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1981 IOWA TURFGRASS FIELD DAY AND EQUIPMENT SHOW

**THURSDAY
JUNE 18, 1981**

**IOWA STATE UNIVERSITY
HORTICULTURAL RESEARCH
STATION
AMES, IOWA**

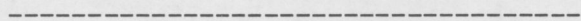
PROGRAM

Thursday

June 18, 1981

9:00 A.M. to 3:30 P.M.

9:00 - 9:45 Registration (coffee)
9:45 - 10:00 Introductions & Opening Remarks
10:00 - 12:00 Observation of Research Area
12:00 - 1:30 Lunch served at Research Station
1:30 - 3:30 Educational sessions on the control
of diseases, insects and weeds.
Equipment demonstrations.



In case of rain, a morning indoor program is planned at the Research Station.

MORNING PROGRAM

There are 10 studies on the research area that we will be looking at between 10:00 and 12:00 this morning. There is a number on the back of your lunch ticket which corresponds to one of these areas. At 10:00 go to the study with the same number as that on your ticket (see map of the research area). Each presentation will last 10 minutes. At the end of the 10 minute period a horn will blow and your group will have two minutes to move to the next area. Each group will see all 10 of the research areas. There are more than 10 studies on the research plots. Please feel free to visit any of these areas during lunch time or after 3:30. The areas that will be discussed this morning and the individuals who will present the information on each area are as follows.

- | | |
|--|-----------------|
| 1. Preemergent and Postemergent Herbicide Studies | Nick Christians |
| 2. Fungicide Trials | Laura Sweets |
| 3. Bentgrass Cultivar and Management Study | Mike Grooms |
| 4. Kentucky bluegrass, Perennial Ryegrass & Fine Fescue Management Study | Robert Shearman |
| 5. Fertilizer Studies | Jeff Nus |
| 6. Growth Retardant Study | Sally Johnson |
| 7. Iron Chlorosis Study on Trees | Wayne Hefley |
| 8. Sod Production Study | Tom Robeson |
| 9. Buffalograss Management Study | David Brahm |
| 10. Turfgrass Cultivar Evaluations | Ed Cott |

This is the first year that a research report has been prepared in conjunction with the annual Field Day. The first projects at the field research station were begun in the fall of 1979 and the information included in this report is based on data taken during the 1980 season. Many of the studies at the station will require from three to five years before any reliable conclusions can be drawn. However, I feel that you will find many of the results in this report to be of interest and hopefully the information included will be helpful to you. Research reports of this type will be prepared as a standard part of the Iowa Turfgrass Field Day in future years.

Nick Christians

June 1981

**Turfgrass
Research
Plots**
Summer 1981

Sorghum Sudan		Premium		Sod Blend		Baron	
Baron		Parade		Sod Production Study 8			
6 Tall Fescue Paint/Growth Retardant Study				Buffalograss Management Study			
				Texoka		Common	
Baron N & K Study Phosphorus Fertilization Demonstration 5		Fine Fescue Management Study		Kentucky Bluegrass Cultivar Evaluations		Perennial Ryegrass Cultivar Evaluations	
Non-Irrigated		Irrigated		10 Fine Fescue Cultivar Trials		Tall Fescue- Kentucky Bluegrass Seed Mixtures	
Kentucky Bluegrass Management Study		Kentucky Bluegrass Management Study				Baron Foliar Study	
Non-Irrigated		Irrigated		Park Liquid Fertilization Study		Baron Foliar Study	
Perennial Ryegrass Management Study		Perennial Ryegrass Management Study		Tall Fescue Regional Trials		Nitrogen Source Study	
Bentgrass Cultivar Study 3		Creeping Bentgrass		Enmundi Fall Fertilization Study			
Penneagle		Penncross		Emerald			
Emerald 2		Penneagle		Penncross Fall Topdressing Study		Park Preemergent Herbicide Study 1 Postemergent Herbicide Study	



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KENTUCKY BLUEGRASS CULTIVAR EVALUATIONS

Tables 1 and 2 contain information on the quality and color ratings for 49 Kentucky bluegrass cultivars. These cultivars were seeded on September 29 of 1979. They received a total of four pounds Nitrogen/1000 ft² in the 1980 season and were watered as needed to prevent drought stress. The values listed under each month are the means of ratings made on three replicated plots. Yearly means of all the months in which data were taken are listed in the last column. These yearly means are ranked in descending order.

It should be remembered that the information included in Tables 1 and 2 is from the first year of the study. The quality ratings were considerably affected by rate of establishment and it is likely that the order of the ranking will change in future years.

Table 1. Kentucky bluegrass quality ratings for the 1980 growing season.

CULTIVAR	MAY	JUNE	JULY	AUG	OCT	NOV	MEAN
1. A-20	7.0	7.5	8.0	8.0	8.5	8.5	8.0
2. TOUCHDOWN	6.5	7.5	8.0	7.5	8.0	8.5	8.0
3. KIMONO	7.0	7.0	8.0	8.0	8.5	8.0	8.0
4. AMERICA	5.5	7.5	7.5	8.5	8.5	9.0	8.0
5. SYDSPORT	6.5	7.5	7.5	7.5	8.0	8.0	7.5
6. ASPEN	6.5	7.0	7.5	7.5	7.5	8.0	7.5
7. PARADE	7.0	7.5	7.5	7.5	8.0	8.5	7.5
8. PARK	8.0	7.5	7.5	7.0	7.5	6.5	7.5
9. CHERI	6.5	7.5	8.0	8.0	8.0	8.0	7.5
10. PLUSH	6.5	7.0	7.5	7.5	8.0	8.0	7.5
11. ARISTA	6.5	7.0	7.5	7.5	8.0	8.0	7.5
12. VICTA	6.5	7.5	8.0	7.5	8.0	7.5	7.5
13. TRENTON	6.5	7.5	7.5	8.0	8.0	8.0	7.5
14. BRISTOL	6.5	6.5	7.5	7.5	8.0	8.0	7.5
15. ENMUNDI	6.5	6.5	7.5	8.0	8.0	7.5	7.5
16. WTN-1-13	6.5	7.5	7.5	7.5	8.0	8.5	7.5
17. A-20-6	7.0	7.5	7.5	7.5	7.5	7.5	7.5
18. WABASH	6.5	7.0	7.5	7.5	8.0	8.0	7.5
19. ESCORT	6.5	7.5	8.0	7.5	8.0	8.0	7.5
20. A-34	7.5	7.5	7.5	7.5	7.5	8.0	7.5
21. MERION	6.5	7.0	7.5	7.5	7.0	7.5	7.0
22. K3-160	6.5	7.0	7.0	7.0	6.5	7.0	7.0
23. SVING	6.0	7.5	8.0	7.5	7.5	7.0	7.0
24. RAM I	5.5	6.5	7.0	7.5	8.0	8.0	7.0
25. BARBIE	6.5	6.5	7.5	7.0	7.0	7.0	7.0
26. FYL KING	6.0	7.0	7.5	7.0	7.5	7.5	7.0
27. BIRKA	6.5	7.5	7.5	6.5	7.0	7.0	7.0
28. PENNSTAR	6.5	6.5	7.0	7.5	7.0	7.5	7.0
29. MAJESTIC	7.0	6.0	7.0	7.0	7.0	7.0	7.0
30. GLADE	5.5	6.5	8.0	7.5	8.0	8.0	7.0
31. RUGBY	6.5	6.5	7.0	7.0	7.5	8.0	7.0
32. P-164	6.5	7.0	7.5	7.5	7.5	7.5	7.0
33. ADELPHI	6.5	7.0	7.5	7.0	7.5	7.5	7.0
34. MERIT	6.0	6.5	7.0	7.5	7.5	7.5	7.0
35. AQUILLA	7.0	7.0	7.5	7.5	7.0	7.5	7.0
36. K76-86-11	7.0	6.5	6.5	6.5	7.0	7.0	7.0
37. SENIC	7.0	6.5	6.5	6.5	7.0	6.5	6.5
38. WTN H-7	6.5	6.5	6.5	6.5	7.0	7.0	6.5
39. NUGGET	6.5	6.0	6.5	7.0	7.0	7.0	6.5
40. 1528T	5.0	5.5	6.5	7.0	7.5	7.5	6.5
41. BARON	5.0	5.5	7.0	7.0	7.5	7.5	6.5
42. FANFARE	6.5	6.5	7.0	6.5	7.0	6.5	6.5
43. VANTAGE	6.0	5.5	7.0	6.5	7.0	6.5	6.5
44. BONNIEBLUE	5.5	5.5	6.5	7.0	7.0	7.5	6.5
45. SV 01617	6.0	6.5	7.0	6.5	6.5	7.0	6.5
46. N535	4.5	5.0	5.5	6.0	7.0	7.5	6.0
47. COMMON	5.5	5.0	5.5	5.0	5.5	5.0	5.0
48. COLUMBIA	2.5	2.5	3.0	4.0	6.5	7.0	4.5
49. BFB-35	2.5	3.5	4.0	5.0	5.0	5.5	4.5

Quality is rated at 9=best quality and 1=dead turf. A rating of 6 or higher constitutes acceptable quality.

