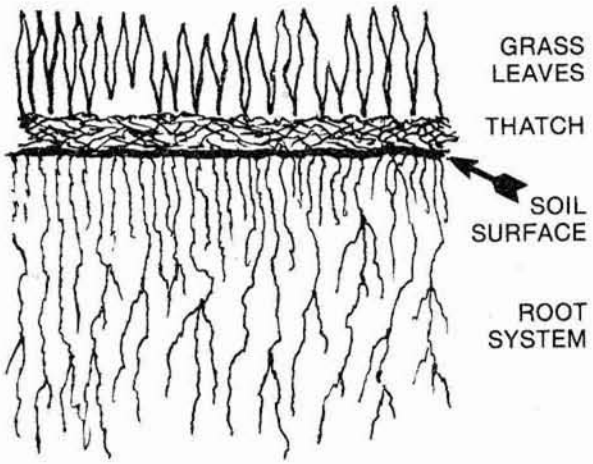
TURFGRASS RESEARCH CONFERENCE AND FIELD DAY



SEPTEMBER 15, 1988

UNIVERSITY OF CALIFORNIA

RIVERSIDE

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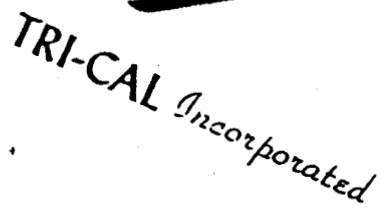
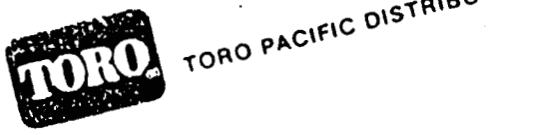
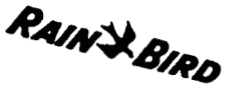
AND CONFERENCE SCHEDULE

THE DEVELOPMENT OF THE UC RIVERSIDE TURF PLOTS IS LARGELY DUE TO THE GENEROSITY OF THE FIRMS AND ORGANIZATIONS SHOWN HERE.







KIKUYUGRASS GROWTH AND DEVELOPMENT

Jodie S. Holt[1]

In order to develop effective means of managing Kikuyugrass, the biology of the species in California must be understood. The same characteristics of Kikuyugrass that render it potentially valuable as a turf species are particularly undesirable when it occurs as an invasive weed. These include vigorous growth and high yield, prolific vegetative reproduction from stolons and rhizomes, and production of seeds that tolerate desiccation. Furthermore, as a species possessing the C_4 photosynthetic pathway, Kikuyugrass is particularly well adapted to the California Mediterranean climate; this alternate route of carbon fixation confers high water use efficiency under conditions of high temperature, high light intensity and limited moisture.

The literature base on Kikuyugrass biology focuses on its use as a pasture or forage species. Separate investigations report maximum growth of Kikuyugrass at temperatures of 16 to 22 C (61 to 72 F), 25 C (77 F), and 20 C (68 F). All three reports indicate that Kikuyugrass is not adapted to high temperature regimes. Similar data have not been documented for California ecotypes, however. Proliferation of roots into deep zones of soil moisture has been reported suggesting a mechanism for increased drought tolerance in dry climates. Kikuyugrass is also reported to be very sensitive to nitrogen fertility in the soil. This review of the literature suggests that temperature is the driving force regulating adaptation of Kikuyugrass to its environment.

Scattered references exist to control of Kikuyugrass with herbicides. Glyphosate provided effective postemergence control of established Kikuyugrass in several studies, as did dicamba and fluazifop-butyl. Preemergence control of seedling Kikuyugrass has been achieved with siduron; however, this chemical is no longer registered in California. It is clear that much more information on the biology and control of Kikuyugrass will be needed before a truly successful management regime can be developed for this species where it occurs as a weed. Information on the morphology, physiology and ecology of Kikuyugrass in response to environmental conditions would allow delineation of any particularly vulnerable growth stages or physiological processes in the life cycle that may be manipulated for maximum control of this species. Such information on the biology of Kikuyugrass could then be used to facilitate selection of the most vulnerable stage of the life cycle to treat with herbicides or other types of management tools.

[1] Asst. Professor of Plant Physiology, Botany and Plant Sciences Department, University of California, Riverside.

TOLERANCE OF ZOYSIA TO SELECTED PREEMERGENCE/POSTEMERGENCE HERBICIDES

David W. Cudney[1]

A new, superior variety of zoysia has been released by the University of California. Zoysia has not been commonly grown in southern California. Therefore, it is important to evaluate the tolerance of the new zoysia variety to the commonly used preemergence and postemergence turf herbicides.

Both a preemergence and postemergence trial were established in 1987 and a postemergence trial in 1988. Common herbicides used in southern California were evaluated.

Evaluations in the preemergence plot showed that of the herbicides tested, only atrazine caused discoloration, or yellowing, of the zoysia which persisted for only two weeks. Root length measurements showed that benefin, bensulide, pendimethalin, prodiamine and trifluralin caused temporary suppression of root growth.

The postemergence evaluations showed that of the herbicides evaluated, no phytotoxicity to zoysia was evident three weeks after treatment. However, bromoxynil, dicamba, 2,4-D and triclopyr caused some initial stunting or discoloration of the turf.

For more information concerning these treatments, refer to articles to be published in the next issue of California Turfgrass Culture.

[1] Weed Scientist, University of California, Riverside.

