

Evaluation of Burn Down Herbicides Before Overseeding Fairways



Toscana Country Club, Indian Wells, California. Note green waste production from flail mowing in foreground compared to other treatments in the row.

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The Bottom Line: Given the conditions of our study, Reward (diquat) provided the best combination of speed of activity, bermudagrass suppression, green waste reduction, and cost effectiveness in preparation for overseeding on golf course fairways. To ensure maximum safety to all turfgrass species, application of Reward is recommended at 32 oz/A between 2-5 days before scalping and overseeding and not withholding irrigation prior to overseeding. Turflon Ester Ultra (Triclopyr) enhanced bermudagrass suppression from the burn down herbicides except for Finale (glufosinate), which did not require Turflon for increased efficacy.

Introduction

Overseeding is common practice on desert golf courses for winter color and playability. Yet, many golf courses are faced with transitioning from warm- to cool-season turf at a time of the year that is not favorable to either species. Traditionally, irrigation has been withheld and aggressive cultivation practices such as flail mowing and verticutting employed to slow down bermudagrass growth and encourage cool-season turf establishment. However, these practices can be deleterious in terms of air quality, green waste transportation and management, and spring transition of bermudagrass.

A growing trend on California desert golf courses is toward chemical suppression of bermudagrass during overseeding. Triclopyr is commonly used to suppress bermudagrass regrowth “on the other end” or during establishment of cool-season turf. Prior to overseeding, a non-selective or burn down herbicide could offer several benefits including:

1. Suppression of bermudagrass competition
2. Reduction of green waste
3. Reduction of labor and transportation costs
4. Improvement of air quality
5. No adverse effects on germination/establishment of overseeded species
6. No adverse effects on spring transition of bermudagrass

The objectives of this research were to compare Scythe (pelargonic acid), Reward (diquat), and Finale (glufosinate) alone and in various combinations for bermudagrass suppression [with or without prior application of Turflon Ester Ultra (triclopyr)] and green waste reduction vs. flail mowing as a standard control.

Study One: How long do burn down herbicides suppress bermudagrass and how does prior application of Triclopyr affect suppression in combination with these herbicides?

Location: 18 North Fairway, Toscana Country Club

Species: Tifway II hybrid bermudagrass

Mowing Height: 0.425 inches

Application Dates: Burn down herbicides (14 Sep 2011)
Turflon Ester Ultra (16 oz/A 5 days prior to above date)

Spray Information: 50 GPA
Burn down herbicides applied with single, even flat fan 8003 nozzle

Design: Randomized complete block; 3 replications
Study was conducted on two areas of turf, one that was pre-treated with Turflon Ester Ultra and the other received no Turflon Ester

Results:

- ✓ With the exception of Finale, all other burn down herbicides were more effective in suppressing bermudagrass when the turf was pre-treated with Turflon Ester Ultra (Table 1).
- ✓ Scythe>Reward>>Finale for speed of activity.
- ✓ Finale>Reward>>Scythe for longevity of bermudagrass suppression.
- ✓ These results demonstrated that overseeding preparation (scalping and seeding) should take place within 1-2, 2-5, and 5-12 days of application of Scythe, Reward, and Finale, respectively.
- ✓ The study area was not overseeded until 29 Oct 2011 and, during that time, bermudagrass appeared to recover among all treatments.

Table 1. Percentage of brown bermudagrass turf 5 and 12 days after treatment with burn down herbicides, and with or with pre-treatment of Turflon Ester Ultra at 16 oz/A. Indian Wells, CA.

No.	Treatment	Rate	Cost/Acre ¹	5 DAT		12 DAT	
				Brown Turf (%) + Turflon	Brown Turf (%) - Turflon	Brown Turf (%) + Turflon	Brown Turf (%) - Turflon
1	Scythe	5% v/v					
1	MSO	1% v/v	\$120	72 cde	25 f	48 cdefg	17 gh
2	Scythe	5% v/v					
2	MSO	0.5% v/v	\$115	85 abcd	38 f	65 abcde	34 efgh
3	Scythe	7% v/v	\$154	88 abc	60 e	68 abcde	36 efgh
4	Scythe	7% v/v					
4	MSO	0.5% v/v	\$159	90 abc	78 bcde	71 abcde	65 abcde
5	Reward	16 oz/A					
5	NIS	0.5% v/v	\$15	94 ab	65 de	78 abcd	17 fgh
6	Reward	32 oz/A					
6	NIS	0.5% v/v	\$25	96 ab	89 abc	88 ab	44 defgh
7	Reward	64 oz/A					
7	NIS	0.5% v/v	\$45	98 ab	88 abc	91 ab	55 bcdef
8	Finale	16 oz/A	\$10	80 abcde	63 e	70 abcde	72 abcde
9	Finale	32 oz/A	\$20	98 ab	96 ab	90 ab	93 ab
10	Finale	64 oz/A	\$40	99 a	99 a	98 a	97 a
11	Scythe	5%v/v					
11	Reward	16 oz/A					
11	NIS	0.5% v/v	\$125	97 ab	65 de	84 abc	13 gh
12	Scythe	5% v/v					
12	Finale	16 oz/A					
12	MSO	0.5% v/v	\$125	96 ab	90 abc	88 ab	65 abcde
13	Reward	16 oz/A					
13	Finale	16 oz/A					
13	NIS	0.5% v/v	\$25	98 ab	86 abc	92 ab	64 abcde
14	Scythe	3% v/v					
14	Reward	8 oz/A					
14	Finale	8 oz/A					
14	NIS	0.5% v/v	\$82	96 ab	62 e	87 ab	8 h

Means followed by the same letter in a column are not significantly different ($\alpha = 0.05$).