Table 2. Kentucky bluegrass color ratings for the 1980 growing season.

CULTIVAR	MAY	JUNE	JULY	AUG	OCT	NOV	DEC	MEAN
1. RAM I	7.5	7.5	8.5	8.5	7.5	8.0	7.0	8.0
2. CHERI	7.5	8.0	8.5	8.0	7.5	7.5	7.0	8.0
3. N-535	7.5	8.0	8.0	8.5	7.5	8.0	7.5	8.0
4. 1528T	7.5	8.5	8.5	8.5	8.5	8.0	6.5	8.0
5. VICTA	8.0	8.5	8.5	8.0	7.5	7.5	7.0	8.0
6. BRISTOL	8.0	8.0	8.5	8.5	8.0	8.0	6.5	8.0
7. ENMUNDI	7.5	8.5	8.5	8.5	7.5	7.5	6.5	8.0
8. MERIT	7.5	8.0	8.5	8.5	8.0	8.0	7.0	8.0
9. ESCORT	7.5	7.5	8.5	8.5	7.5	7.5	7.0	8.0
10. SYDSPORT	7.5	8.5	8.0	7.5	7.5	7.5	6.5	7.5
11. P-164	5.5	8.5	8.0	8.5	8.0	7.5	6.5	7.5
12. ASPEN	7.5	7.5	7.5	7.5	7.5	7.0	6.5	7.5
13. TOUCHDOWN	8.0	7.5	8.0	8.0	7.0	7.0	6.5	7.5
14. PARADE	8.0	7.5	7.0	7.5	7.0	7.5	7.0	7.5
15. KIMONO	7.5	8.0	8.0	8.0	7.5	7.0	6.5	7.5
16. BARBIE	7.5	7.5	8.0	7.5	7.0	6.5	6.5	7.5
17. NUGGET	7.5	7.5	8.0	8.0	7.5	6.5	6.0	7.5
18. COLUMBIA	8.0	7.5	8.0	8.0	7.5	8.0	7.0	7.5
19. AMERICA	7.5	7.5	8.0	8.5	8.0	7.5	6.5	7.5
20. BARON	7.5	8.0	8.5	8.5	7.5	7.5	6.5	7.5
21. ARISTA	8.5	7.5	8.0	8.0	7.5	8.0	6.5	7.5
22. FYLKING	7.5	6.5	8.0	8.0	7.0	7.5	7.0	7.5
23. BIRKA	8.0	7.5	7.5	7.0	7.0	7.0	6.5	7.5
24. PENNSTAR	7.5	7.5	8.0	8.0	7.0	7.0	6.5	7.5
25. TRENTON	7.5	7.5	7.5	7.0	7.0	7.5	7.0	7.5
26. GLADE	7.5	8.0	8.0	8.0	8.0	7.5	6.0	7.5
27. RUGBY	7.5	7.5	7.0	7.5	7.5	7.5	6.5	7.5
28. ADELPHI	7.5	7.5	7.5	7.5	8.0	7.0	6.5	7.5
29. AQUILLA	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.5
30. SV-01617	7.5	7.0	7.5	7.5	7.5	7.0	6.5	7.5
31. SENIC	7.5	7.5	6.5	7.5	8.0	6.5	5.5	7.0
32. MERION	7.0	5.5	7.5	7.5	7.0	7.0	6.0	7.0
33. A-34	8.0	7.5	7.5	7.5	7.0	7.0	6.0	7.0
34. K3-160	7.5	7.5	7.5	7.5	7.0	6.5	6.0	7.0
35. SVING	7.5	7.5	8.0	7.5	7.0	6.5	5.5	7.0
36. PARK	7.0	7.5	7.0	7.0	7.0	6.5	5.5	7.0
37. BFB-35	5.5	6.5	7.5	7.5	7.0	7.5	6.5	7.0
38. PLUSH	7.0	7.5	8.0	7.5	7.0	7.0	6.5	7.0
39. FANFARE	8.0	7.5	7.5	7.5	7.0	6.5	5.5	7.0
40. MAJESTIC	6.5	6.5	7.0	7.5	7.0	7.0	6.5	7.0
41. VANTAGE	7.5	6.5	7.0	7.0	7.0	6.5	6.0	7.0
42. BONNIEBLUE	7.0	7.5	7.5	7.5	7.0	7.0	5.5	7.0
43. WTN-1-13	6.0	7.5	7.5	6.5	7.0	7.0	6.5	7.0
44. WABASH	6.5	7.5	7.5	7.0	7.0	7.0	6.5	7.0
45. A-20	6.0	7.5	7.0	7.0	7.0	6.5	6.0	6.5
46. COMMON	5.0	7.5	7.0	7.5	7.0	6.5	5.5	6.5
47. WTN H-7	6.5	7.5	6.5	6.5	6.0	6.0	5.0	6.5
48. A-20-6	6.5	7.0	7.0	6.5	7.0	6.5	5.5	6.5
49. K 76-86-1	6.0	6.5	6.5	6.5	7.0	6.5	5.5	6.5

Color is rated at 9=darkest green and 1=dead turf. A rating of 6 or higher constitutes acceptable color.

PERENNIAL RYEGRASS CULTIVAR EVALUATIONS

Tables 3 and 4 contain information on the quality and color ratings for 22 cultivars of perennial ryegrass. These perennial ryegrasses were seeded on September 29, 1979 and received a total of four pounds Nitrogen/1000 ft² during the 1980 season. The area was watered as needed to prevent drought stress. The values listed under each month are the means of ratings made on three replicated plots. Yearly means of all the months in which data were taken are listed in the last column. The yearly means are ranked in descending order.

One of the main problems with perennial ryegrasses in this area is winter kill. The past two winters in the Ames area have been very mild and there has been no winter kill as of the spring of 1981. With the exception of cultivars which have shown a poor mowing quality, the perennial ryegrasses have been fairly uniform in their performance up to this time.

Table 3. Perennial ryegrass quality ratings for the 1980 growing season.

CULTIVAR	MAY	JUNE	JULY	AUG	OCT	NOV	MEAN
1. YORKTOWN	8.0	8.0	8.0	8.0	9.0	9.0	8.5
2. BLYES	7.5	8.5	8.0	8.0	8.5	8.0	8.0
3. LORETTA	8.0	8.5	7.5	7.0	7.5	8.0	8.0
4. CITATION	8.0	7.5	8.0	8.0	8.5	8.0	8.0
5. ELKA	8.0	8.0	8.0	7.0	8.0	8.0	8.0
6. FIESTA	8.0	8.0	8.5	8.0	8.0	8.0	8.0
7. DELRAY	8.0	8.0	8.0	8.0	8.5	8.0	8.0
8. PENNFINE	8.0	8.0	8.0	8.0	7.5	7.5	8.0
9. DIPLOMAT	8.0	7.5	8.0	8.0	8.0	8.0	8.0
10. BELLE	8.0	8.0	8.0	7.5	8.5	8.5	8.0
11. K5-88	8.0	7.5	7.5	7.0	8.0	7.5	7.5
12. MANHATTAN	8.0	8.0	7.0	7.5	7.5	7.5	7.5
13. REGAL	8.0	7.0	8.5	7.0	7.0	7.0	7.5
14. MED NORTH	8.0	8.0	7.5	8.0	7.5	7.5	7.5
15. DERBY	8.0	7.5	8.0	8.0	7.0	7.0	7.5
16. J186R24D	8.0	8.0	7.0	6.5	6.0	6.5	7.0
17. NK-200	8.0	8.0	7.0	7.0	6.5	6.5	7.0
18. GOALIE	8.0	8.0	7.0	7.0	6.5	6.5	7.0
19. K5-94	8.0	7.5	6.5	7.0	6.5	7.0	7.0
20. CARAVELLE	6.5	6.0	7.0	6.0	6.0	6.5	6.5
21. NK-100	7.5	7.0	6.5	6.5	6.0	6.5	6.5
22. LINN	6.5	6.5	6.5	5.5	5.0	5.0	6.0

Quality is rated at 9=best quality and 1=dead turf. A rating of 6 or higher constitutes acceptable quality.

