MEMO

To:

From: Montco Products Corporation

Date:

Re: University research showing *Surfside 37* outperforming *Cascade Plus*, *LescoFlo*, and *Primer Select*

Summary:

In 2003 and 2004, a two-year study titled *"Effects of Several Wetting Agents on Creeping Bentgrass Color and Quality"* was led by Keith J. Karnok, Ph.D., at the University of Georgia. A handful of the most popular wetting agent brands were chosen for the study including *Surfside 37, Cascade Plus, LescoFlo,* and *Primer Select*. Several plots of grass of equal size at the same location were treated with the recommended concentration of each of the wetting agents while one plot, the control, was left untreated.

The condition of the grass was monitored over eight weeks following the application of the wetting agents. All experiments were performed in two sets, in which one set was immediately irrigated and the other set was irrigated 24 hours after application.

The color and quality of the grass in each set were recorded using the "Crenshaw Creeping Bentgrass Color Scale" in which a "1" indicates brown, dead turf and a "9" indicates dark green, healthy turf. The attached results of the study speak volumes about the quality and reliability of Surfside 37. In every trial conducted, the color and quality of the grass treated with Surfside 37 surpassed all competitors. Scientific research solidifies what golf course superintendents have been saying for decades: Surfside 37 just simply outperforms the competition. This is why Surfside 37 has been on the market longer than any of its competitors and remains the best choice in the wetting agent industry.

EFFECTS OF SEVERAL WETTING AGENTS ON CREEPING BENTGRASS COLOR AND QUALITY

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Montco Products Corporation

"Effects of Several Wetting Agents on Creeping Bentgrass Color and Quality"
(The University of Georgia, 2004)

University of Georgia
2004
Second Year Report
Two Year Study
Tables revised for easier reading
Full reports available on request

Table 1. 'Crenshaw' creeping bentgrass color as affected by several wetting agents

Treatment	Application Dates	Irrigation[1]	8/3[2]	8/4	8/5	8/6	8/8	8/10	8/17	8/24	8/31	9/14	9/28
			'Crenshaw' Creeping Bentgrass Color[3]										
Cascade Plus - 25.5+25.5 l/ha	8/3, 8/10	Immediate	7.4a[4]	6.9ab	6.1bc	5.5cd	5.3b	4.6d	4.8bcd	5.6bc	5.5bc	6.5bcde	7.1bc
Surfside 37 - 50.9 l/ha	8/3	Immediate	7.3a	7.0ab	6.9ab	6.5abc	6.1ab	6.4abc	6.8a	7.8a	7.8a	7.9a	8.1a
LescoFlo - 25.5+25.5 l/ha	8/3, 8/10	Immediate	7.4a	6.4bc	5.9c	5.1de	5.4b	5.1cd	4.5cd	5.3c	5.1cd	6.4cde	7.3abc
Primer Select 19.1 l/ha	8/3	Immediate	7.5a	7.4a	7.1ab	6.5abc	6.1ab	6.3abc	6.3ab	7.0ab	6.8ab	7.3abc	7.4ab
Control	---------	Immediate	7.6a	7.5a	7.5a	7.4a	7.1a	7.3ab	7.4a	7.6a	7.0a	7.4abc	7.4ab
Cascade Plus - 25.5+25.5 l/ha	8/3, 8/10	24 hours	7.4a	5.9c	4.9d	4.3ef	3.5c	3.3e	3.1de	3.4d	4.8cd	5.8de	6.4cd
Surfside 37 - 50.9 l/ha	8/3	24 hours	7.0a	6.8ab	6.4bc	6.1bcd	6.1ab	6.6abc	6.4ab	7.4a	7.4a	7.8ab	7.5ab
LescoFlo - 25.5+25.5 l/ha	8/3, 8/10	24 hours	7.4a	5.6c	3.9e	3.3f	2.9c	2.8e	2.4e	3.5d	4.0d	5.4e	6.1d
Primer Select 19.1 l/ha	8/3	24 hours	7.8a	6.9ab	6.4bc	6.0bcd	6.0ab	5.9bcd	5.9abc	6.9a	6.8ab	7.0abcd	7.3abc
Control	---------	24 hours	7.6a	7.6a	7.6a	7.5a	7.4a	7.5a	7.4a	8.1a	7.8a	7.6abc	7.6ab