ZOYSIAGRASS ESTABLISHMENT STUDY

J. Michael Henry[1]

The development of numerous new zoysiagrass cultivars by the late Dr. Vic Youngner, led to the selection of three of the most promising for further study.

This study was undertaken to evaluate the establishment rates of these three new zoysia cultivars at different times of the year. A demonstration of the two most common planting methods (plugs vs. stolons) for zoysia was also incorporated into this study. The planting season for vegetatively propagated, warm season turfgrasses plays a major role in the success of the planting. The longer the newly planted plant material is exposed to warm weather, the faster it grows and fills in.

Planting date and varietal characteristics (differences) were the two main treatments of the establishment study. Planting times during the year - summer, fall and spring - were selected with winter being judged unfeasible for any warm season grass.

Comparison of monthly percent coverage data clearly showed the late spring, early summer period as the preferred time to gain quick establishment of the zoysiagrasses in southern California. The fall (September) planting suffered from slow growth of the zoysia due to cool temperatures and the competition of the faster growing winter-season annual weeds, especially Poa annua and Brass Buttons. The spring planting (March) also suffered from slow initial growth of the Zoysia and rapid growth of spring annual weeds (Crabgrass, Spotted Spurge, etc.).

When the three zoysia cultivars were compared in any of the treatment planting date studies, it was evident that the variety #1 ('El Toro') was significantly faster growing, resulting in quicker establishment over the other two cultivars. Using the threshold level of 90 percent covered as the point of comparison, 'El Toro' became established in three months as compared to four months for variety #3 and eight months for variety #5 when all were planted in the summer.

The three zoysiagrass selections were each planted using two planting methods, sprigging (stolons) and plugging. In most cases, the stolon planting method produced quicker establishment than the plugging method, except for the fall planted treatment, which showed no significant difference between the two planting methods.

This comparison of three new zoysiagrass cultivars showed that one, #1 ('El Toro'), was faster growing than the other two. Cultural practices that increase the chances for optimal establishment rate are: 1) early summer planting and 2) choosing stolon planting over plugging if sod is not available or feasible.

[1] County Director and Turf Advisor, University of California Cooperative Extension, Orange County.

ALTERNATIVE PLANT MATERIAL STUDY

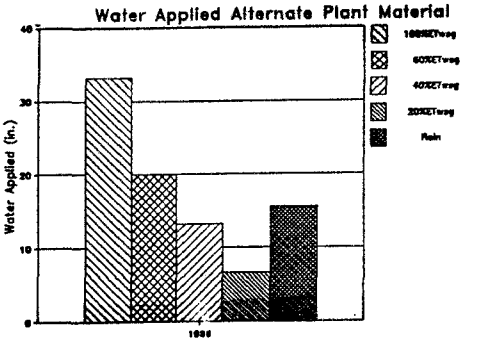
J.L. Meyer, V.A. Gibeault, R. Autio, and R. Strohman[1]

Turfgrasses require significant amounts of irrigation water to sustain their growth, appearance and usefulness. The amounts of water needed have been thoroughly documented, with warm season turfgrasses requiring less irrigation water than the cool season turfgrasses. The objectives of this study were to evaluate plant materials for turf quality when subjected to varying low irrigation treatments with regular mowing and minimal fertilization.

Thirty-six plant materials and mixes were established on April 11, 1984 at South Coast Field Station to three irrigation areas, each with three replications arranged in a randomized block design. Coefficient of uniformity for the sprinkler system was nearly 87.4%. Following establishment, the area was mowed weekly at 1-1/2 inches and fertilized monthly with 1/2 lb N/M from ammonium sulfate. Mid-spring, 1985, three irrigation treatments were imposed, those being 60%, 40%, and 20% of that amount of water required by warm season turfgrasses (evaporation from a Class A Weather Bureau Pan x Kp). Irrigation was applied weekly. Plant material present and turf quality characteristics (color, texture, density, and uniformity) ratings were taken monthly using a commonly accepted turfgrass scoring of 0-9, nine being the best.

In this study, the calculations to determine the minutes of sprinkler system operation to give 20, 40, and 60% ET were based on evaporation readings from a Class A U.S. Weather Bureau Evaporation Pan using pan coefficients (Kp) established by the authors during a previous turfgrass study at South Coast Field Station.

In 1986, 33.22 inches were applied to warm season turfgrass to meet 100% of calculated ET. Using 20%, 40%, and 60% of warm season turfgrass ET (about 6.5", 13", and 20"), only common bermuda and Atriplex survived reasonably well. The common bermuda survived well with 40 and 60% of warm season turf ET, however, the two Atriplex varieties survived best with 20 and 40% warm season turfgrass ET.



[1] Irrigation and Soils Specialist, UC Riverside; Extension Environmental Horticulturist, UC Riverside; Staff Research Associates, UC Riverside.

COACHELLA VALLEY OVERSEEDING TRIAL

John Van Dam[1]

Coachella Valley is considered the world's mecca of prestigious golf courses. It also enjoys an environment most amiable to warm season grasses. However, winter use of the golf courses by demanding golfers seeking maximum playability and aesthetics requires that cool season grasses be used to maintain the attractiveness and playability demanded. These requirements are dealt with by annually overseeding the entire golfing facility. Formerly, annual ryegrass was the species used, but with the advent of perennial ryegrasses, this species has become the first choice.