Table 4. Perennial ryegrass color ratings for the 1980 growing season.

CULTIVAR	JUNE	JULY	AUG	OCT	NOV	DEC	MEAN
1. BLYES	7.5	8.0	8.0	8.5	8.0	4.5	7.5
2. REGAL	8.0	9.0	8.0	8.0	7.5	5.0	7.5
3. CITATION	7.0	8.5	8.0	8.0	8.0	4.5	7.5
4. FIESTA	7.5	8.0	8.5	8.0	8.0	4.5	7.5
5. DERBY	7.5	8.5	8.5	8.0	8.0	5.0	7.5
6. YORKTOWN	8.0	8.0	8.5	9.0	8.5	4.5	7.5
7. DIPLOMAT	7.5	8.0	8.0	8.0	8.0	4.5	7.5
8. BELLE	7.5	8.0	8.0	8.5	8.0	4.5	7.5
9. J186R24D	7.5	7.0	7.0	6.5	7.0	6.0	7.0
10. K5-88	7.0	7.5	7.5	7.5	7.0	4.5	7.0
11. NK-200	7.5	7.0	7.0	7.0	7.0	5.5	7.0
12. MANHATTAN	7.5	7.5	7.5	7.5	8.0	5.0	7.0
13. LORETTA	8.5	8.0	7.5	7.0	7.5	4.0	7.0
14. CARAVELLE	6.5	7.5	6.5	7.0	7.5	5.5	7.0
15. MED-NORTH	8.0	7.5	7.5	7.5	7.5	4.5	7.0
16. DELRAY	7.5	8.0	7.5	8.0	7.5	4.0	7.0
17. PENNFINE	7.5	7.5	8.0	7.5	7.5	4.5	7.0
18. GOALIE	7.5	7.0	7.0	7.0	6.5	4.0	6.5
19. ELKA	8.0	8.0	7.5	6.5	6.5	3.0	6.5
20. K5-94	7.5	6.5	7.0	7.0	7.0	4.5	6.5
21. NK-100	7.5	7.0	7.0	7.0	7.0	4.0	6.5
22. LINN	6.5	7.0	6.5	6.5	6.0	3.5	6.0

Color is rated at 9=darkest green and 1=dead turf. A rating of 6 or higher constitutes acceptable color.

TALL FESCUE CULTIVAR TRIALS

Table 5 contains information on quality ratings for 20 tall fescue cultivars. These cultivars were seeded on September 5, 1979. They received three pounds Nitrogen/1000 ft² in the 1980 season and were watered as needed to prevent drought stress. The values listed under each month are the means of ratings on three replicated plots. Yearly means of all the months in which data were taken are listed in the last column. The yearly means are ranked in descending order.

This study is part of a national test being conducted by the USDA. Similar plantings exist at many of the other universities in the country. Tall fescues have very poor cold tolerance and Ames is on the northern edge of the region in which this species will do well. One of the primary concerns of the Ames test is to evaluate winter hardiness. Again, the past two winter in Ames have been mild and no winter damage has been observed. As of the spring of 1981, the ratings for the various cultivars have been very uniform.

Table 5. Tall fescue quality ratings for the 1980 growing season.

CULTIVAR	MAY	JUNE	JULY	AUG	OCT	NOV	MEAN
PHB-1-5	6.5	7.5	7.5	7.5	7.5	7.5	7.5
L-FZ-SYN 1	6.5	7.0	7.5	7.5	7.5	8.0	7.5
NJ-78 6	6.5	7.0	8.0	7.5	8.0	8.0	7.5
KENWELL	7.0	7.5	7.5	7.5	7.5	7.0	7.5
BELT KPH-1	6.5	7.5	7.5	7.0	7.5	7.5	7.5
BELT TF-11	6.5	7.0	8.0	7.5	7.5	7.5	7.5
BELT TF-25	6.5	7.5	8.0	8.0	8.0	8.0	7.5
T.F. 14801	6.5	7.5	7.5	7.5	7.5	7.5	7.5
KENHY	6.5	7.0	7.0	7.0	7.5	7.5	7.0
AG-125	6.5	6.5	7.5	7.5	7.5	7.5	7.0
BLEND 36-1	6.5	7.0	8.0	7.0	7.5	7.0	7.0
K5-27	6.5	6.5	7.5	7.0	7.5	7.0	7.0
T-5	6.5	6.5	7.5	7.5	7.5	7.5	7.0
KENTUCKY 31	6.5	7.5	7.5	7.0	7.5	7.0	7.0
KENMONT	6.5	6.5	7.0	7.0	7.5	7.5	7.0
GOAR	6.0	7.0	7.5	7.0	7.5	7.0	7.0
BEL SYN 16-1	6.0	6.5	7.5	7.5	7.5	7.5	7.0
T.F. 14802	6.5	6.5	7.5	7.0	7.5	7.5	7.0
T.F. 14803	6.5	6.5	7.5	7.5	7.5	7.5	7.0
FAWN	1.0	1.5	4.5	6.5	6.5	6.5	4.5

Quality is rated at 9=best quality and 1=dead turf. A rating of 6 or higher constitutes acceptable quality.

FINE FESCUE CULTIVAR TRIALS

Tables 6 and 7 contain information on the quality and color ratings for 20 fine fescue cultivars. These cultivars were seeded on August 29, 1979. The study received four pounds Nitrogen/1000 ft² in the 1980 season, and was watered as needed to prevent drought stress. As before, the yearly means are listed in descending order on the right.

The last five cultivars in Table 6 - Syn W, Pennlawn, Engina, Rolax, and Waldina - arrived late and were seeded in September of 1979. They were not as fully established as the others in the spring of 1980. This accounts for their low rating during the 1980 season.

Table 6. Fine fescue quality ratings for the 1980 growing season.

CULTIVAR	JUNE	JULY	AUG	OCT	NOV	MEAN
1. FL-1	7.5	8.5	8.5	8.5	8.0	8.0
2. ENSYLVA	6.5	8.0	8.0	8.5	8.0	8.0
3. HIGHLIGHT	7.5	7.5	8.0	8.0	8.0	8.0
4. FORTRESS	7.5	7.0	7.0	7.5	8.0	7.5
5. JAMESTOWN	6.5	8.0	7.5	8.0	8.0	7.5
6. ATLANTA	7.0	8.0	7.0	8.0	8.0	7.5
7. DAWSON	6.5	7.5	7.5	8.0	8.5	7.5
8. SCALDIS	7.0	8.0	8.0	7.5	8.0	7.5
9. K4-21	7.0	7.5	7.5	7.5	7.5	7.5
10. CHECKER	7.5	8.0	7.0	7.5	7.5	7.5
11. CANADA	6.0	7.0	7.0	7.0	7.0	7.0
12. K 5-29	6.5	7.5	7.0	7.0	7.5	7.0
13. RUBY	5.5	7.0	7.0	7.0	7.5	7.0
14. BILJART	5.5	6.5	7.5	7.5	7.0	7.0
15. TOURNAMENT	6.5	7.5	7.0	7.0	7.0	7.0
16. SYN W	6.0	7.0	7.0	7.0	7.5	7.0
17. PENNLAWN	5.0	7.0	7.0	6.5	7.0	6.5
18. ENGINA	5.5	6.0	6.0	6.5	7.5	6.5
19. ROLAX	5.0	6.0	6.0	6.5	7.0	6.0
20. WALDINA	4.5	6.0	6.5	6.5	6.5	6.0

Quality is rated at 9=best quality and 1=dead turf.
A rating of 6 or higher constitutes acceptable quality.

Table 7. Fine fescue color ratings for the 1980 growing season.