[1]Irrigation: Immediate = irrigated immediately after treatment application, 24 hours = irrigated 24 hours after treatment application (no irrigation or rainfall for 24 hours).
[2]'Crenshaw' creeping bentgrass color taken before initial treatment application
[3]'Crenshaw' Creeping Bentgrass Color – 1 to 9 (1 = brown, dead turf and 9 = dark green, healthy turf
[4]Means in the same column joined by the same letter are not significantly different at the 0.05 level of probability according to Duncan's Multiple Range Test

Montco Products Corporation

"Effects of Several Wetting Agents on Creeping Bentgrass Color and Quality"

(The University of Georgia, 2004)

Table 2. 'Crenshaw' creeping bentgrass quality as affected by several wetting agents

Treatment	Application Dates	Irrigation[1]	8/3[2]	8/4	8/5	8/6	8/8	8/10	8/17	8/24	8/31	9/14	9/28
			'Crenshaw' Creeping Bentgrass Color[3]										
Cascade Plus - 25.5+25.5 l/ha	8/3, 8/10	Immediate	7.5a[4]	7.5a	7.0ab	6.5ab	5.8bc	5.3bcd	5.3bc	5.6bc	5.5bc	6.4bc	7.1a
Surfside 37 - 50.9 l/ha	8/3	Immediate	7.6a	7.6a	7.6a	7.4a	6.8ab	6.8ab	7.1a	7.4a	7.6a	7.5ab	7.8a
LescoFlo - 25.5+25.5 l/ha	8/3, 8/10	Immediate	7.5a	7.4ab	6.8ab	6.0bc	5.1cd	5.0cd	4.0cd	4.6cd	4.8cd	6.0cd	6.9ab
Primer Select 19.1 l/ha	8/3	Immediate	7.6a	7.6a	7.6a	7.3a	6.5abc	6.4abc	6.5ab	6.8ab	6.8ab	7.1ab	7.5a
Control	---	Immediate	7.8a	7.8a	7.8a	7.6a	7.4a	7.4a	7.4a	7.4a	7.1a	7.5ab	7.5a
Cascade Plus - 25.5+25.5 l/ha	8/3, 8/10	24 hours	7.8a	6.5c	6.0b	5.3c	4.3d	3.9de	3.4de	3.4de	4.4cd	5.3de	6.0bc
Surfside 37 - 50.9 l/ha	8/3	24 hours	7.5a	7.3abc	7.0ab	6.6ab	6.6ab	6.5ab	6.9a	7.3a	7.6a	7.5ab	7.8a
LescoFlo - 25.5+25.5 l/ha	8/3, 8/10	24 hours	7.5a	6.6bc	4.4c	3.0d	2.9e	2.6e	2.5e	3.0e	3.4d	4.4e	5.1c
Primer Select 19.1 l/ha	8/3	24 hours	7.9a	7.9a	7.1a	7.5a	6.5abc	6.6abc	6.9a	7.0a	6.6ab	7.3ab	7.6ab
Control	---	24 hours	7.8a	7.8a	7.8a	7.8a	7.8a	7.6a	7.8a	8.0a	7.8a	7.6a	7.5a

[1]Irrigation: Immediate = irrigated immediately after treatment application, 24 hours = irrigated 24 hours after treatment application (no irrigation or rainfall for 24 hours).

