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Use of Postemergence Grass Herbicides for Coastal Bermudagrass Burndown and Clover Establishment

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Summary

Seven postemergence grass herbicides were applied to Coastal bermudagrass to determine if these compounds could be used to reduce grass competition and enhance clover establishment. Poast, Selectone, Assure, Whip, Fusilade 2000, Verdict, and SC-1084 were applied at three rates and evaluated in the fall and early summer to determine burndown and subsequent spring regrowth. None of the chemicals evaluated were phytotoxic to subterranean clover which was overseeded on the Coastal. Poast, Selectone, Verdict, SC-1084, and the low Fusilade rate produce the ideal combination of good fall desiccation and spring recovery of Coastal bermudagrass.

Introduction

The greatest potential and use for cool season annual clovers is in mixtures with warm season perennial grasses (Evers, 1984). Clover persistence from year to year is dependent on production of a good seed crop in the spring and successful germination and establishment the following fall. Competition from the perennial grass sod in the fall is the greatest deterrent to obtaining a good volunteer clover stand (Evers and Dorsett, 1986). Producers try to reduce fall grass competition by grazing and mowing.

A possible and more effective method may be used if a chemical desiccant applied in the fall would burn back the grass but not harm the young clover seedlings. Applying the proper rate of such a chemical is critical in that it needs to be high enough to top kill the grass in the fall but low enough to permit grass recovery the following spring. Seven postemergence herbicides were applied at three rates to identify potential chemicals for use in promoting clover establishment and persistence in a Coastal bermudagrass sod.

Procedure

Coastal bermudagrass test site with a soil type of Tremona loamy fine sand and a pH of 5.2 was shredded to a height of 4 to 6 inches. A compressed air bicycle sprayer with three SS11002 nozzles, spaced 20 inches apart was used to apply the postemergence grass herbicides on October 9, 1985. The sprayer delivered 20 gallons of water per acre at 25 psi pressure. All treatments, except Whip, included a non-phytotoxic oil (Agridex) added at the rate of 1 qt/A. Experimental design was a randomized complete block with four replications. Plot size was 76 inches wide X 26 ft long. Mt. Barker

subterranean clover was planted with a Tye sod seeder at the rate of 10 lbs/A into the treated plots on October 17, 1985 and 0.51 inch of rainfall was received on October 18. One hundred and fifty pounds per acre of 0-46-0 was applied to the plots on November 6.

Percent burndown and subsequent regrowth of the coastal was evaluated five times from fall into early summer. A rating index (0 equals to no burndown or regrowth; 100 equals complete burndown or regrowth) was used to evaluate the herbicidal treatments. Four 1-ft square quadrants were clipped from each plot to determine percent clover, weeds, and bermudagrass in each plot. Then plots were harvested using a Lawn Genie mower and individual plot weights recorded. Plots were harvested on February 20, 1986, and April 3, 1986.

Results and Discussion

Desiccation of Coastal bermudagrass was slow for all chemicals with only 20 to 42 percent burndown 9 DAT (days after treatment) (Table 1). At 29 DAT, Selectone, Fusilade, and SC-1084 resulted in about 90 percent desiccation. Poast and Verdict were also effective at higher application rates. There was a general decrease in percent burndown from 29 to 56 DAT for all chemicals except Fusilade and SC-1084. The low rate of Poast (0.125 lb ai/A), Assure at 0.0625 and 0.125 lbs ai/A and all Whip treatments had significantly lower burndown than the other treatments at 56 DAT.

A rating for Coastal regrowth in early summer (June 20) revealed that only Fusilade at 0.25 or 0.375 lbs ai/A and SC-1084 at 0.4 lbs ai/A were significantly lower in regrowth from the untreated check, indicating that these rates may have resulted in Coastal bermudagrass kill. Treatments resulting in a combination of good fall burndown and spring recovery of Coastal bermudagrass were Poast, Selectone, Verdict, SC-1084, and the low Fusilade rate.

The dry fall 1985 resulted in only fair stands and yields of subterranean clover (Table 2). Clover and total forage yields did decrease as herbicide rate increased for Selectone, Whip, Verdict, and SC-1084 at the first harvest. It did not appear there was any phytotoxicity to the subterranean clover. At the second harvest only Poast at 0.375 lb ai/A had a significantly higher total yield than the control. One year's data is not sufficient to make recommendations. But the results are encouraging that some of these chemicals could be helpful in establishing and maintaining clovers in warm season perennial grasses.

Literature Cited

1. Evers, G.W. 1984. Clovers for the Lower South. Proceedings of the 1984 American Forage and Grassland Council, pp. 251-254.
2. Evers, G.W. and D.J. Dorsett. 1986. Estimated forage legume acreage and management problems in Texas. Texas Agri. Exp. Sta. MP-1618.

KEYWORDS: Postemergence grass herbicides/burndown/regrowth/coastal bermudagrass/subterranean clover.