CULTIVAR	MAY	JUNE	JULY	AUG	OCT	NOV	MEAN
1. PENNLAWN	8.0	8.0	8.0	7.5	7.5	8.0	8.0
2. FL-1	8.0	7.5	8.0	8.0	8.5	8.5	8.0
3. ROLAX	8.0	8.0	8.0	7.5	7.5	8.0	8.0
4. BILJART	7.5	7.5	8.5	8.5	8.5	8.5	8.0
5. SCALDIS	7.5	7.5	7.5	8.0	8.0	8.0	8.0
6. SYN W	8.0	8.0	8.0	7.5	7.5	7.5	8.0
7. WALDINA	8.0	7.5	8.5	8.5	8.5	8.5	8.0
8. FORTRESS	7.0	7.5	7.5	7.5	7.5	8.0	7.5
9. JAMESTOWN	7.5	6.5	7.5	7.5	7.5	8.0	7.5
10. ATLANTA	7.5	7.0	8.0	7.5	7.5	7.5	7.5
11. ENGINA	7.5	6.5	7.0	7.5	8.0	8.0	7.5
12. HIGHLIGHT	7.5	7.5	8.0	7.5	7.0	7.0	7.5
13. TOURNAMENT	7.5	6.5	7.0	7.5	8.0	8.0	7.5
14. CANADA	7.5	6.5	7.0	7.0	7.5	7.5	7.0
15. K 5-29	6.5	6.5	7.5	7.5	7.5	7.5	7.0
16. DAWSON	7.0	6.5	7.0	7.5	7.5	7.5	7.0
17. ENSYLVA	7.0	6.5	7.5	7.0	7.0	7.5	7.0
18. K4-21	7.5	6.5	7.0	7.0	7.5	7.5	7.0
19. CHECKER	7.0	7.5	7.0	7.0	7.0	7.5	7.0
20. RUBY	6.0	6.5	7.0	7.0	7.0	7.5	6.5

Color is rated at 9=darkest green and 1=dead turf. A rating of 6 or higher constitutes acceptable color.

GROWTH REGULATOR STUDY

A growth retardant study was carried out on a common Kentucky bluegrass turf at the research station in 1980. The purpose of the investigation was to observe the effects of four growth regulating chemicals on the growth and quality of this turf. The area was mowed at 2" prior to treatment and 2" seven days after application. Two applications were made on the area, a spring application which was applied on May 12, 1980 and a summer application which was applied on July 6.

The results following the first application can be found in Tables 8, 9 and 10. Plots treated with Ethrel maintained an excellent quality throughout the six week period following application. The four and six lb a.i./a treatments were found to be of a better quality than the control, which received no treatment.

The BAS 106 material had very little effect on the turf. Growth was not inhibited and quality was not affected. The only exception was the 4.5 lb a.i./a rate applied to wet turf, which resulted in some growth reduction.

The MBR 12325 2S (Embark) and MBR 18337, which are both 3M products, resulted in adequate growth retardation. However, these materials were quite detrimental to overall quality. The MBR 18337 discolored the turf badly at higher application rates, as did the MBR 12325, Table 9.

Results of observations made following the second application on July 6 can be found in Tables 8a, 9a and 10a. Again, Ethrel was effective in slowing growth and was observed to maintain a high quality.

The BAS 106 was very effective in controlling growth after the second application; however, it was also quite detrimental to color and quality. A similar thing, only in reverse, occurred with the MBR materials. MBR 12325 and MBR 18337 were very effective following the first application,

but showed little effect following the July application.

The reason for these seasonal differences is not known. It is not unusual for differences of this kind to occur with the growth regulating materials, and much more work will be required before these chemicals and their effects are fully understood.

Table 8. Quality ratings on the growth regulator study following the spring application.

TREATMENT	RATE	DATE						MEAN	
		5-28	6-3	6-11	6-21	6-27	7-3		
1	ETHREL	4	9.0	9.0	9.0	9.0	8.5	8.5	9.0
2	ETHREL	6	8.5	8.5	9.0	9.0	8.5	9.0	9.0
3	CONTROL		9.0	9.0	9.0	9.0	8.0	8.0	8.5
4	ETHREL	2	8.0	8.0	8.5	8.5	8.5	8.5	8.5
5	ETHREL	4+2	9.0	9.0	9.0	9.0	7.5	7.5	8.5
6	BAS 106 DRY	3	8.5	8.5	8.0	8.0	7.0	7.0	8.0
7	BAS 106 DRY	3+1.5	8.5	8.0	8.0	7.5	6.5	6.5	7.5
8	BAS 106 DRY	4.5	8.5	8.0	8.0	7.5	7.0	6.5	7.5
9	BAS 106 WET	3	8.5	8.5	8.0	7.5	6.5	6.5	7.5
10	BAS 106 WET	3+1.5	9.0	8.0	7.5	7.5	7.0	7.0	7.5
11	MBR 12325 2S	0.125	6.5	6.5	7.0	8.0	9.0	9.0	7.5
12	MBR 12325 2S	0.250	6.5	7.0	7.0	7.5	9.0	9.0	7.5
13	MBR 12325 2S	0.50	6.0	6.5	7.0	7.5	9.0	9.0	7.5
14	MBR 18337 GR	0.125	8.0	7.5	6.5	6.5	8.5	9.0	7.5
15	MBR 18337 GR	0.250	7.0	7.0	6.0	6.0	8.5	9.0	7.5
16	MBR 18337 2EC	0.125	6.5	7.0	7.0	8.0	8.5	9.0	7.5
17	BAS 106 WET	4.5	8.0	7.5	7.5	6.5	7.0	6.5	7.0
18	MBR 18337 2EC	0.250	6.0	6.0	6.0	7.5	9.0	9.0	7.0
19	MBR 18337 2EC	0.50	6.0	6.0	6.0	6.5	9.0	9.0	7.0
20	MBR 18337 GR	0.50	5.5	5.5	5.5	5.0	8.0	8.5	6.5

Quality is rated at 9=best quality and 1=dead turf. A rating of 6 or higher constitutes acceptable quality.

Table 9. Color ratings on the growth regulator study following the spring application of growth regulating chemicals.

TREATMENT	RATE	DATE						MEAN	
		5-28	6-3	6-11	6-21	6-27	7-3		
1	CONTROL		8.5	8.5	9.0	8.5	8.0	8.0	8.5
2	ETHREL	4	8.0	8.5	9.0	9.0	8.5	9.0	8.5
3	ETHREL	4+2	8.0	9.0	9.0	8.5	7.5	8.0	8.5
4	ETHREL	6	8.0	8.5	8.5	9.0	8.5	9.0	8.5
5	ETHREL	2	7.5	7.5	8.0	8.5	8.5	8.5	8.0
6	BAS 106 DRY	3	8.5	7.5	7.5	7.5	7.0	7.5	7.5
7	BAS 106 DRY	3+1.5	8.5	7.5	7.5	7.0	6.5	6.5	7.5
8	BAS 106 WET	3+1.5	8.5	7.5	7.5	6.5	7.0	7.0	7.5
9	MBR 12325 2S	0.125	6.5	5.5	6.5	7.5	9.0	9.0	7.5
10	MBR 18337 2EC	0.125	7.5	6.5	6.5	7.5	8.5	9.0	7.5
11	BAS 106 DRY	4.5	9.0	7.0	7.5	6.5	7.0	6.5	7.0
12	BAS 106 WET	3	8.5	7.0	7.0	7.0	6.5	7.0	7.0
13	BAS 106 WET	4.5	9.0	7.0	7.5	6.5	7.0	6.5	7.0
14	MBR 12325 2S	0.250	6.0	4.5	5.5	7.5	9.0	9.0	7.0
15	MBR 12325 2S	0.50	6.5	4.5	6.0	7.0	9.0	9.0	7.0
16	MBR 18337 GR	0.125	7.5	6.0	5.5	6.0	8.5	9.0	7.0
17	MBR 18337 2EC	0.250	6.5	4.5	5.5	7.0	9.0	9.0	7.0
18	MBR 18337 GR	0.250	7.0	4.5	4.5	5.5	8.5	9.0	6.5
19	MBR 18337 2EC	0.50	6.0	4.0	4.5	5.5	9.0	9.0	6.5
20	MBR 18337 GR	0.50	6.5	4.0	4.0	4.0	8.0	9.0	6.0

Color is rated at 9=darkest green and 1=dead turf. A rating of 6 or higher constitutes acceptable color.

Table 10. Measurements made on the height of growth following the spring application of growth regulating chemicals.