[2]'Crenshaw' creeping bentgrass color taken before initial treatment application

[3]'Crenshaw' Creeping Bentgrass Color – 1 to 9 (1 = brown, dead turf and 9 = dark green, healthy turf

[4]Means in the same column joined by the same letter are not significantly different at the 0.05 level of probability according to Duncan's Multiple Range Test

Montco Products Corporation

"Effects of Several Wetting Agents on Creeping Bentgrass Color and Quality"
(The University of Georgia, 2004)

Table 4. 'Crenshaw' creeping bentgrass quality as affected by several wetting agents (Irrigated immediately after application).

Treatment	Application Dates	8/15[1]	8/16	8/17	8/18	8/20	8/22	8/29	9/5	9/12	9/26	10/10
		'Crenshaw' Creeping Bentgrass Color[2]										
Cascade Plus - 25.5+25.5 l/ha	8/15, 8/22	8.6a[3]	6.9c	4.6c	3.8d	3.8c	3.5e	2.4c	3.0b	3.3b	5.1b	5.8b
Surfside 37 - 50.9 l/ha	8/15	8.3a	7.8ab	6.6b	6.1b	6.3b	6.8bc	6.6ab	6.5a	6.8a	7.3a	7.6a
LescoFlo - 25.5+25.5 l/ha	8/15, 8/22	8.4a	7.0bc	5.3c	4.9c	4.5c	4.5d	1.9c	2.3b	2.4b	3.8b	5.4b
Primer Select 19.1 l/ha	8/15	8.3a	7.8ab	6.5b	6.1b	5.9b	6.0c	6.4b	6.8a	6.8a	7.1a	7.8a
Control	---------	8.0a	7.9a	7.4ab	7.3a	7.6a	7.5ab	7.3a	7.1a	6.9a	6.9a	7.3a

Table 6. 'Crenshaw' creeping bentgrass quality as affected by several wetting agents (No irrigation or rainfall 24 hours after application).

Treatment	Application Dates	8/15[1]	8/16	8/17	8/18	8/20	8/22	8/29	9/5	9/12	9/26	10/10
		'Crenshaw' Creeping Bentgrass Color[2]										
Cascade Plus - 25.5+25.5 l/ha	8/15, 8/22	8.6a[3]	8.1a	6.4c	5.4c	4.5b	4.4b	2.9b	3.3b	3.5b	4.5b	5.5b
Surfside 37 - 50.9 l/ha	8/15	8.4a	8.4a	7.8ab	7.3ab	7.0a	7.0a	6.9a	7.0a	7.0a	7.4a	7.6a
LescoFlo - 25.5+25.5 l/ha	8/15, 8/22	8.6a3	8.3a	6.5bc	6.4bc	5.4b	5.5b	2.4b	2.5b	2.6b	3.5b	4.9b
Primer Select 19.1 l/ha	8/15	8.4a	8.3a	7.5abc	7.1ab	6.9a	6.9a	6.9a	7.0a	7.0a	7.3a	7.6a
Control	---------	8.3a	8.3a	8.0a	7.8a	7.8a	7.8a	7.5a	7.0a	7.1a	6.8a	7.0a

[1]'Crenshaw' creeping bentgrass color taken before initial treatment application
[2]'Crenshaw' Creeping Bentgrass Color – 1 to 9 (1 = brown, dead turf and 9 = dark green, healthy turf
[3]Means in the same column joined by the same letter are not significantly different at the 0.05 level of probability according to Duncan's Multiple Range Test

Montco Products Corporation

"Effects of Several Wetting Agents on Creeping Bentgrass Color and Quality"
(The University of Georgia, 2003)

University of Georgia
2003
First Year Report
Two Year Study
Tables revised for easier reading
Full reports available on request

Table 3. 'Crenshaw' creeping bentgrass color as affected by several wetting agents (Irrigated immediately after application)