¹Cost/acre of all ingredients is approximate and meant for comparison purposes only.

DAT = days after treatment. MSO = methylated seed oil. NIS = non-ionic surfactant.

Study Two: How do burn down herbicides affect green waste, ryegrass germination, and bermudagrass spring transition?

Location:	18 North Fairway, Toscana Country Club
Species:	Tifway II hybrid bermudagrass
Application Dates:	Burn down herbicides (11 Oct 2011) Turflon Ester Ultra (16 oz/A 5 days prior to above date)
Mowing Height:	0.425 inches 0.250 inches (scalping) and/or flail mowing on 13 Oct 2011
Spray Information:	50 GPA Burn down herbicides applied with CO ₂ -powered flat fan 8003 nozzles
Design:	Randomized complete block; 4 replications
Plot Size:	7 ft x 15 ft; 5-ft alleys
Overseeding:	Perennial Ryegrass, 800 lbs/A, 29 Oct 2011

Results:

- ✓ All treatments resulted in significantly less green waste production compared to the flail and scalping control. Consequently, the data were reported as a percent reduction compared to that treatment (Table 2).
- ✓ Although few significant differences in green waste were found among the scalping and chemical treatments, both rates of Reward reduced green waste the most (74% and 76% reduction).
- ✓ After flail mowing and/or scalping and 48 hours after chemical application, Reward or treatments containing Reward provided the best bermudagrass suppression as evidenced by the percentage of brown bermudagrass turf.
- ✓ Overall, the results of these studies suggest that Reward (diquat) is the best burn down herbicide for use on fairways prior to overseeding based on cost, speed of activity, green waste reduction, and bermudagrass suppression. To ensure maximum safety to all turfgrass species, application of Reward is recommended at 32 oz/A between 2-5 days before scalping and overseeding and not withholding irrigation prior to overseeding.
- ✓ Scythe (pelargonic acid) is tried and true for overseeding preparation on putting greens where cost is less of a factor due to area. Furthermore, it has already been used with success on fairways in the Coachella Valley. Other advantages include its speed of activity, thus shortening the window between times of application and overseeding preparation. However, our results suggest that the

other burn down herbicides are more cost effective and equally or more effective in function on fairways and other large areas of turf.

- ✓ Finale (glufosinate) is the least studied burn down herbicide for this application. However, Finale appears to offer the greatest potential for bermudagrass suppression even without pre-treatment with Triclopyr. In the second experiment, Finale was at a disadvantage since it requires a longer period of time than 48 hours to suppress bermudagrass. However, again it provides the longest suppression. And, like Reward, it is very cost effective. The recommended application rate for this function is 32 oz/A. Additional research with Finale and the other burn down herbicides will continue in 2012 including monitoring spring transition of bermudagrass in these trials.

Table 2. Percentage of bermudagrass green waste reduction and brown turf following flail or reel mowing on 13 Oct 2011. Herbicide treatments were applied 48 hours earlier. Indian Wells, CA.

No.	Treatment	Rate	Cost/Acre ¹	Green Waste Reduction (%) ²	Brown Turf (%)
1	Untreated Flail + Reel	--	--	0 a	85 ab
2	Untreated Reel	--	--	62 bc	41 d
3	Scythe	5% v/v			
3	MSO	0.5% v/v			
3	APSA 80	0.5% v/v	\$130	64 bc	71 bc
4	Scythe	7% v/v			
4	MSO	0.5% v/v			
4	APSA 80	0.5% v/v	\$167	67 bc	86 ab
5	Scythe	5% v/v			
5	Reward	10 oz/A			
5	MSO	0.5% v/v	\$121	68 bc	94 ab
6	Reward	32 oz/A			
6	NIS	0.5% v/v	\$25	74 c	99 a
7	Reward	64 oz/A			
7	NIS	0.5% v/v	\$45	76 c	99 a
8	Finale	32 oz/A	\$20	60 bc	35 de
9	Finale	64 oz/A	\$40	66 bc	41 d
10	Scythe	5% v/v			
10	Finale	16 oz/A			
10	MSO	0.5% v/v	\$125	67 bc	78 ab
11	Reward	16 oz/A			
11	Finale	16 oz/A			
11	NIS	0.5% v/v	\$25	69 bc	87 ab
12	Flucarbazone	0.6 oz/A	--	54 b	14 e
13	Flucarbazone	1.2 oz/A	--	67 bc	40 d
14	Flucarbazone	2.4 oz/A	--	70 bc	46 cd

Means followed by the same letter in a column are not significantly different ($\alpha = 0.05$).

¹Cost/acre of all ingredients is approximate and meant for comparison purposes only.

²Green waste reduction values were calculated as a percentage of clippings harvested from the untreated flail and reel mowing treatment.

MSO = methylated seed oil. NIS = non-ionic surfactant.

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