TREATMENT	RATE	DATE					MEAN	
		5-29	6-4	6-11	6-21	6-27		
		----- CM -----						
1	MBR 18337 GR	0.50	9.0	9.0	12.5	16.0	16.5	12.5
2	MBR 18337 2EC	0.50	9.0	9.0	10.5	18.5	19.5	13.0
3	MBR 18337 GR	0.250	11.5	11.5	12.0	16.5	18.0	14.0
4	ETHREL	6	13.5	13.5	13.5	15.5	16.5	14.5
5	ETHREL	4+2	14.0	14.0	14.5	15.5	16.0	15.0
6	MBR 12325 2S	0.250	9.5	11.5	14.5	18.5	21.0	15.0
7	MBR 12325 2S	0.50	10.5	10.5	14.0	19.5	20.0	15.0
8	MBR 18337 GR	0.125	11.5	12.5	15.5	17.5	19.5	15.0
9	MBR 18337 2EC	0.250	9.0	9.5	13.5	20.0	22.0	15.0
10	ETHREL	2	12.5	14.0	16.0	18.5	19.5	16.0
11	BAS 106 WET	4.5	14.5	16.5	17.0	17.0	17.5	16.5
12	ETHREL	4	14.5	14.5	15.5	18.0	18.5	16.5
13	MBR 12325 2S	0.125	10.5	13.0	16.5	20.0	22.0	16.5
14	MBR 18337 2EC	0.125	12.5	13.5	16.0	18.5	21.5	16.5
15	BAS 106 DRY	4.5	15.0	16.0	17.0	18.0	18.0	17.0
16	BAS 106 WET	3+1.5	15.5	16.0	17.5	18.5	18.5	17.0
17	BAS 106 DRY	3+1.5	15.0	17.0	18.5	19.0	20.0	18.0
18	BAS 106 WET	3	14.0	17.5	18.5	19.5	20.5	18.0
19	BAS 106 DRY	3	15.0	17.5	19.0	19.5	20.5	18.5
20	CONTROL		16.0	20.5	23.0	26.5	27.5	22.5

Table 8a. Quality ratings on the growth regulator study following the summer application.

TREATMENT	RATE		DATE					MEAN
	lb. a.i./a		8_1	8_6	8_19	8_27	9_3	
1	CONTROL		9.0	9.0	9.0	8.5	8.5	9.0
2	ETHREL	4	8.5	9.0	9.0	9.0	9.0	9.0
3	ETHREL	2	8.5	8.5	9.0	9.0	9.0	8.5
4	ETHREL	4+2	8.5	8.5	9.0	8.5	9.0	8.5
5	ETHREL	6	8.5	8.5	9.0	8.5	9.0	8.5
6	MBR 12325 2S	0.125	7.5	8.0	9.0	8.5	8.5	8.5
7	MBR 12325 2S	0.250	7.0	7.5	8.5	8.0	9.0	8.0
8	MBR 18337 GR	0.125	7.0	7.5	9.0	8.5	9.0	8.0
9	MBR 18337 GR	0.250	6.5	6.5	8.5	8.5	9.0	8.0
10	MBR 18337 GR	0.50	7.0	7.0	8.5	8.5	8.5	8.0
11	MBR 18337 2EC	0.125	6.5	7.0	8.5	8.0	8.5	8.0
12	MBR 18337 2EC	0.250	7.0	7.5	8.0	8.5	8.5	8.0
13	MBR 18337 2EC	0.50	7.0	7.5	9.0	9.0	8.5	8.0
14	MBR 12325 2S	0.50	6.5	7.0	8.5	8.0	8.5	7.5
15	BAS 106 WET	3	7.0	6.5	7.0	6.5	6.5	7.0
16	BAS 106 DRY	3	6.5	6.0	6.5	6.5	6.5	6.5
17	BAS 106 DRY	3+1.5	7.0	6.5	6.5	6.5	6.5	6.5
18	BAS 106 WET	3+1.5	6.5	6.0	6.5	6.5	6.5	6.5
19	BAS 106 DRY	4.5	6.0	5.5	6.0	6.0	6.0	6.0
20	BAS 106 WET	4.5	6.0	5.5	6.0	6.5	6.5	6.0

Table 9a. Color ratings on the growth regulator study following the summer application.

TREATMENT	RATE		DATE					MEAN
	lb.	a.i./a	8_1	8_6	8_19	8_27	9_3	
1	CONTROL		8.5	9.0	8.5	8.5	8.5	8.5
2	ETHREL	2	8.0	8.0	9.0	9.0	9.0	8.5
3	ETHREL	4	8.5	8.0	9.0	9.0	9.0	8.5
4	ETHREL	4+2	8.5	8.5	9.0	9.0	9.0	8.5
5	ETHREL	6	8.5	8.5	9.0	9.0	9.0	8.5
6	MBR 12325 2S	0.125	7.0	8.0	8.5	8.5	8.5	8.0
7	MBR 12325 2S	0.250	7.0	7.5	8.5	8.5	8.5	8.0
8	MBR 18337 GR	0.125	7.5	7.5	8.0	8.5	8.5	8.0
9	MBR 18337 GR	0.250	6.5	7.0	8.0	9.0	8.5	8.0
10	MBR 18337 GR	0.50	7.0	7.0	8.5	8.5	8.0	8.0
11	MBR 18337 2EC	0.50	6.5	7.5	8.5	8.5	8.5	8.0
12	MBR 12325 2S	0.50	6.5	7.0	8.0	8.5	8.0	7.5
13	MBR 18337 2EC	0.125	6.5	7.0	8.0	8.0	8.5	7.5
14	MBR 18337 2EC	0.250	6.5	7.5	8.0	8.5	7.5	7.5
15	BAS 106 WET	3	6.5	6.5	7.0	7.0	7.0	7.0
16	BAS 106 DRY	3	6.5	6.0	6.5	6.5	6.5	6.5
17	BAS 106 DRY	3+1.5	6.5	6.0	7.0	6.5	6.5	6.5
18	BAS 106 DRY	4.5	6.0	5.5	5.5	6.0	6.0	6.0
19	BAS 106 WET	3+1.5	6.5	5.5	5.5	6.5	6.5	6.0
20	BAS 106 WET	4.5	6.0	5.0	6.5	6.0	6.5	6.0

Table 10a. Measurements made on the height of growth following the summer application of growth regulating chemicals.

TREATMENT	RATE lb. a.i./a.	DATE						MEAN	
		7_31	8_6	8_19	8_27	9_3	9_19		
1	BAS 106 DRY	4.5	8.0	8.0	8.5	9.0	9.0	9.5	8.5
2	BAS 106 WET	4.5	8.0	8.0	8.5	9.5	10.5	13.5	9.5
3	BAS 106 WET	3+1.5	9.5	9.5	9.5	9.5	9.5	10.5	10.0
4	BAS 106 DRY	3+1.5	9.5	10.0	10.5	11.0	11.5	11.0	10.5
5	BAS 106 DRY	3	10.0	10.5	12.0	13.5	14.5	15.5	12.5
6	BAS 106 WET	3	10.0	10.5	11.5	15.0	15.5	15.5	13.0
7	ETHREL	4+2	10.0	10.5	15.5	16.5	18.0	15.5	14.5
8	ETHREL	6	10.0	10.5	14.5	17.5	18.5	15.0	14.5
9	ETHREL	2	10.0	12.5	15.5	18.5	20.0	18.0	15.5
0	ETHREL	4	10.5	10.5	16.0	18.5	22.0	16.5	16.0
1	MBR 18337 GR	0.125	10.5	12.0	18.5	22.0	25.5	22.5	18.5
2	MBR 18337 2EC	0.125	10.0	12.0	19.5	25.0	28.5	18.0	19.0
3	MBR 18337 2EC	0.250	10.0	11.5	20.0	25.5	28.5	19.5	19.0
4	MBR 12325 2S	0.250	10.5	13.0	20.5	25.5	27.0	20.0	19.5
5	MBR 18337 GR	0.250	8.0	10.5	20.5	28.5	30.0	20.5	19.5
6	CONTROL		12.5	14.5	20.5	25.0	27.5	20.0	20.0
7	MBR 12325 2S	0.125	10.5	12.5	21.5	25.5	28.5	21.0	20.0
8	MBR 12325 2S	0.50	9.0	10.5	21.5	26.5	30.5	21.5	20.0
9	MBR 18337 GR	0.50	10.5	11.5	21.5	26.5	28.5	20.0	20.0
0	MBR 18337 2EC	0.50	10.5	12.5	20.5	29.5	32.0	22.0	21.0

KENTUCKY BLUEGRASS MANAGEMENT STUDY

The Kentucky bluegrass management study was established on August 16, 1979. The study which includes 10 cultivars of Kentucky bluegrass, is divided into irrigated and non-irrigated sections. Each cultivar is maintained at two mowing heights, one and two inches, and is fertilized with IBDU at two rates, one and three pounds Nitrogen/1000 ft²/year.