On September 29, 1983, a study was conducted to evaluate the perennial ryegrass species as well as the annual ryegrass, intermediate ryegrass species and the blend of 50/50 perennial and intermediate ryegrasses all at seeding rates that ranged in increments of 100 lb/A to 600 lb/A. Conducted in cooperation with the Cathedral Canyon Country Club on a common bermudagrass fairway, a test area was established of 50 square foot plots seeded to those grasses at those rates, arranged in randomized block design and replicated four times.

The area was not irrigated for two weeks prior to seeding but was very closely mowed. Following the seeding, the area was then irrigated for three minutes every two hours until germination and initial seeding growth was achieved. This continued until mid-October when irrigations were reduced to their regular maintenance level. Twenty-one days after seeding, mowing was resumed and the stand cut to 1-1/4 inch high. Thereafter, the cut was gradually reduced to 11/16 inch and retained at that height.

Considering the seeding rates, regardless of species, those plots seeded to 100 lb/A and 200 lb/A rates achieved significantly less acceptable ratings than all other rates until late December when they began to match the establishment of the plots seeded to the high rates. The 300 lb/A seeding was initially and thereafter as good as the 400 lb/A rating, but never until late December did they score as well as the 500 and 600 lb/A rates. There was never any significant difference between the 500 and 600 rates. Both always achieved higher ratings throughout the study than did any of the other seeding rates.

As to species, regardless of seeding rates, the annual ryegrass was the first to establish but was quickly (by end of October) matched by the other species. From November on and throughout the study, perennial ryegrass (PR) alone and PR plus intermediate ryegrass (IR) rated superior to all others. The IR alone was very slow to establish. The value of this species throughout the study seemed to be as a blend with PR. Both PR and PR plus IR blend gave good color and stand density with acceptability even at 300 lb/A seeding rate.

In general, the best quality, greatest percentage density and most uniform sward of darkest green color was attained by the PR seeded at the 600 lb/A seeding rate. A very acceptable turfgrass overseeding stand, however, was attained at the 300 lb/A rate of PR, or if cost was a factor, by the PR plus IR blend. If a stand is to be established within the least available time, annual ryegrass would be an excellent species even at the lower rates, but for more lasting results, the choice must be perennial ryegrass and the rate could be as low as 300 lb/A.

[1] University of California Farm Advisor, San Bernardino County.

TURF DISEASE RESEARCH

Howard D. Ohr[1]

Research on turf diseases at Riverside is being accomplished by Dr. R. M. Endo and myself. Dr. Endo concentrates on the basic research aspects of turf diseases while I give my attention to chemical and cultural control. Currently, Dr. Endo is giving his attention to a disease of Poa annua. This grass has, due to its competitive abilities, become a primary grass of golf greens in California. Unfortunately, this is a mixed blessing because it is not without its problems.

The disease is characterized by the collapse of the plants in hot weather. This collapse is due to the blockage of water conducting vessels in the plants due to a fungal infection. Dr. Endo has isolated a fungus, grown it in pure culture, and has inoculated plants reproducing the disease symptoms. As of this writing, he is in the process of fulfilling the last step of Koch's postulates to prove that the fungus is the cause. He is currently isolating from his experimental plants to see if the fungus is the same as that he inoculated with.

The fungus invades the primary and secondary roots of the plant. If it is lower down on the roots, the plants may not collapse, but if it is higher, they usually do. Dr. Endo feels that Benlate, Bayleton and Cleary's 3336 will be effective in controlling the disease but they must be applied early in the year before the plants become infected. Dr. Endo will retire in about a year so hopefully he will find some much needed answers before then.

As I previously stated, my work is in control. This aspect fluctuates as diseases are available or as we can produce them. For the past several years working with Jim Downer in Ventura county, we have conducted chemical control trials on bluegrass rust in Camarillo. This is a good area for disease but, even so, only about one of three tests is successful. Some of the better chemicals were Ciba Geigy's Banner, Mobay's Bayleton and a numbered chemical from Mallinkradt (now Sierra Chemical) MF654. Of the three, only Bayleton is currently registered in California.

Currently, we are continuing work on control of spring deadspot which is another disease that defies us by its inconsistent occurrence. We have worked with Mike Henry in Orange county and John Karlik in Kern county and, as a result, Rubigan has been registered and Banner is close to registration.

Two other trials that will hopefully be underway during this field day are chemical control trials of anthracnose and brown patch Poa annua. We will be attempting inoculations of this grass with the causal agents using techniques developed by Dr. Chastagner in Washington.

[1] Extension Plant Pathologist, UC Riverside.

EVALUATION OF PERENNIAL RYEGRASS CULTIVARS

S.T. Cockerham, V.A. Gibeault, R. Autio, M.K. Leonard[1]

The National Ryegrass Evaluation Trial was planted in October, 1984 at the Agricultural Experiment Station in Riverside. Included in the trial were 53 perennial ryegrasses and one intermediate ryegrass. The grasses were rated regularly for turfgrass quality (turf scores), color and disease (leaf rust) susceptibility. At the termination of the trial, the grasses were submitted to eight weeks of simulated cleated-sports traffic with the Brinkman Traffic Simulator. From mid-May through mid-July, 1988, moderate intensity traffic was applied for the first four weeks and football-game intensity traffic was applied for the following four weeks.

Most of the perennial ryegrasses provided acceptable quality throughout the trial. Palmer, HR-1, Tara, Citation II, M-382, Gator, Blazer, Prelude, and SWRC-1 were in the top rated group.