Treatment	Application Dates	8/15[1]	8/16	8/17	8/18	8/20	8/22	8/29	9/5	9/12	9/26	10/10
		'Crenshaw' Creeping Bentgrass Color[2]										
Cascade Plus - 25.5+25.5 l/ha	8/15, 8/22	8.3a[3]	7.9a	6.5b	6.0b	6.0c	5.9b	5.8b	6.0d	6.4d	7.0b	7.6a
Surfside 37 - 50.9 l/ha	8/15	8.5a	7.9a	7.8a	7.6a	7.8a	7.5a	7.6a	7.4ab	7.5a	7.9a	8.0a
LescoFlo - 25.5+25.5 l/ha	8/15, 8/22	8.6a	8.6a	7.5ab	7.0ab	6.8bc	6.9ab	6.0b	6.4cd	6.6cd	7.1ab	7.9a
Primer Select 19.1 l/ha	8/15	8.3a	8.3a	7.4ab	7.1ab	6.9b	6.8ab	6.9a	6.9bc	6.9bc	7.5ab	7.6a
Control	---------	8.0a	8.1a	7.9a	8.0a	8.1a	7.9a	7.1a	7.1ab	7.3ab	7.6ab	7.8a

Table 5. 'Crenshaw' creeping bentgrass color as affected by several wetting agents (No irrigation or rainfall 24 hours after application)

Treatment	Application Dates	8/15[1]	8/16	8/17	8/18	8/20	8/22	8/29	9/5	9/12	9/26	10/10
		'Crenshaw' Creeping Bentgrass Color[2]										
Cascade Plus - 25.5+25.5 l/ha	8/15, 8/22	8.6a[3]	6.9c	4.6c	3.8d	3.8c	3.5e	2.4c	3.0b	3.3b	5.1b	5.8b
Surfside 37 - 50.9 l/ha	8/15	8.3a	7.8ab	6.6b	6.1b	6.3b	6.8bc	6.6ab	6.5a	6.8a	7.3a	7.6a
LescoFlo - 25.5+25.5 l/ha	8/15, 8/22	8.4a	7.0bc	5.3c	4.9c	4.5c	4.5d	1.9c	2.3b	2.4b	3.8b	5.4b
Primer Select 19.1 l/ha	8/15	8.3a	7.8ab	6.5b	6.1b	5.9b	6.0c	6.4b	6.8a	6.8a	7.1a	7.8a
Control	---------	8.0a	7.9a	7.4ab	7.3a	7.6a	7.5ab	7.3a	7.1a	6.9a	6.9a	7.3a

[1]'Crenshaw' creeping bentgrass color taken before initial treatment application
[2]'Crenshaw' Creeping Bentgrass Color – 1 to 9 (1 = brown, dead turf and 9 = dark green, healthy turf
[3]Means in the same column joined by the same letter are not significantly different at the 0.05 level of probability according to Duncan's Multiple Range Test

INTRODUCTION

Water repellent soils have been observed for many years in grasslands (1) forests (2) and citrus groves (3). They have become an increasing problem on golf greens since 1960, when the United States Golf Association recommended that golf green topsoil mix should contain at least 90% sand (20). Symptoms of these water repellent soils begin as small irregular shaped areas of drought-stressed turfgrass known as localized dry spots (4,5,6,7,8,9,10,11,12,13,14,15, 16, 17, 21). If left untreated these areas can increase in size and become excessively dry. Large areas of turfgrass can be severely damaged. Research has shown that the sand particles in the localized dry spots are covered with an organic coating, which renders them water repellent (4,5,6,7,8,9, 10,11,12,13,14,15,16,17,18,19). The problem is most evident during late spring, summer and early fall.

Currently, hand-watering, syringing, coring and the use of wetting agents are the best methods for controlling localized dry spots (4,5,6,7,8,9,10,11,12,13,14,15,16,17,21) caused by water repellent soils. However, wetting agents are potentially phytotoxic to turfgrasses if improperly used. The objective of this research was to determine the effects of several popular wetting agents on creeping bentgrass color and quality.