The results of quality and color ratings can be found in Tables 11 thru 16. When all of the data taken in 1980 were averaged, only Aquila, Sydsport, and Touchdown had obtained an acceptable quality (Table 11).

Irrigated and non-irrigated sections of the study are compared in Tables 12 and 13. Under irrigated conditions, Sydsport, Aquila, Glade, Touchdown Majestic and Park were found to be acceptable. The summer of 1980 was dry and hot, and none of the cultivars attained an acceptable rating under non-irrigated conditions.

The cultivars observed to have the best color were Glade, Baron and Victa.

Again, the cultivars were seeded in the fall of 1979 and the low quality ratings of some of them was probably due to a slow rate of establishment.

Table 11. Overall quality means for irrigated and non-irrigated Kentucky bluegrasses in the management study.

CULTIVARS	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	MEAN
1. AQUILA	5.5	4.5	6.0	6.0	6.0	6.0	6.5	6.0
2. SYDSPORT	5.5	4.5	6.0	6.0	6.0	6.5	6.5	6.0
3. TOUCHDOWN	5.5	5.0	6.0	6.0	6.0	6.0	6.5	6.0
4. MAJESTIC	5.5	4.5	5.5	5.5	6.0	6.0	6.5	5.5
5. PARK	5.0	4.5	5.5	5.5	5.0	5.0	6.0	5.0
6. GLADE	5.5	4.5	5.5	5.5	5.0	5.0	6.0	5.0
7. ADELPHI	5.0	4.0	5.0	5.0	5.5	5.0	5.5	5.0
8. MERION	4.5	4.0	5.0	5.0	4.5	4.5	5.5	4.5
9. BARON	4.5	4.0	5.0	5.0	4.5	4.5	5.0	4.5
10. VICTA	4.5	4.0	5.0	5.0	4.0	4.5	5.5	4.5

Table 12. Quality means for the irrigated Kentucky bluegrasses included in the management study.

CULTIVAR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	MEAN
1. SYDSPORT	5.5	5.0	7.0	7.0	7.0	7.5	7.0	6.5
2. AQUILA	5.0	5.0	6.0	6.5	6.5	6.5	6.5	6.0
3. GLADE	5.5	5.0	6.5	6.5	6.0	6.0	6.0	6.0
4. TOUCHDOWN	5.5	5.0	6.5	6.5	7.0	7.0	6.5	6.0
5. MAJESTIC	5.5	5.0	6.0	6.5	7.0	6.5	6.5	6.0
6. PARK	5.0	4.5	6.0	6.0	5.5	6.0	5.5	6.0
7. ADELPHI	5.0	4.5	6.0	6.0	6.0	6.0	6.0	5.5
8. MERION	4.5	4.5	5.5	6.0	5.0	5.0	6.0	5.0
9. BARON	5.0	4.0	5.5	5.5	5.0	5.0	5.0	5.0
10. VICTA	4.5	3.5	5.0	5.5	4.0	4.5	5.0	4.5

Table 13. Quality means for the non-irrigated Kentucky bluegrasses included in the management study.

CULTIVAR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	MEAN
1. AQUILA	5.5	4.5	6.0	5.5	5.5	5.5	6.5	5.5
2. TOUCHDOWN	5.5	4.5	5.5	5.0	5.5	5.5	6.5	5.5
3. PARK	5.0	4.5	4.5	5.0	4.5	4.5	6.0	5.0
4. SYDSPORT	5.0	4.0	5.0	5.0	5.0	5.5	6.5	5.0
5. MAJESTIC	5.0	4.5	5.0	4.5	4.5	5.0	6.5	5.0
6. GLADE	5.5	4.0	5.0	4.0	4.0	4.5	6.0	4.5
7. VICTA	4.5	4.5	5.0	4.5	3.5	4.5	5.5	4.5
8. ADELPHI	5.0	4.0	4.5	4.0	4.5	4.5	5.5	4.5
9. MERION	4.5	4.0	4.0	3.5	4.0	4.0	5.0	4.0
10. BARON	4.5	3.5	4.0	4.0	4.0	4.0	5.0	4.0

Table 14. Overall color means for the irrigated and non-irrigated Kentucky bluegrasses in the management study.

CULTIVAR	JULY	AUG	SEPT	OCT	NOV	MEAN
1. GLADE	7.0	7.0	8.0	8.5	6.5	7.5
2. BARON	7.5	7.0	9.0	8.5	5.0	7.5
3. VICTA	7.0	7.0	8.5	8.0	5.5	7.5
4. AQUILA	7.0	6.5	7.5	7.5	6.0	7.0
5. SYDSPORT	7.0	7.0	8.5	7.0	5.0	7.0
6. TOUCHDOWN	7.0	7.0	8.0	7.0	5.0	7.0
7. MAJESTIC	7.0	7.0	8.0	8.0	6.5	7.0
8. ADELPHI	6.5	6.5	8.0	7.0	5.0	6.5
9. MERION	6.5	6.5	7.0	5.0	4.0	6.0
10. PARK	6.5	6.5	7.0	6.0	4.0	6.0

Table 15. Color means for the irrigated Kentucky bluegrasses included in the management study.

CULTIVAR	JULY	AUG	SEPT	OCT	NOV	MEAN
1. GLADE	7.0	7.0	8.0	8.5	8.0	7.5
2. BARON	7.0	7.0	9.0	9.0	6.5	7.5
3. VICTA	7.0	7.0	9.0	8.5	6.5	7.5
4. AQUILA	6.5	6.5	7.5	7.0	6.5	7.0
5. TOUCHDOWN	7.0	7.0	8.5	6.5	5.5	7.0
6. MAJESTIC	6.5	6.5	7.5	7.5	6.5	7.0
7. SYDSPORT	6.5	6.5	8.0	6.0	5.5	6.5
8. ADELPHI	6.5	6.0	8.0	6.5	6.0	6.5
9. MERION	6.5	6.5	7.5	4.5	4.0	6.0
10. PARK	6.0	6.0	7.0	5.0	4.0	5.5

Table 16. Color means for the non-irrigated Kentucky bluegrasses included in the management study.

CULTIVAR	JULY	AUG	SEPT	OCT	NOV	MEAN
1. GLADE	7.5	7.5	8.5	8.5	5.5	7.5
2. SYDSPORT	7.5	7.5	8.5	8.0	5.0	7.5
3. MAJESTIC	7.0	7.5	9.0	8.5	6.0	7.5
4. AQUILA	7.0	7.0	8.0	8.0	5.0	7.0
5. BARON	7.5	7.0	8.5	8.5	4.0	7.0
6. VICTA	7.5	7.0	8.0	7.5	5.0	7.0
7. ADELPHI	7.0	7.0	8.0	7.5	4.5	7.0
8. TOUCHDOWN	7.5	7.0	7.5	7.0	4.0	6.5
9. MERION	7.0	7.0	6.5	5.5	4.0	6.0
10. PARK	6.5	7.0	7.0	6.5	4.0	6.0

PERENNIAL RYEGRASS MANAGEMENT STUDY

The Perennial ryegrass management study, like the Kentucky bluegrass management study, includes 10 cultivars and is divided into irrigated and non-irrigated sections. Each cultivar is maintained at two mowing heights, one and two inches. Each plot is divided into two fertilizer treatments, one and three pounds Nitrogen/1000 ft², applied as IBDU. The study was established on August 16, 1979.

The results of quality and color ratings can be found in Tables 17 thru 22. Loretta, Manhattan, and Yorktown were the only cultivars which maintained an acceptable quality over the entire season on both irrigated and non-irrigated areas. On the irrigated section of the area all cultivars except Caravelle and Linn maintained an acceptable quality throughout the season. On the non-irrigated area, none of the cultivars were acceptable. Loretta, Manhattan, and Pennfine were the three best cultivars on the non-irrigated area.