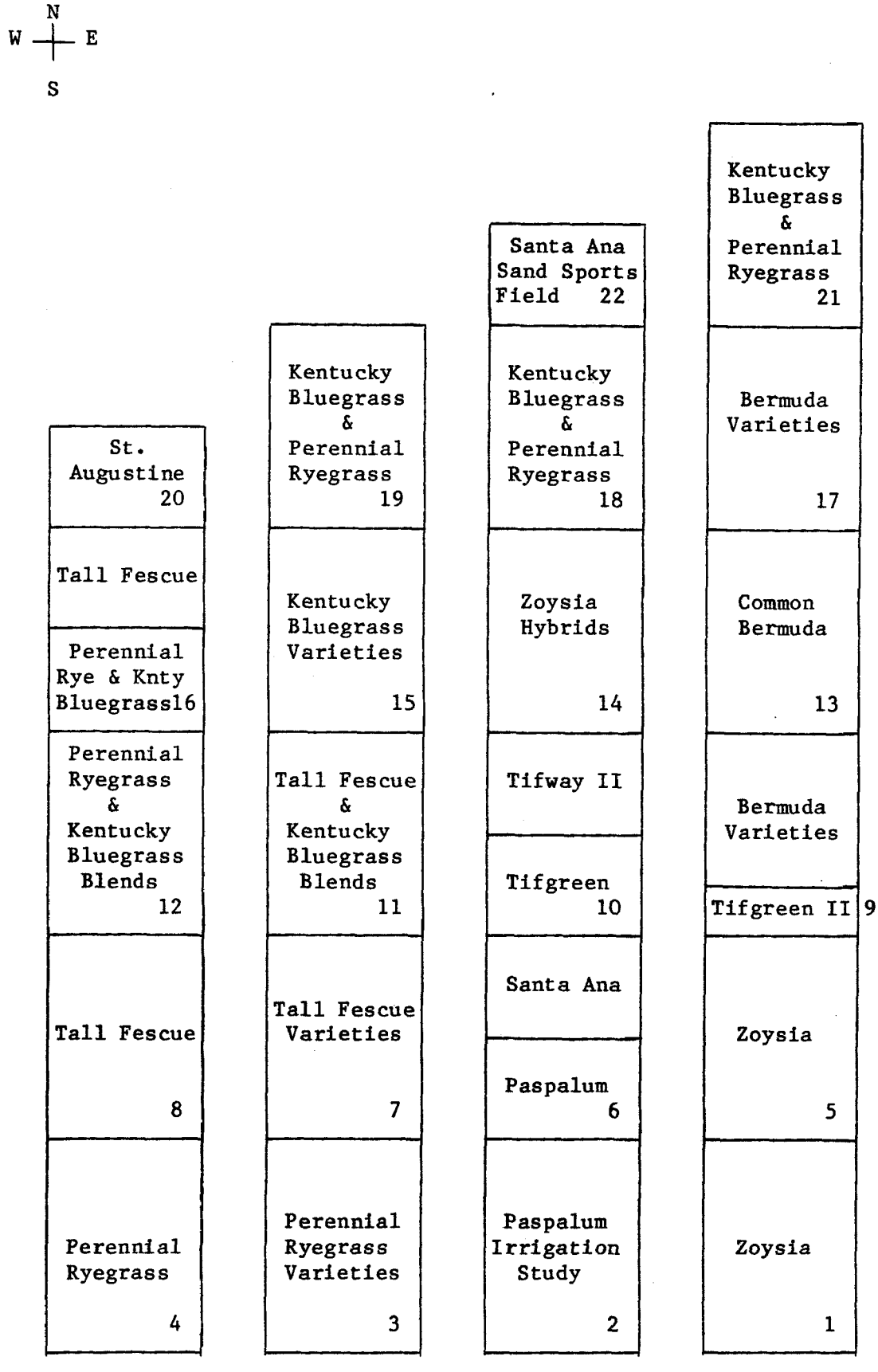
Concerning leaf rust, Gator, HR-1, Tara, Palmer, Manhattan II, MOM LP 702, Birdie II, Cowboy, Ranger, Yorktown II, MOM LP 210, M-382, NK 80389, HE-168, Citation II, SWRC-1, Acclaim, Barry, Ovation, MOM LP 792, Elka, Cigil, and Pippin were all relatively free of leaf rust, but not significantly different from each other.

Most of the perennial ryegrasses tolerated cleat-type sports traffic much better than anticipated. The intermediate ryegrass, as expected, did not tolerate the traffic well at all. Pippin and Linn were weakened significantly under traffic. Birdie II, HR-1, Ovation, and Cigil were significantly different than the most traffic tolerant cultivar, which was Citation II.

A perennial ryegrass with low traffic tolerance does not mean it is a poor turfgrass. These grasses tend to transition as overseeded grasses better than the more durable cultivars. A ryegrass that is tolerant of heavy traffic would be likely to persist as an overseed and become a weed problem.

[1] Superintendent, UC Agricultural Operations; Extension Environmental Horticulturist, UC Riverside; Staff Research Associates, UC Riverside.

UCR TURF RESEARCH PLOTS



UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date May 12, 1988 Plot No. 1
Completion Date Fall 1988

Title: El Toro Zoysia Nitrogen Source x Rate Study

Objective: Evaluate response of 'El Toro' to eight different nitrogen sources applied at three rates.