MATERIALS AND METHODS

The field experiment was initiated August 3, 2004 on the University of Georgia Experimental Golf Green that was built in 1996 to USGA specifications with the upper 10 cm (4.0 in.) of topsoil mix consisting of water repellent sand. The green consists of 83.6 square meters (900 ft.^{2}) of 'Crenshaw' creeping bentgrass (*Agrostis stoloniferous* var. *palustris*). The green was mowed at 0.64 cm (0.25 inch) and irrigated as needed with 0.95 cm (0.375 inch) of water when sufficient rainfall did not occur. Regular maintenance practices (fertilizer and pesticide applications) were performed as needed. Daily temperature and rainfall were recorded for the duration of the experiment.

Treatments were applied to 0.3 X 0.3 meter (1 X 1 ft.) plots with a CO_2 backpack sprayer. The following treatments were applied:

1. Cascade Plus: 25.5 l/ha (8 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied twice at a 7-day interval and irrigated immediately after application with 0.64 cm (0.25 inch) of water.
2. Cascade Plus: 25.5 l/ha (8 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied twice at a 7-day interval and irrigated 24 hours after application with 0.64 cm (0.25 inch) of water (no irrigation or rainfall for 24 hours).
3. LescoFlo: 25.5 l/ha (8 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied twice at a 7-day interval and irrigated immediately after application with 0.64 cm (0.25 inch) of water.
4. LescoFlo: 25.5 l/ha (8 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied twice at a 7-day interval and irrigated 24 hours after application with 0.64 cm (0.25 inch) of water (no irrigation or rainfall for 24 hours).
5. Primer Select: 19.1 l/ha (6 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied once and irrigated immediately after application with 0.64 cm (0.25 inch) of water.

6. Primer Select: 19.1 l/ha (6 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied once and irrigated 24 hours after application with 0.64 cm (0.25 inch) of water (no irrigation or rainfall for 24 hours).
7. NoBurn2: 38.2 l/ha (12 oz./1000 ft.^{2}) in 1,915 liters of water/ha (4.7 gallons of water /1000 ft.^{2}) applied once and irrigated immediately after application with 0.64 cm (0.25 inch) of water.
8. NoBurn2: 38.2 l/ha (12 oz./1000 ft.^{2}) in 1,915 liters of water/ha (4.7 gallons of water /1000 ft.^{2}) applied once and irrigated 24 hours after application with 0.64 cm (0.25 inch) of water (no irrigation or rainfall for 24 hours).
9. Surfside 37: 50.9 l/ha (16 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied once and irrigated immediately after application with 0.64 cm (0.25 inch) of water.
10. Surfside 37: 50.9 l/ha (16 oz./1000 ft.^{2}) in 814.9 liters of water/ha (2 gallons of water /1000 ft.^{2}) applied once and irrigated 24 hours after application with 0.64 cm (0.25 inch) of water (no irrigation or rainfall for 24 hours).
11. Control: Irrigated immediately after application of wetting agent treatments with 0.64 cm (0.25 inch) of water.
12. Control: Irrigated 24 hours after application of wetting agent treatments with 0.64 cm (0.25 inch) of water (no irrigation or rainfall for 24 hours).

Visual turfgrass color (1 to 9, 1 = brown, dead turf and 9 = dark green, healthy turf) and quality (1 to 9, 1 = very poor quality and 9 = excellent quality) ratings were taken on 8/3/04 (before treatment application), 8/4/04, 8/5/04, 8/6/04, 8/8/04, 8/10/04, 8/17/04, 8/24/04, 8/31/04, 9/14/04 and 9/28/04. Experimental design was a randomized complete block with four replications per treatment. Data were subjected to analysis of variance (ANOVA) procedures with treatment means separated by Duncan's Multiple Range Test at the 0.05 level of probability.

