well. Seasonal application rates, N source, and number of applications significantly affected visual turf color ratings.

These findings suggest that if N leaching is a concern, then there are products available with various amounts of slow-release N that should reduce the potential for N leaching.

Additional research is needed to confirm the results reported here for the 1996-1997 cool season.

The study was sponsored by Bandini Fertilizer Co., Hydro Agri North America, Inc., IMC Vigoro, J.R. Simplot Co., The Scotts Co., Sea Source, Inc., Target Specialty Products, Tessengerlo Kerley, United Horticultural Supply, Vicksburg Chemical Co, and the UCR Turfgrass Research Program.

Investigators were **Robert Green**, **Grant Klein**, **Janet Hartin**, and **Eliseo Baltazar**.

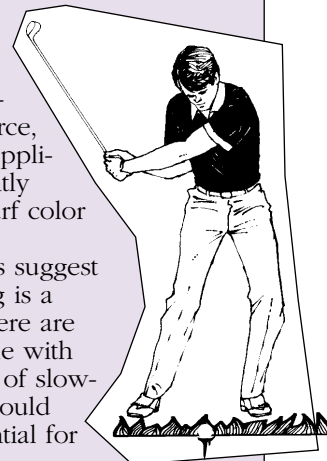


Table 1. Visual Quality Scores for Two-Year Fertilizer Treatments on Tall Fescue

Product (N-P ₂ O ₅ -K ₂ O)	Consistency Score ^a	Overall Visual Quality Rating (1-9) ^b	lb N/1000ft ² per 12 months		Number of Applications	
			Yr. 1	Yr. 2	Yr.1	Yr. 2
Gold'n'Gro 20-1-7	126	6.8	7.7	6.0	12	12
Greener Pastures 15-1-15	123	6.6	6.0	6.0	5	5
Turf Rally 16-4-8	122	6.6	6.0	6.0	5	5
UCR Check ^c	117	6.5	6.0	6.0	6	6
Polygon 43/42-0-0	116	6.6	6.0	6.0	4	4
Turfgo 25-5-16	114	6.4	6.0	6.0	3	4
Gold'n'Gro 20-1-7	107	6.2	3.9	3.0	6	6
Gold'n'Gro 20-1-7	88	5.6	2.5	2.0	4	4

^aScores for 8 two-year treatments based on number of rating dates (50 total) that visual quality was ranked in one of three categories: 3 points for high rating (≥ 6.8); 2 points for medium rating (5.4 - 6.7); 1 point for low (≤ 5.3).

^bFor meaning of visual quality ratings, see text. Least significant difference (LSD) for overall quality ratings = 0.1 at a probability of 5% ($P_{0.05}$). ^cTurf Supreme, 16-6-8; Turf Gold 21-3-5; Poly Supreme, 23-5-10; and Nitra King, 22-3-9.

Table 2. Visual Color Scores for Nitrogen Fertilizer Treatments Applied on Overseeded Common Bermudagrass

Product (N-P ₂ O ₅ -K ₂ O)	Consistency Score ^a	Overall Visual Color Rating (1-9) ^b	lb N/ 1000ft ² ----- per 5 months -----	Number of Applications ^c -----	%N	%N
					Slow Release	Fast Release
Bandini 28-4-6	27	6.9	4.0	4	53	47
Multicote 12-0-43	26	7.0	4.0	2	100	0
ProLong 21-4-6	26	6.9	4.0	4	39	61
Bandini 22-4-22	26	6.9	4.0	4	36	64
Turf Royale 21-7-14	26	6.9	4.0	5	0	100
K-Power 13.7-0-44.5	26	6.8	4.0	10	0	100
Multicote 40-0-0	26	6.6	4.0	2	100	0
Nitra King 22-3-9	25	6.6	4.0	5	0	100
Re-Gain 16-3-7/6-2-6	25	6.4	4.0	5	66	34
ProBalance ^d /Nitra King	24	6.7	4.0	4	0	100
Turfgo 23-5-10	24	6.7	4.0	4	68	32
Turf Rally 6-10-10/16-4-8	24	6.6	4.0	5	97	3
Classic Royale 15-15-15	24	6.6	4.0	5	0	100
Turfgo 16-23-16	24	6.5	4.0	4	44	56
Scotts 16-25-12/30-3-9	23	6.6	4.0	4	34	66
HydroPrill 16-15-15	23	6.5	4.0	5	0	100
ParEx 24-4-12/10-22-22	23	6.4	4.0	3	44	56
Endure/Polygon/Turf Gold ^d	22	6.3	4.0	4	66	34
ParEx 28-3-10/10-22-22	22	6.1	4.0	3	62.5	37.5
Trisert KS ^e 15-0-12	21	6.5	4.0	5	45	55
N-Sure Lite ^e 30-0-0	21	6.3	4.0	5	37	63
K-Power 13.7-0-44.5	20	6.1	2.5	10	0	100
6-20-20/IBDU ^d	20	6.0	4.0	3	67.5	32.5
Check	10	4.7	0	0	0	0