Investigator(s):
Name V. Gibeault Dept. Coop Ext Phone X 3575
Name M. Leonard Dept. Turf Lab Phone X 3898

Species/Cultivars: 'El Toro' Zoysia

Management: Mowing Frequency 1 x/Wk. Height 5/8 in.
Fertilizer-Material _____ Rate _____
Irrigation - / / as needed 60 % ET_o / /Other (Specify Below)
Special _____

Experimental Design: / / CRD /X/ RCB / / SPLT / / Other _____
No. of Reps 3 Size of Rep. 4' x 4' Total Plot 20' x 60'
Treatments: Eight nitrogen sources (see below) applied at 1.0, 2.0, and 4.0 lb N/1000 ft^2.

Data Collection: 1) Variable Color Frequency bi-weekly
2) Variable _____ Frequency _____
3) Variable _____ Frequency _____

Special Instructions/Comments:
Nitrogen sources:
Urea (46-0-0)
Ammonium Sulfate (21-0-0)
Ammonium Nitrate (34-0-0)
IBDU (31-0-0)
Ureaformaldehyde (liquid, 38-0-0)
Osmocote (34-0-7)
Methylene Urea (dry, 41-0-0)
Sulfur-coated Urea (37-0-0)

Submitted by _____ Date _____

'EL TORO' ZOYSIA NITROGEN SOURCE X RATE STUDY

N

Rep I					Rep II					Rep III				
22	5	3	8	2	13	20	5	24	22	2	22	15	23	4
19	24	16	6	4	14	4	10	19	15	14	13	25	18	5
23	10	17	25	18	8	9	2	18	17	1	11	7	21	6
13	1	12	15	21	25	11	6	1	21	8	12	20	3	17
7	11	9	20	14	16	3	12	7	23	24	16	19	9	10
Rep I					Rep II					Rep III				

Treatment No.	Nitrogen Source	Analysis	#N/1000
1)	UREA (dry)	46-0-0	1
2)			2
3)			4
4)	Ammonium sulfate	21-0-0	1
5)			2
6)			4
7)	Ammonium nitrate	34-0-0	1
8)			2
9)			4
10)	IBDU	31-0-0	1
11)			2
12)			4
13)	UF (Powder Blue)	38-0-0	1
14)			2
15)			4
16)	Osmocote	34-0-7	1
17)			2
18)			4
19)	Methylene urea	41-0-0	1
20)			2
21)			4
22)	SCU (30% DR)	37-0-0	1
23)			2
24)			4
25)	Control	0-0-0	0

UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date October 1988 Plot No. 1
Completion Date _____

Title: 'El Toro' Zoysia/Tall Fescue Mix Study

Objective: Determine if a mixture of 'El Toro' Zoysia and tall fescue produce an acceptable year-round turf.

Investigator(s):
Name V. Gibeault Dept. Coop Ext Phone X 3575
Name M. Leonard Dept. Turf Lab Phone X 3898

Species/Cultivars: 'El Toro' Zoysia; 'Jaguar' (Turf-type) and 'Monarch' (Dwarf-type) Tall Fescue

Management: Mowing Frequency 1 x/Wk. Height 1.5 in.
Fertilizer-Material Ammonium Nitrate Rate 1.0 lb N/1000 ft^2/month
Irrigation - / / as needed _____% ET_o /X/Other (Specify Below)
Special 60% ET in summer, 80% ET in winter

Experimental Design: /X/ CRD / / RCB / / SPLT / / Other _____
No. of Reps 4 Size of Rep. 5' x 10' Total Plot 20' x 50'
Treatments: (1) El Toro, (2) Jaguar TF, (3) Monarch TF, (4) Jaguar overseeded into El Toro, (5) Monarch overseeded into El Toro.

Data Collection: 1) Variable Percent cover Frequency Monthly
2) Variable Turf Score Frequency Monthly
3) Variable Uniformity Frequency Monthly

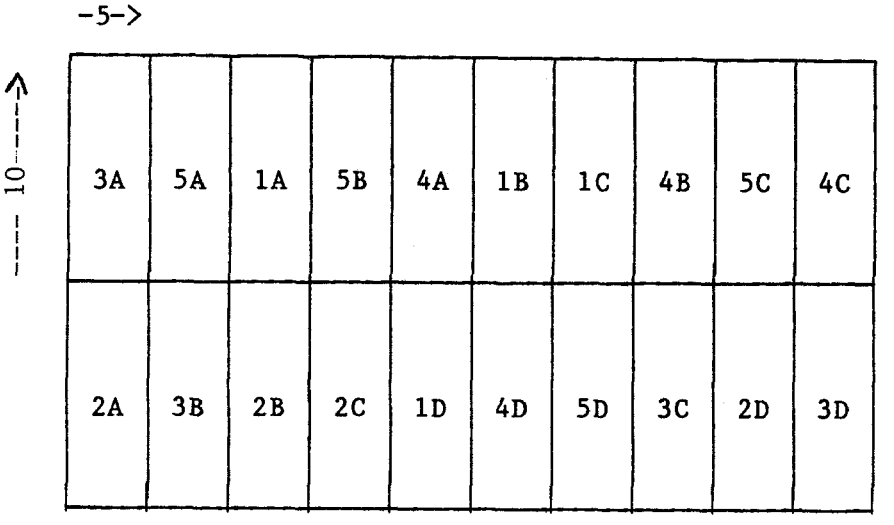
Special Instructions/Comments: El Toro was vertical mowed prior to overseeding.

Tall fescue seeding rate was 15 lb/1000 ft^2.