RESULTS AND DISCUSSION

Turfgrass Color

No differences in turfgrass color were observed before initial treatment application (Table 1). Experimental plots had an average turfgrass color rating of 7.4 on 8/3/04 (Table 1). During the course of the study, discoloration of the turfgrass by the wetting agents varied depending on the product and the timing of irrigation after treatment application. The greatest reduction in turfgrass color was observed on plots treated with Cascade Plus (irrigated 24 hours after application) and LescoFlo (irrigated 24 hours after application) (Table 1). These treatments caused discoloration within a day and the discoloration became more severe during the first two weeks of the experiment. After 3 weeks the discoloration began to dissipate. However, turfgrass color ratings of the Cascade Plus (irrigated 24 hours after application) and LescoFlo (irrigated 24 hours after application) treatments were lower than the control (irrigated 24 hours after treatment application) for the duration of the experiment. In contrast, turfgrass treated with Primer Select (irrigated immediately after application), NoBurn2 (irrigated immediately after application), NoBurn2 (irrigated 24 hours after application) and Surfside 37 (irrigated immediately after application) exhibited no discoloration on any of the observation dates.

Turfgrass treated with Cascade Plus (irrigated immediately after application) exhibited discoloration, as compared the control (irrigated immediately after treatment applications) during the first 4 weeks of the experiment (Table 1). However, no discoloration was observed after 6 weeks (9/14/04 and 9/28/04). Likewise, turfgrass color ratings of the LescoFlo (irrigated immediately after application) treated plots were less than the control (irrigated immediately after treatment applications) during the first 4 weeks of the experiment (Table 1). However, no discoloration was observed after 6 weeks (9/14/04 and 9/28/04). Also, compared to each other, turfgrass color ratings of the Cascade Plus (irrigated immediately after application) treatment and the LescoFlo (irrigated immediately after application) treatment were not different on any observation date (Table 1).

Turfgrass treated with Primer Select (irrigated immediately after application) did not exhibited discoloration, as compared to the control (irrigated immediately after treatment applications) on any observation date (Table 1). However, Primer Select (irrigated 24 hours after application) treated turfgrass exhibited discoloration on 8/5/04, 8/6/04 and 8/10/04 (Table 1). Compared to each other, turfgrass color ratings of the Primer Select (irrigated immediately after treatment application) treated plots were not different than the Primer Select (irrigated 24 hours after application) treated plots on any observation date (Table 1).

Compared to the control (irrigated immediately after treatment applications), turfgrass treated with Surfside 37 (irrigated immediately after application) exhibited no discoloration on any observation date (Table 1). Turfgrass color ratings of the Surfside 37 (irrigated 24 hours after application) treated plots were lower than the control (irrigated 24 hours after treatment applications) on 8/5/06 and 8/6/04 (Table 1). However, the discoloration was not severe and had dissipated when turfgrass ratings were taken on 8/8/04. Compared to each other, turfgrass color ratings of the Surfside 37 (irrigated immediately after treatment application) treated plots were not different than the Surfside 37 (irrigated 24 hours after application) treated plots on any observation date (Table 1).

Turfgrass Quality

No difference in turfgrass quality was observed before initial treatment application (Table 2). Experimental plots had an average turfgrass quality rating of 7.6 on 8/3/04 (Table 2). During the course of the study, quality reduction by the wetting agents varied depending on the product and the timing of irrigation after treatment application. The greatest reduction in turfgrass quality was observed on plots treated with Cascade Plus (irrigated 24 hours after application) and LescoFlo (irrigated 24 hours after application) (Table 2). These treatments reduced turfgrass quality within a day and the reduction in quality became more severe during the first two weeks of the experiment. After 2 weeks turfgrass quality began to increase. However, turfgrass quality ratings of the Cascade Plus (irrigated 24 hours after application) and LescoFlo (irrigated 24 hours after application) treatments were lower than the control (irrigated 24 hours after treatment application) for the duration of the experiment (Table 2).