TABLE 1. PERCENTAGE BURNDOWN AND REGROWTH OF COASTAL BERMUDAGRASS AFTER TREATMENT WITH HERBICIDES

Treatment	Rate lbs ai/A	Percent Burndown			Percent Regrowth	
		10/17/85 (9 DAT) ¹	11/07/85 (29 DAT)	12/06/85 (56 DAT)	4/18/86	6/20/86
1. Check	—	O c ²	O h	O e	100 a	100 a
2. Poast (1.53#/gal) CO ³	0.125	20 b	66 ef	36 d	50 bc	98 a
3. Poast + CO	0.25	30 ab	88 abc	81 ab	43 bcd	98 a
4. Poast + CO	0.375	37 ab	93 ab	85 ab	36 bcdef	94 a
5. Selectone 2E + CO	0.2	32 ab	90 abc	58 c	45 bc	96 a
6. Selectone + CO	0.3	37 ab	93 ab	80 ab	41 bcde	88 ab
7. Selectone + CO	0.4	27 ab	94 a	90 ab	36 bcdef	98 a
8. Assure (0.8#/gal) + CO	0.0625	32 ab	61 f	30 d	52 b	97 a
9. Assure + CO	0.125	42 a	79 bcd	40 d	50 bc	99 a
10. Assure + CO	0.25	27 ab	93 ab	80 ab	32 bcdef	87 ab
11. Whip 1EC	0.2	27 ab	47 g	25 d	50 bc	98 a
12. Whip	0.3	27 ab	57 fg	32 d	50 bc	98 a
13. Whip	0.4	27 ab	70 def	33 d	50 bc	93 a
14. Fusilade 2000 1E + CO	0.125	32 ab	94 a	99 a	17 fgh	86 ab
15. Fusilade 2000 + CO	0.25	37 ab	95 a	100 a	10 gh	65 c
16. Fusilade 2000 + CO	0.375	30 ab	98 a	100 a	1 h	42 d
17. Verdict (2.0#/gal) + CO	0.0625	27 ab	78 cde	60 c	42 bcd	99 a
18. Verdict + CO	0.125	32 ab	94 a	76 bc	28 cdefg	98 a
19. Verdict + CO	0.25	37 ab	96 a	86 ab	16 fgh	91 ab
20. SC-1084 4E + CO	0.2	20 b	91 abc	84 ab	22 defgh	94 a
21. SC-1084 + CO	0.3	35 ab	88 abc	97 ab	20 efgh	94 a
22. SC-1084 + CO	0.4	25 ab	93 ab	96 ab	8 gh	76 bc

¹DAT = Days after treatment.

²Means followed by the same letter are not significantly different at the 0.05 level of significance (Duncan's Multiple Range Test).

³CO = crop oil (Agridex at 1 qt/A).

TABLE 2. YIELDS FROM VARIOUS HERBICIDE TREATMENTS

Treatment	Rate lbs ai/A	20 Feb. 1986		3 April 1986	
		Dry Clover Weight lbs/A	Total Dry ¹ Weight lbs/A	Dry Clover Weight lbs/A	Total Dry Weight lbs/A
1. Check	—	520 a ²	1,884 a	1,333 ab	2,404 b
2. Poast (1.53#/gal) + CO ³	0.125	515 a	1,158 abcd	1,444 ab	2,644 b
3. Poast + CO	0.25	434 a	810 bcd	1,602 ab	2,513 b
4. Poast + CO	0.375	451 a	1,203 abcd	2,390 a	3,994 a
5. Selectone 2E + CO	0.2	654 a	1,581 abcd	1,702 ab	2,530 b
6. Selectone + CO	0.3	335 a	700 cd	1,749 ab	2,752 b
7. Selectone + CO	0.4	243 a	623 d	1,309 ab	2,350 b
8. Assure (0.8#/gal) + CO	0.0625	468 a	1,293 abcd	1,314 ab	2,249 b
9. Assure + CO	0.125	813 a	1,760 abc	1,691 ab	2,572 b
10. Assure + CO	0.25	534 a	1,275 abcd	1,956 ab	2,668 b
11. Whip 1EC	0.2	794 a	1,796 ab	910 b	1,943 b
12. Whip	0.3	158 a	1,236 abcd	1,360 ab	2,170 b
13. Whip	0.4	414 a	1,051 abcd	1,880 ab	2,506 b
14. Fusilade 2000 1E + CO	0.125	459 a	1,399abcd	1,152 b	2,230 b

TABLE 2. (Cont'd)

Treatment	Rate lbs ai/A	20 Feb. 1986		3 April 1986	
		Dry Clover Weight lbs/A	Total Dry ¹ Weight lbs/A	Dry Clover Weight lbs/A	Total Dry Weight lbs/A
15. Fusilade 2000+CO	0.25	592 a	1,196 abcd	1,013 b	2,123 b
16. Fusilade 2000+CO	0.375	675 a	1,644 abcd	1,150 b	2,032 b
17. Verdict (2.0#/gal)+CO	0.0625	662 a	1,180 abcd	1,507 ab	2,536 b
18. Verdict+CO	0.125	450 a	946 abcd	1,083 b	2,081 b
19. Verdict+CO	0.25	385 a	721 cd	1,278 ab	2,464 b
20. SC-1084 4E+CO	0.2	463 a	1,086 abcd	1,614 ab	2,411 b
21. SC-1084+CO	0.3	400 a	899 abcd	1,770 ab	2,434 b
22. SC-1084+CO	0.4	363 a	759 bcd	1,999 ab	2,578 b

¹Total dry weight=clover + grass + weeds.

²Means followed by the same letter are not significantly different at the 0.05 level of significance (Duncan's Multiple Range Test).

³CO=crop oil (Agridex at 1 qt/A).