Submitted by _____ Date _____

OVERSEEDING OF 'EL TORO' ZOYSIAGRASS
WITH TALL FESCUE

N



TREATMENTS

1) El Toro Zoysia

2) Turf-type Tall Fescue

3) Dwarf-type Tall Fescue

4) Turf-type TF Overseeded on Zoysia

5) Dwarf-type TF Overseeded on Zoysia

UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date June 14, 1988 Plot No. 5
Completion Date 1991

Title: Zoysia cultivar evaluation

Objective: Examine turf quality and growth characteristics of commercially available and experimental cultivars of zoysiagrass.

Investigator(s):
Name V. Gibeault Dept. Coop Ext Phone X 3575
Name M. Leonard Dept. Turf Lab Phone X 3898

Species/Cultivars: Zoysia japonica and intraspecific hybrids of Z. japonica, Z. matrella and Z. tenuifolia.

Management: Mowing Frequency _____ x/Wk. Height _____ in.
Fertilizer-Material ammonium nitrate Rate 1.0 lb N (1000 ft^2/month)
Irrigation - / / as needed 60 % ET_o / /Other (Specify Below)
Special _____

Experimental Design: / / CRD /X/ RCB / / SPLT / / Other _____
No. of Reps 3 Size of Rep. 10' x 10' Total Plot 60' x 90'
Treatments: Cultivars: El Toro, Meyer, Emerald, Belair plus 14 experimental UC cultivars.

Data Collection: 1) Variable See Below Frequency _____
2) Variable _____ Frequency _____
3) Variable _____ Frequency _____

Special Instructions/Comments: Cultivars will be evaluated for rate of establishment, winter color retention, rooting depth, thatch accumulation, mowability, seedhead production, color, and general turf quality, over a period of several years.

Plots were established from 16 2" plugs planted on 2' centers.

Submitted by _____ Date _____

UCR ZOYSIA VARIETY EVALUATION

	11	5	16	15	13	9	
Rep I	14	17	4	1	3	18	Rep I
	12	8	2	7	10	6	
	15	3	9	16	17	4	
Rep II	6	1	12	14	10	7	Rep II
	5	8	11	13	18	2	
	14	12	11	1	13	15	
Rep III	7	2	9	8	6	18	Rep III
	10	5	4	17	16	3	

Zoysia Selections

1) El Toro
2) Meyer
3) Emerald
4) Belair
5) UCR-Z88-1
6) UCR-Z88-2
7) UCR-Z88-3
8) UCR-Z88-4
9) UCR-Z88-5
10) UCR-Z88-6
11) UCR-Z88-7
12) UCR-Z88-8
13) UCR-Z88-9
14) UCR-Z88-10
15) UCR-Z88-11
16) UCR-Z88-12
17) UCR-Z88-13
18) UCR-Z88-14

UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date 29 May 86 Project No. _____
Completion Date _____ Plot No. 9 North & 17

Title: National Bermudagrass Trial

Objective: To evaluate Bermudagrass cultivars in southern California.

Investigator(s):
Name V.A. Gibeault Dept. Coop Ext Phone X 3575
Name R. Autio Dept. Coop Ext Phone X 4430

Species/Cultivars: 32 Bermudagrass cultivars.

Management: Mowing Frequency 1 or 2 x/Wk. Height 3/4 in.
Fertilizer-Material _____ Rate 1# N/M/6 wk.
Irrigation - /X/ as needed _____% ET_o / /Other (Specify Below)
Special _____

Experimental Design: / / CRD /X/ RCB / / SPLT / / Other _____
No. of Reps 3 Total Plots 90 x 90 (Block 17), 60 x 70 (N Block 9)
Treatments: _____

Data Collection: 1) Variable Turfscores Frequency Monthly
2) Variable _____ Frequency _____
3) Variable _____ Frequency _____

Special Instructions/Comments: _____

N

NATIONAL BERMUDAGRASS TRIAL, UCR
Planted May 29, 1986

Block 17

Plot Size 10' x 10'

	32	31	30	24	3	10
	25	7	6	26	15	21
	1	29	12	5	11	16
I	2	19	9	28	13	8
	4	20	27	18	14	17
	22	23	7	3	16	13
	23	2	12	5	29	11
	25	24	9	19	15	27
II	21	14	17	28	8	22

(Common Bermudagrass)

			31	32	18	6
	20	30	26	1	8	2
	30	22	9	27	11	7
	26	6	18	25	5	1
III	12	16	19	14	29	13
	17	15	21	28	24	23
	32	31				

Entry Number	Name
1	CT-23
2	NM 43
3	NM 72
4	NM 375
5	NM 471
6	NM 507
7	Vamont
8	E-29
9	A-29
10	RS-1
11	MSB-10
12	MSB-20
13	MSB-30
14	A-22
15	Texturf 10
16	Midiron
17	Tufcote
18	Tifgreen
19	Tifway
20	Tifway II
21	NMS 1
22	NMS 2
23	NMS 3
24	NMS 4
25	NMS 14
26	Arizona Common
27	Guymon
28	FB-119
29	C19
30	C84
31	Tifgreen II
32	Santa Ana

Objective:
To evaluate Bermudagrass varieties in southern California.

Methods and Materials:
In May, 1986, 1" plugs were placed on 1" centers in 10' x 10' plots. The plots are mowed at 3/4", fertilized at 1# N/M every 6 weeks and irrigated as needed.

UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date March 1988 Plot No. 10S
Completion Date December 1988

Title: Multiple application nitrogen source x rate study - hybrid Bermudagrass

Objective: Evaluate response of hybrid Bermudagrass to different sources and rates of nitrogen fertilizer when applied throughout the year.

Investigator(s):
Name Steve Cockerham Dept. Ag Oper Phone X 5906
Name Matt Leonard Dept. Turf Lab Phone X 3898

Species/Cultivars: 'Tifgreen' hybrid Bermudagrass

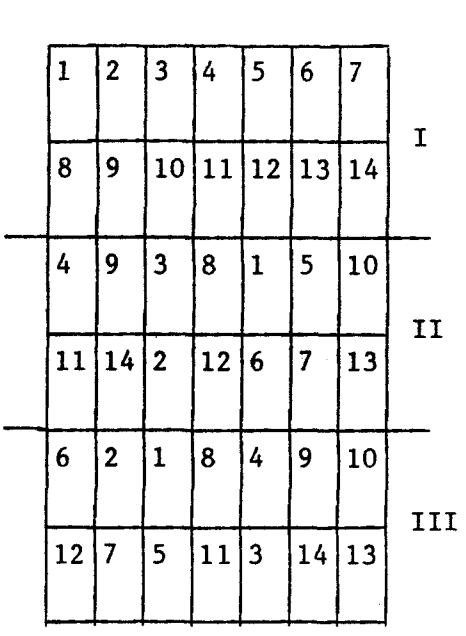
Management: Mowing Frequency 1 x/Wk. Height 5/8 in.
Fertilizer-Material _____ Rate _____
Irrigation - / / as needed 60 % ET_o / /Other (Specify Below)
Special _____

Experimental Design: / / CRD /X/ RCB / / SPLT / / Other _____
No. of Reps 3 Size of Rep. 4' x 6' Total Plot 41' x 28'
Treatments: See sources below. Applications made approximately every 8 weeks at rates of 1.5, 2.5, and 3.5 lb. N/1000 ft^2.

Data Collection: 1) Variable color Frequency bi-weekly
2) Variable _____ Frequency _____
3) Variable _____ Frequency _____

Special Instructions/Comments:
Nitrogen sources:
Urea, dry (46-0-0)
Urea, liquid (46-0-0)
SCU (37-0-0)
SCU, Mini-prills (31-0-0)

Submitted by _____ Date _____



Treatments	Rate (lb. N/1000 ft.^{2})
1. Control	0.0
2. UREA, dry (46-0-0)	1.5
3. UREA	2.5
4. UREA	3.5
5. UREA, liquid (46-0-0)	1.5
6. UREA	2.5
7. UREA	3.5
8. SCU (37-0-0)	1.5
9. SCU	2.5
10. SCU	3.5
11. SCU, mini (31-0-0)	1.5
12. SCU	2.5
13. SCU	3.5
14. Variable	-

UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date May 86 Project No. _____
Completion Date _____ Plot No. 15

Title: National Kentucky Bluegrass Trial

Objective: To evaluate Kentucky bluegrass in southern California.

Investigator(s):
Name V.A. Gibeault Dept. Coop Ext Phone X 3575
Name R. Autio Dept. Coop Ext Phone X 4430

Species/Cultivars: 72 Kentucky bluegrass cultivars

Management: Mowing Frequency 1 x/Wk. Height 1-1/2 in.
Fertilizer-Material _____ Rate 1# N/M/6 wk.
Irrigation - /X/ as needed _____% ET_o / /Other (Specify Below)
Special _____

Experimental Design: / / CRD /X/ RCB / / SPLT / / Other _____
No. of Reps 3 Size of Rep. 60 x 30 Total Plot 60 x 90
Treatments: _____

Data Collection: 1) Variable Turfscores Frequency Monthly
2) Variable _____ Frequency _____
3) Variable _____ Frequency _____

Special Instructions/Comments: _____

UCR NATIONAL KENTUCKY BLUEGRASS TRIAL

Block #15

N

64	30	47	06	01	12	54	63	57	33	38	36
52	72	56	27	59	32	58	60	69	13	35	14
10	17	62	40	68	41	45	05	42	09	08	39
37	18	22	67	24	03	26	46	55	31	66	04
34	20	44	50	29	53	71	15	43	70	02	48
19	28	65	61	23	16	25	07	21	49	11	51
42	08	49	43	19	56	52	47	32	25	53	60
04	48	51	66	61	44	30	50	46	05	24	15
09	69	57	33	10	40	20	37	59	68	58	45
70	55	21	14	62	34	67	72	54	07	23	29
02	39	31	36	17	22	18	06	63	26	03	71
13	35	11	38	64	28	27	65	12	41	01	16
53	03	41	01	49	31	70	09	52	61	10	44
23	60	58	45	02	33	35	21	18	47	20	37
05	46	54	63	43	08	04	48	56	19	27	34
07	68	26	15	42	57	39	38	72	64	30	65
59	32	29	16	11	36	14	66	50	22	28	40
71	24	25	12	51	13	69	55	06	62	17	67