In contrast, turfgrass quality ratings of the Primer Select (irrigated immediately after application), NoBurn 2 (irrigated immediately after application) and Surfside 37 (irrigated immediately after application) treatments were not different than the quality ratings of the control (irrigated immediately after application) on any observation date (Table 2). Also, turfgrass quality ratings of the Primer Select (irrigated 24 hours after application), NoBurn 2

(irrigated 24 hours after application) and Surfside 37 (irrigated 24 hours after application) treatments were not different than the quality ratings of the control (irrigated 24 hours after treatment applications) on any observation date (Table 2).

Turfgrass quality ratings of the Cascade Plus (irrigated immediately after application) treatment were less than the quality ratings of the control (irrigated immediately after application) on 8/8/04, 8/10/04, 8/17/04, 8/24/04 and 8/31/04 (Table 2). Turfgrass quality ratings of the LescoFlo (irrigated immediately after application) treatment were lower than the quality ratings of the control (irrigated immediately after application) on 8/6/04, 8/8/04, 8/10/04, 8/17/04, 8/24/04, 8/31/04 and 9/14/04. Compared to each other, turfgrass quality of the Cascade Plus (irrigated immediately after application) treatment and the LescoFlo (irrigated immediately after application) treatment was not different on any observation date (Table 2).

Turfgrass quality of plots treated with Primer Select (irrigated immediately after application) was not different than the control (irrigated immediately after application) on any observation date (Table 2). Also, no differences in turfgrass quality were observed between the Primer Select (irrigated 24 hours after application) treatment and the control (irrigated 24 hours after treatment application) (Table 2).

Turfgrass quality of plots treated with Surfside 37 (irrigated immediately after application) was not different than the control (irrigated immediately after application) on any observation date (Table 2). Also, no differences in turfgrass quality were observed between the Surfside 37 (irrigated 24 hours after application) treatment and the control (irrigated 24 hours after treatment application).

SUMMARY

Under the conditions of this study, the data indicate that the effects of wetting agents on creeping bentgrass color and quality can vary depending on product and timing of irrigation after application. In general, treatments that were not irrigated immediately after application exhibited the greatest reduction in turfgrass color and quality. The data indicate that a severe reduction in turfgrass color and quality can occur if Cascade Plus and LescoFlo are not irrigated immediately after application. However, this reduction in color and quality can be diminished if these treatments are irrigated immediately after application. In contrast, turfgrass treated with NoBurn2 did not reduce turfgrass color and quality even when it was not irrigated until 24 hours after treatment application.

Turfgrass treated with Primer Select and irrigated immediately did not exhibit any reduction in color or quality. Turfgrass treated with Primer Select and irrigated 24 hours after application did not exhibit a reduction in quality. However, a reduction in color was exhibited by turfgrass treated with Primer Select and irrigated 24 hours later. The discoloration was not severe and dissipated within 2 weeks.

Turfgrass treated with Surfside 37 and irrigated immediately exhibited no reduction in color and quality. However, a reduction in turfgrass color was exhibited by turfgrass treated with Surfside 37 and irrigated 24 hours later. Turfgrass quality was not affected and the discoloration was not severe and dissipated within 5 days.

REFERENCES

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APPENDIX

2004
WEATHER DATA

Daily maximum and minimum temperatures and rainfall data of August 2004 at the University of Georgia Rhizotron and Turfgrass Facility.