^aScores for 23 N fertilizer treatments based on number of rating dates (10 total) that visual color was ranked in one of three categories: 3 points for high rating (≥ 6.8); 2 points for medium rating (5.4 - 6.7); 1 point for low (≤ 5.3). ^bFor meaning of visual color ratings, see text. Least significant difference (LSD) for overall color ratings = 0.1 at a probability of 5% ($P_{0.05}$). ^cAppl. rates ranged from 0.25 to 2.0 lb N/1000 ft². ^dAnalyses of ProBalance, Endure, Polygon, Turf Gold, and IBDU are 15-15-15, 15-15-15, 43-0-0, 21-3-5, and 31-0-0, respectively. ^eTwo treatments were spray-applied and received 0.75 lb N/1000 ft² per application following a granular application of 6-20-20 at 1.0 lb N/1000 ft² in 11/96.

UCR Extension Develops Certificate Program in Turfgrass Management

With advice from members of the UC Riverside Turfgrass Research Advisory Committee (UCRTRAC) and other turf leaders in Southern California, UCR Extension has developed a Certificate Program in Turfgrass Management that will benefit managers of golf courses, parks, cemeteries, athletic fields, sports complexes, and other turf facilities.

Courses include the latest research findings and technology advancements, providing managers a competitive edge in efficient, environmentally sensitive use of resources and investment protection.

Managers enrolled in the comprehensive certificate program will

- Learn basic scientific principles of chemistry, soil science, and botany for turf management.
- Develop technical skill in turf selection and maintenance, including pest management, fertilization, and irrigation.
- Understand from an integrated perspective the benefits of fertilizer and pesticide use as well as their potential environmental impacts.
- Explore principles of budgeting, purchasing, and other management functions.

The program offers six required courses and three electives. Required courses are Foundations of Turfgrass Management, Principles of Plant Growth, Turfgrass Species and Applications, Soil Fertility and Fertilizers, Management Skills for Turfgrass Managers, and Turfgrass Irrigation and Drainage. Electives include Turfgrass Pests, Pesticide Use on Turfgrass and Ornamental Plants, and Landscape Plants in a Turfgrass Environment.

Candidates must complete all required classes and two electives (24 units) with a grade of "C" or better to receive the certificate.

The program's Curriculum Development Advisory Committee includes 12 UCRTRAC members: **Tracy Barcelona**, California Golf Course Superintendents Association; **Tim Barrier**, San Diego Golf Course Superintendents Association; **Ty Broadhead** and **Craig Shafer**, Hi-Lo Desert Golf Course Superintendents Association; **Fred Eckert** and **Mark Hodnick**, Southern California Turfgrass Council; **Pat Gross**, United States Golf Association; **John Martinez**, Southern California Golf Association; and **Steve Sinclair** and **Bert Spivey**, Golf Course Superintendents Association of Southern California. University members of UCRTRAC on the committee are **Vic Gibeault**, Extension Environmental Horticulture Specialist, and **Steve Cockerham**, Superintendent, UCR Agricultural Operations.

For more information or to receive a brochure, contact Jon W. Kindschy, director of natural sciences at UCR Extension, at (909) 787-5804.

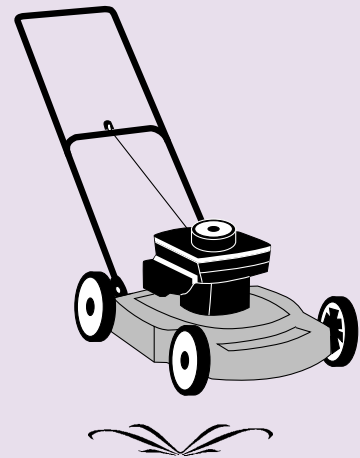
GRASSCYCLING

(continued from page 1)

- Encourages healthier grass stand. Decomposing clippings release nutrients to soil and may enhance soil microbial activity.
- Saves money. Reduces need for nitrogen fertilizer by 20-30% due to nitrogen returned to soil from decomposing clippings.

Grasscycling is possible with any type of mower, but the most effective are mulching (also called recycling) mowers, which have an enclosed housing where clippings are reduced in size and chipped to fine debris before discharge beneath the mower. Recycling mowers facilitate the disappearance of clippings into the turf canopy to mulch the soil and aid or enhance the decomposition of clippings due to their smaller size.

Once-a-week mowing is frequent enough for successful grasscycling, and the "1/3 rule" should be followed: Turf should be mowed often enough that no more than 1/3 of the length of the grass blade is cut in any one mowing. When this rule is enforced, short clippings will fall through the canopy to decompose and will not cover the lawn surface. Homeowners concerned about thatch buildup and an unsightly lawn appearance should consider switching to recycling mowers to help reduce solid waste volume while maintaining a manicured look to the yard.



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 Creative Design Services.