Entry	Name	Entry	Name
1	Classic	37	Parade
2	Monopoly	38	Asset
3	Barzan	39	HV 97
4	Gnome	40	Lofts 1757
5	Tendos	41	Cheri
6	P-104	42	Eclipse
7	Ram-1	43	Liberty
8	Compact	44	Destiny
9	Joy	45	Dawn
10	Sydsport	46	Merion
11	Haga	47	Nassau
12	Georgetown	48	Amazon
13	Somerset	49	239
14	Mystic	50	Wabash
15	Baron	51	Julia
16	Able I	52	Ikone
17	A-34	53	Glade
18	Merit	54	Huntsville
19	BAR VB 577	55	F-1872
20	Annika	56	Aquila
21	Conni	57	K1-152
22	Kenblue	58	Harmony
23	Bristol	59	Welcome
24	Victa	60	Aspen
25	Ba 70-139	61	Rugby
26	Ba 70-242	62	Trenton
27	Ba 72-441	63	K3-178
28	Ba 72-492	64	Midnight
29	Ba 72-500	65	Challenger
30	Ba 73-626	66	Blacksburg
31	BAR VB 534	67	PST-CB1
32	Cynthia	68	South Dakota Cert.
33	NE 80-88	69	WW Ag 468
34	America	70	WW Ag 491
35	Ba 69-82	71	WW Ag 495
36	Ba 73-540	72	WW Ag 496

Objectives:
To evaluate Kentucky bluegrasses for use in southern California.

Methods and Materials:
In May, 1986, 72 cultivars of Kentucky bluegrass were seeded to 5' x 5' plots at a rate of 2.2 #/M. The plots are mowed at 1-1/2", fertilized at 1# N/M every 6 weeks and irrigated as needed.

UCR - TURFGRASS RESEARCH CENTER - PROJECT SUMMARY

Starting Date Oct. 87 Project No. _____
Completion Date _____ Plot No. 7

Title: National Tall Fescue Trial

Objective: To evaluate the suitability of turf-type tall fescue in southern California

Investigator(s):
Name V.A. Gibeault Dept. Coop Ext Phone X 3575
Name R. Autio Dept. Coop Ext Phone X 4430

Species/Cultivars: 72 tall fescue cultivars

Management: Mowing Frequency 1 x/Wk. Height 1-1/2 in.
Fertilizer-Material _____ Rate 1# N/M/6 wk.
Irrigation - /X/ as needed _____% ET_o / /Other (Specify Below)
Special _____

Experimental Design: / / CRD /X/ RCB / / SPLT / / Other _____
No. of Reps 3 Size of Rep. 50 x 20 Total Plot 50 x 60
Treatments: _____

Data Collection: 1) Variable Turfscores Frequency Monthly
2) Variable _____ Frequency _____
3) Variable _____ Frequency _____

Special Instructions/Comments: _____

Submitted by _____ Date _____

BLOCK #7

NATIONAL TALL FESCUE TRIAL

CA3 Riverside

N

64	30	47	06	01	12	54	63	57	33	38	36
52	72	56	27	59	32	58	60	69	13	35	14
10	17	62	40	68	41	45	05	42	09	08	39
37	18	34	67	24	03	26	46	55	31	66	04
22	20	44	50	29	53	71	15	43	70	02	48
19	28	65	61	23	16	25	07	21	49	11	51
42	08	49	43	19	56	52	47	32	25	53	60
04	48	70	66	61	44	30	50	46	05	24	15
09	69	57	33	10	40	20	37	59	68	58	45
51	55	21	14	62	34	67	72	54	07	23	29
02	39	31	36	17	22	18	06	63	26	03	12
13	35	11	38	64	28	27	65	71	41	01	16
53	03	41	01	49	31	70	09	52	61	10	44
23	60	58	45	02	33	35	21	18	47	20	37
05	46	54	63	43	08	04	48	56	19	27	34
07	68	26	15	42	57	39	38	72	64	30	22
59	32	29	16	11	36	14	66	50	65	28	40
51	24	25	67	71	13	69	55	06	62	17	12

Entry Name	Entry Name
1 Adventure	37 PST-5HF
2 BAR Fa 7851	38 Jaguar
3 Trident	39 PST-DBC
4 Titan	40 Olympic
5 Pick DDF	41 Jaguar II
6 Pick 127	42 Monarch
7 Pick 845PN	43 Apache
8 Pick SLD	44 PST-5DM
9 PE-7	45 Pick DM
10 PE-7E	46 Normarc 99
11 Hubbard 87	47 Pacer
12 Syn Ga	48 Carefree
13 Legend	49 Richmond
14 Taurus	50 Tip
15 Aztec	51 Ky-31
16 Sundance	52 Bel 86-1
17 Fatima	53 Bel 86-2
18 Normarc 25	54 PST-5EN
19 Normarc 77	55 PST-5F2
20 KWS-DUR	56 Finelawn 5GL
21 KWS-BG-6	57 Finelawn I
22 Willamette	58 Rebel
23 Chieftan	59 Rebel II
24 Pick GH6	60 Tribute
25 Thoroughbred	61 Arid
26 Pick TF9	62 Wrangler
27 PST-50L	63 Mesa
28 PST-5D7	64 JB-2
29 Cimmaron	65 Falcon
30 Bonanza	66 5MI + Endophyte
31 PST-5AG	67 5MI
32 PST-5BL	68 517
33 PST-5MW	69 5D6
34 Trailblazer	70 Pick 151
35 PST-5D1	71 DDF MD
36 PST-5AP	72 DDF GP87

Objectives:
To evaluate the suitability of turf-type tall fescue for southern California.

Methods and Materials:
In october, 1987, 72 cultivars of tall fescue were seeded to 5' x 5' plots at a rate of 4.4 #/M. The plots are mowed at 1-1/2", fertilized at 1# N/M every 6 weeks and irrigated as needed.