All of the cultivars maintained an acceptable color on both irrigated and non-irrigated areas.

Table 17. Overall quality ratings for irrigated and non-irrigated perennial ryegrasses in the management study.

CULTIVAR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	MEAN
1. LORETTA	5.0	5.0	6.5	6.0	6.0	6.5	6.5	6.0
2. MANHATTAN	5.5	5.0	6.0	6.0	6.0	6.5	6.5	6.0
3. YORKTOWN	5.0	4.5	6.0	6.0	6.0	6.5	6.5	6.0
4. PENNFINE	5.0	4.5	6.0	6.0	6.0	6.0	6.0	5.5
5. DERBY	4.5	4.5	6.0	6.0	6.0	6.0	6.5	5.5
6. CITATION	5.5	5.0	6.0	6.0	6.0	6.0	6.0	5.5
7. DIPLOMAT	4.5	5.0	6.0	6.0	6.0	6.0	6.0	5.5
8. NK 200	5.0	4.5	5.5	5.5	5.0	5.0	5.5	5.0
9. CARAVELLE	3.0	4.0	5.0	5.0	4.5	5.0	5.0	4.5
10. LINN	3.5	4.0	5.5	5.5	4.0	4.5	5.0	4.5

Table 18. Quality ratings for the irrigated perennial ryegrasses included in the management study.

CULTIVAR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	MEAN
1. Loretta	5.5	5.5	7.0	7.5	8.0	8.0	7.5	7.0
2. Yorktown	5.0	5.0	6.5	7.0	8.0	8.0	7.5	7.0
3. Manhattan	6.0	5.0	6.5	7.0	7.5	7.5	7.5	6.5
4. Pennfine	5.5	5.0	6.5	7.0	8.0	7.5	7.0	6.5
5. Derby	5.0	5.0	6.5	7.0	7.5	7.0	7.0	6.5
6. Citation	5.0	5.0	6.0	7.0	7.5	7.5	6.5	6.5
7. Diplomat	5.5	5.0	6.5	7.0	7.5	7.5	7.5	6.5
8. NK 200	5.0	4.5	6.0	6.5	6.5	6.0	6.5	6.0
9. Caravelle	3.0	4.0	5.5	5.5	6.0	6.0	6.0	5.0
10. Linn	3.0	4.0	6.0	6.5	4.5	4.5	5.0	4.5

Table 19. Quality ratings for the non-irrigated perennial ryegrasses included in the management study.

CULTIVAR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	MEAN
1. Loretta	4.5	4.5	5.5	4.5	4.5	4.5	5.0	5.0
2. Manhattan	5.0	5.0	5.5	5.0	4.5	5.0	5.0	5.0
3. Pennfine	4.5	4.5	5.5	5.0	4.5	5.0	5.0	5.0
4. Derby	4.0	4.5	5.5	5.0	4.5	5.0	5.5	5.0
5. Citation	5.5	4.5	5.5	4.5	4.0	4.5	5.0	5.0
6. Yorktown	4.5	4.5	5.5	5.0	4.5	5.0	5.0	5.0
7. NK 200	4.5	4.5	5.0	4.5	4.0	4.0	4.5	4.5
8. Diplomat	4.0	4.5	5.5	5.0	4.0	4.5	5.0	4.5
9. Caravelle	3.5	4.0	4.5	4.0	3.5	4.0	4.0	4.0
10. Linn	4.0	3.5	5.0	4.5	4.0	4.0	4.5	4.0

Table 20. Overall color ratings for the irrigated and non-irrigated perennial ryegrasses in the management study.

CULTIVAR	JULY	AUG	SEPT	OCT	NOV	MEAN
1. CITATION	6.5	7.0	8.0	7.5	6.5	7.0
2. DIPLOMAT	6.5	7.0	7.5	7.0	6.5	7.0
3. YORKTOWN	6.5	7.0	7.5	7.5	6.5	7.0
4. CARAVELLE	6.5	7.0	7.5	7.0	6.5	7.0
5. LORETTA	6.5	6.5	7.0	7.5	6.0	6.5
6. MANHATTAN	6.5	7.0	7.0	7.0	6.5	6.5
7. PENNFINE	6.5	7.0	7.5	7.0	6.0	6.5
8. NK 200	6.0	6.5	6.5	6.0	6.5	6.5
9. DERBY	6.5	7.0	7.0	6.5	6.5	6.5
10. LINN	6.0	7.0	6.0	5.5	5.5	6.0

Table 21. Color ratings for the irrigated perennial ryegrasses in the management study.

CULTIVAR	JULY	AUG	SEPT	OCT	NOV	MEAN
1. YORKTOWN	7.0	7.0	9.0	9.0	7.0	8.0
2. PENNFINE	7.5	7.5	8.5	8.0	6.0	7.5
3. DERBY	7.0	7.5	7.5	7.5	7.0	7.5
4. CITATION	7.0	7.0	8.5	8.0	7.0	7.5
5. DIPLOMAT	7.0	7.0	8.5	8.0	7.0	7.5
6. LORETTA	6.5	7.0	7.5	8.5	6.5	7.0
7. MANHATTAN	7.0	6.5	7.5	7.5	7.0	7.0
8. NK 200	6.5	6.5	7.5	6.5	7.0	7.0
9. CARAVELLE	7.0	7.0	8.0	7.5	6.5	7.0
10. LINN	6.5	6.5	6.0	5.5	6.0	6.0

Table 22. Color ratings for the non-irrigated perennial ryegrasses in the management study.

CULTIVAR	JULY	AUG	SEPT	OCT	NOV	MEAN
1. MANHATTAN	6.0	7.0	6.5	6.0	6.0	6.5
2. CITATION	6.0	7.0	7.0	6.5	6.0	6.5
3. DIPLOMAT	5.5	7.0	6.5	6.0	6.0	6.5
4. CARAVELLE	6.0	7.0	7.0	7.0	6.5	6.5
5. LORETTA	6.0	6.5	6.0	6.0	5.5	6.0
6. PENNFINE	6.0	6.5	6.5	6.0	5.5	6.0
7. NK 200	5.5	6.5	6.0	6.0	6.5	6.0
8. DERBY	6.0	6.5	6.5	6.0	6.0	6.0
9. YORKTOWN	5.5	7.0	6.0	6.5	6.0	6.0
10. LINN	5.5	7.0	6.0	6.0	5.5	6.0

FINE FESCUE MANAGEMENT STUDY

The Fine Fescue Management study includes the following cultivars:

- | | |
|----------------------------|-------------------------------|
| 1. Pennlawn Red Fescue | 6. Dawson Red Fescue |
| 2. Scaldis Hard Fescue | 7. FL-1 Hard Fescue |
| 3. Ruby Red Fescue | 8. Ensylva Red Fescue |
| 4. Atlanta Chewings Fescue | 9. Highlight Chewings Fescue |
| 5. K5-29 Red Fescue | 10. Jamestown Chewings Fescue |

The study includes only an irrigated section. Non-irrigated areas were not included in this study. Each cultivar is maintained at two mowing heights, one and two inches. Each plot is divided into two fertilizer treatments; one and three lbs. Nitrogen/1000 ft², applied as IBDU. The study was established on September 8, 1979.

The results of quality and color ratings can be found in Tables 23 and 24.

During this first year of the study, the Hard Fescues, Scaldis and FL-1, performed best. These two cultivars performed exceptionally well at the one inch mowing height. The low rating for Pennlawn was due to the fact that this cultivar was established somewhat later than the others.

Jamestown, Pennlawn and Scaldis maintained the best color throughout the season.

Table 23. Quality ratings for the ten Fine Fescue cultivars included in the management study.

CULTIVAR	MAY	JUNE	JULY	AUG	OCT	NOV	MEAN
1. SCALDIS	7.0	6.0	7.5	7.5	6.5	7.0	7.0
2. FL-1	6.5	6.0	7.5	7.5	7.0	7.0	7.0
3. ATLANTA	6.5	6.5	7.0	7.0	6.5	7.0	6.5
4. DAWSON	6.0	6.0	7.0	7.0	6.5	7.0	6.5
5. ENSYLVA	6.0	6.0	7.0	6.5	6.5	7.0	6.5
6. JAMESTOWN	6.5	5.5	7.0	7.0	6.5	7.0	6.5
7. K5-29	6.0	5.5	6.0	6.0	5.5	6.0	6.0
8. HIGHLIGHT	6.0	5.0	6.0	6.5	6.0	6.0	6.0
9. RUBY	5.5	5.0	5.5	6.0	5.5	6.0	5.5
10. PENNLAWN	3.5	4.5	4.5	5.0	5.0	5.0	4.5

Table 24. Color ratings for the 10 Fine Fescue cultivars included in the management study.