Date	Max. Temp.		Min. Temp.		Rainfall	
	F°	C°	F°	C°	in.	cm
8/1	90.3	32.4	71.3	21.8	0.00	0.00
8/2	88.3	31.3	70.7	21.5	0.00	0.00
8/3	93.0	33.9	67.1	19.5	0.00	0.00
8/4	94.0	34.4	70.3	21.3	0.00	0.00
8/5	89.6	32.0	69.0	20.6	0.03	0.08
8/6	83.2	28.4	64.6	18.1	0.00	0.00
8/7	80.6	27.0	58.7	14.8	0.00	0.00
8/8	83.9	28.8	55.2	12.9	0.00	0.00
8/9	84.5	29.2	59.6	15.3	0.00	0.00
8/10	78.5	25.8	63.4	17.4	0.01	0.03
8/11	82.6	28.1	60.3	15.7	0.00	0.00
8/12	79.3	26.3	64.2	17.9	2.12	5.38
8/13	79.9	26.6	58.8	14.9	0.00	0.00
8/14	81.8	27.7	59.6	15.3	0.00	0.00
8/15	78.3	25.7	66.3	19.1	0.00	0.00
8/16	85.6	29.8	65.8	18.8	0.00	0.00
8/17	85.3	29.6	64.4	18.0	0.00	0.00
8/18	86.4	30.2	64.3	17.9	0.00	0.00
8/19	89.8	32.1	65.2	18.4	0.00	0.00
8/20	87.6	30.9	67.1	19.5	0.04	0.10
8/21	83.8	28.8	69.2	20.7	0.00	0.00
8/22	83.8	28.8	67.5	19.7	0.00	0.00
8/23	85.3	29.6	68.1	20.1	0.00	0.00
8/24	87.9	31.1	67.5	19.7	0.00	0.00
8/25	85.6	29.8	68.2	20.1	0.01	0.03
8/26	86.7	30.4	65.1	18.4	0.00	0.00
8/27	87.5	30.8	66.8	19.3	0.00	0.00
8/28	90.3	32.4	68.7	20.4	0.00	0.00
8/29	88.9	31.6	68.2	20.1	0.05	0.13
8/30	87.1	30.6	68.0	20.0	1.01	2.57
8/31	87.8	31.0	66.5	19.2	0.01	0.03

Daily maximum and minimum temperatures and rainfall data of September 2004 at the University of Georgia Rhizotron and Turfgrass Facility.

Date	Max. Temp.		Min. Temp.		Rainfall	
	F°	C°	F°	C°	in.	cm
9/1	80.5	26.9	69.1	20.6	0.99	2.51
9/2	79.1	26.2	68.3	20.2	0.50	1.27
9/3	80.7	27.1	66.2	19.0	0.00	0.00
9/4	82.3	27.9	64.2	17.9	0.00	0.00
9/5	83.7	28.7	65.9	18.8	0.00	0.00
9/6	78.4	25.8	71.0	21.7	0.23	0.58
9/7	73.3	22.9	68.7	20.4	4.58	11.63
9/8	75.1	23.9	66.9	19.4	0.16	0.41
9/9	85.1	29.5	64.4	18.0	0.00	0.00
9/10	83.6	28.7	66.3	19.1	0.00	0.00
9/11	82.8	28.2	64.1	17.8	0.00	0.00
9/12	80.0	26.7	63.0	17.2	0.00	0.00
9/13	77.2	25.1	61.8	16.6	0.00	0.00
9/14	78.6	25.9	60.3	15.7	0.00	0.00
9/15	72.6	22.6	63.3	17.4	0.00	0.00
9/16	76.2	24.6	70.1	21.2	3.43	8.71
9/17	78.0	25.6	66.1	18.9	0.34	0.86
9/18	83.6	28.7	59.6	15.3	0.00	0.00
9/19	76.2	24.6	52.8	11.6	0.00	0.00
9/20	71.5	21.9	52.0	11.1	0.00	0.00
9/21	74.5	23.6	51.0	10.6	0.00	0.00
9/22	79.9	26.6	54.1	12.3	0.00	0.00
9/23	85.2	29.6	59.1	15.1	0.00	0.00
9/24	80.7	27.1	61.6	16.4	0.00	0.00
9/25	79.3	26.3	59.8	15.4	0.00	0.00
9/26	77.5	25.3	57.9	14.4	0.00	0.00
9/27	70.0	21.1	65.4	18.6	3.85	9.78
9/28	80.4	26.9	64.8	18.2	0.04	0.10
9/29	77.8	25.4	59.2	15.1	0.00	0.00
9/30	81.2	27.3	55.3	12.9	0.00	0.00