CULTIVAR	JULY	AUG	OCT	NOV	DEC	MEAN
1. JAMESTOWN	7.0	7.0	8.0	7.5	5.0	7.0
2. PENNLAWN	7.5	7.5	7.5	7.0	4.0	6.5
3. SCALDIS	6.5	7.5	7.5	7.0	4.5	6.5
4. RUBY	6.0	7.0	7.0	7.0	4.5	6.5
5. ATLANTA	6.5	7.0	7.0	7.0	4.5	6.5
6. DAWSON	7.0	7.0	7.5	7.5	5.0	6.5
7. FL-1	7.0	7.5	7.5	7.0	4.0	6.5
8. ENSYLVA	7.0	6.5	7.0	7.0	4.5	6.5
9. HIGHLIGHT	6.5	7.0	7.5	7.0	4.5	6.5
10. K5-29	6.0	7.0	7.0	7.0	4.0	6.0

FALL TOPDRESSING STUDY

A fall topdressing study was begun in November of 1980 on both the modified soil (1-1-1) and native soil, Penncross creeping bentgrass greens at the research station. Three different treatments were included; a) a 70-10-20 (sand-soil-peat) mix b) a 1-1-1 topdressing mix and c) a control area where no topdressing was applied. The treatments were applied at a depth of 1/4 inch. Each topdressing treatment was further divided into three fertilizer treatments; a) no nitrogen, b) 0.5 lb N/1000 ft², and c) 1 lb N/1000 ft². The plots were then further split into two fungicide treatments; a) Chloroneb 9 ounces/1000 ft² (Tersan SP) and b) Benomyl 2 ounces/1000 ft² (Tersan 1991). The treatments applied to the native soil area were exactly the same as those applied to the modified soil.

The winter of 1980-81 was very dry and no snow mold occurred on the greens involved in the study.

The results of color ratings made on the greens can be found in Table 25. The modified soil area 'greened up' much slower than did the native soil area. The modified soil area has a lower water holding capacity and this would be expected after a dry winter. The topdressed areas on both greens turned green much earlier than did the controls, which received no topdressing. There were no real differences between the 70-10-20 and 1-1-1 topdressing mixes on either area.

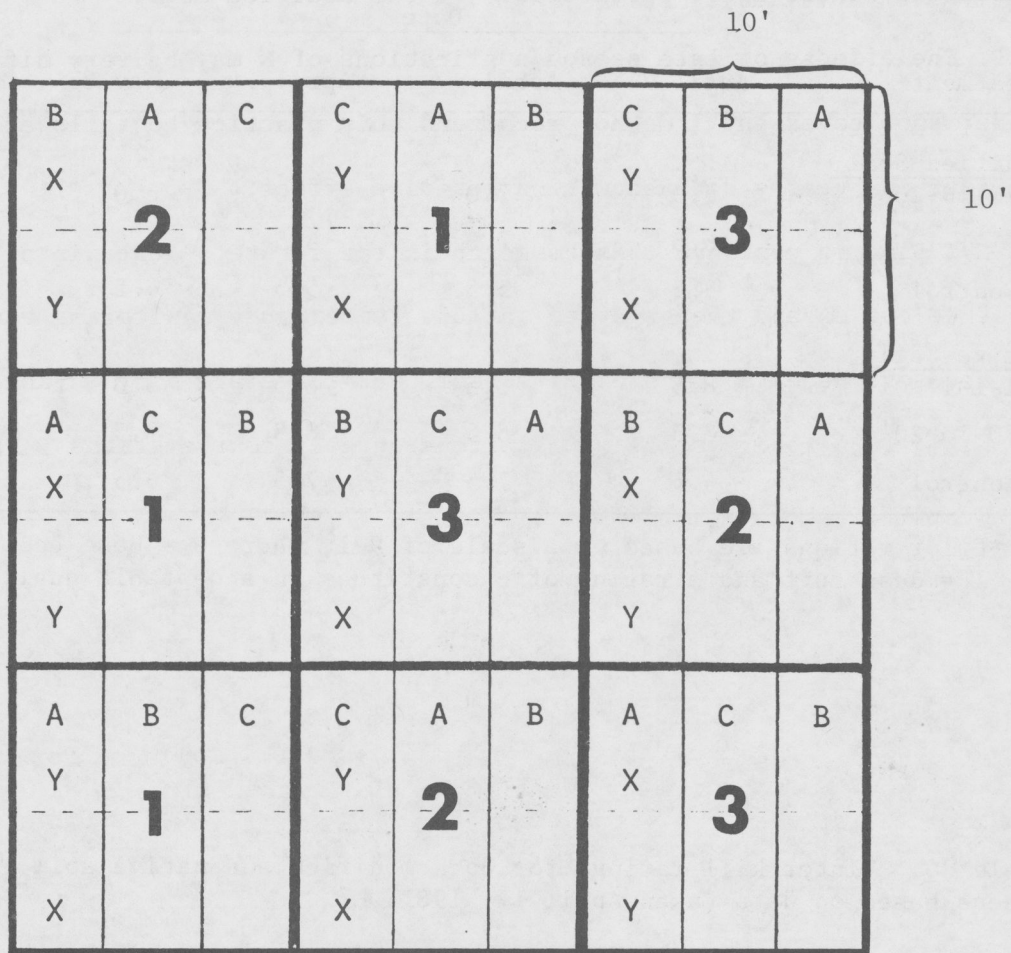
Winter Kill, as it was affected by topdressing treatments and N fertilization, was also evaluated. The results can be found in Table 26. The modified soil green was damaged to a far greater degree than was the native soil green. The control plots were also damaged to a greater

extent than were the areas which were topdressed. Increasing the rate of N from 0 to 1 lb N/1000 ft² (urea), just prior to topdressing in the fall, decreased winter kill, particularly on the modified soil.

The effects of late season applications of N may be very different under snow cover and I do not recommend this practice be followed based on just one year's data showing a positive effect.

I plan to continue this research in the future. Next winter I hope that we can expand the study to include temperature monitoring equipment in the soil beneath the plots. I feel that there are many advantages to heavy fall topdressing applications on golf course greens in the midwestern region and you will be hearing more about this practice in the future.

FALL TOPDRESSING STUDY



1. Control
2. 70-10-20 Topdressing (.77 cu. yd./1000 ft²)
3. 1-1-1 Topdressing (.77 cu. yd./1000 ft²)
 - a. Control
 - b. .5 lb. N (urea)/1000 ft²
 - c. 1 lb. N (urea)/1000 ft²
 - x. Chloroneb 9 oz./1000 ft²
 - y. Benomyl 2 oz./1000 ft²

Table 25. Color ratings for the modified (1-1-1-) soil green and the native soil green in the spring of 1981.

Treatment	Date				Mean
	April 7	April 17	April 24	May 8	
<u>Modified Soil</u>					
70-10-20	7.0*	7.0	7.0	6.0	6.5
1-1-1-	6.5	7.0	6.5	5.5	6.5
Control	3.5	5.5	5.5	4.5	4.5
<u>Native Soil</u>					
1-1-1-	8.5	8.5	8.5	8.0	8.5
70-10-20	8.5	8.5	8.5	7.5	8.0
Control	4.5	7.5	7.5	6.5	6.5

*Color ratings are based on a scale of 9-1, where 9 = best color, 1 = dead turf and a rating of 6 constitutes an acceptable quality.

Table 26. Winter kill ratings for both modified and native soil greens based on data taken April 17, 1981.

	Toppdressing Treatment								
	Control			70-10-20			1-1-1		
Green	0*	0.5	1.0	0	0.5	1.0	0	0.5	1.0
Modified	3.3**	4.5	5.6	6.7	8.0	8.4	5.0	7.3	8.0
Native	7.2	7.3	8.7	8.8	9.0	9.0	8.8	9.0	9.0

*Pounds of N/1000 ft² applied just prior to toppdressing treatments in November, 1980.

**9 = no damage; 1 = dead turf