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Herbicide Evaluation As Sod Desiccants on Dallisgrass

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Summary

Fall application of chemicals to desiccate warm season perennial grasses would improve establishment of sod seeding cool season clovers and grasses. None of the herbicides now cleared possess all the desirable qualities of the ideal grass desiccant. Paraquat, Glyphosate, and Dalapon were compared to new chemicals developed for post-emergence grass control in cotton and soybeans. Varying rates of Fusilade, Poast, Dowco 453, HOE-00661, and CGA-82725 were evaluated over 2 years on a dallisgrass sod. Dowco 453, HOE-00661, and the higher Fusilade rates resulted in the best desiccation but were also the most phytotoxic in terms of summer dallisgrass recovery. Fusilade and Poast might be more effective as desiccants on bermudagrasses which are more tolerant of these chemicals.

KEYWORDS: Sod seeding/overseeding/herbicides/desiccants.

Introduction

Warm season perennial grasses are the basis for the livestock industry in the southeastern United States. Dallisgrass, bahiagrass, and bermudagrasses begin growth about April 1 and stay green until frost in late fall. A potential area for improving livestock production efficiency and reducing cost of gain is fall sodseeding of ryegrass, clover, and/or small grains to provide grazing during the winter and early spring and nitrogen for the summer grasses following the clover.

The primary obstacle to sod seeding is the competition of the well established grass sod to the young emerging grass or clover seedlings. Paraquat, Glyphosate, and Dalapon are available as sod desiccants. However, they all have limitations for use on the warm season perennial grasses in the southeast. Paraquat provides fast desiccation but only holds the grass back about 1 week. Glyphosate is effective but is phytotoxic to dallisgrass and bahiagrass. Dalapon must be applied at least 3 weeks before sod seeding, which reduces the grazing season of the summer grass. Nor is Dalapon persistent. Bermudagrass will begin to green up 5 weeks after application (2 weeks after sod seeding) which interferes with the establishment of a cool season grass or clover. Dalapon also has been observed to retard dallisgrass recovery the following summer.

The ideal chemical for sod seeding would be one that desiccates quickly, is effective for 2 to 3 months, is not toxic to cool season forages being seeded, and allows good recovery of the warm season perennial grass in the spring. Studies were conducted for 2 years on a dallisgrass sod to compare new chemicals with those presently being used as sod desiccants.

Procedure

The studies were conducted on dallisgrass at the Texas Agricultural Experiment Station at Angleton. Experimental design was a randomized block with four replications. Plots were 6 X 15 ft. Herbicides were applied with a CO₂ pressurized sprayer at 30 psi at the rate of 16.5 gal water/A. The test site was sod seeded to Gulf ryegrass after herbicide application. Time of herbicide application before seeding varied among chemicals and is reported in the tables. The degree of dallisgrass desiccation was scored on the day of seeding. Since sod desiccation primarily effects early forage production, only the first ryegrass harvest is reported. Recovery of the dallisgrass was scored on August 1, 1983 and 1984.

Results and Discussion

1982 to 1983 Study

The dallisgrass sod was satisfactorily desiccated by the day of ryegrass planting for all treatments except CGA-82725, Poast, and the low Fusilade rate (Table 1). Observations the previous fall showed that CGA-82725 and Poast were more phytotoxic when the dallisgrass was growing under good moisture conditions.

The first ryegrass harvest was late. Differences between herbicide treatments were smaller than normal because of the late germination due to poor moisture conditions. Paraquat, as discussed earlier, has quick activity but fails to hold the grass sod back as shown by the low ryegrass yields at the first harvest. Glyphosate did an excellent job of sod desiccation as indicated by the high ryegrass production. However, less than 10 percent of the dallisgrass stand

TABLE 1. HERBICIDE EVALUATION FOR SOD SEEDING ON DALLISGRASS 1982 TO 1983

Herbicide	Rate (A.I.)	Application before seeding	Desiccation rating ¹	First ryegrass harvest	Dallisgrass recovery rating ²
	lb/A		Oct. 20	lb DM/A	Aug. 1
Control	—	—	1.00	898	5.00
Paraquat	0.5	1 day	4.75	1,176	5.00
Glyphosate	0.5	1 wk	3.75	2,073	.75
Dalapon	3.75	3 wk	4.25	1,409	1.00
CGA-82725 + 1% C.O. ³	0.25	3 wk	1.50	1,194	4.50
CGA-82725 + 1% C.O.	0.12	3 wk	1.00	1,077	4.75
Poast + 1¼% C.O.	0.12	1 wk	1.75	916	4.75
Poast + 2½% C.O.	0.12	1 wk	1.75	1,050	3.75
Fusilade + C.O.	0.06	3 wk	2.25	1,048	4.50
Fusilade + C.O.	0.12	3 wk	4.00	1,277	4.00
Fusilade + C.O.	0.25	3 wk	3.75	1,526	1.75
Fusilade + C.O.	0.25	1 wk	1.25	727	1.75
HOE-00661	0.5	1 wk	4.00	1,454	2.25
HOE-00661	0.75	1 wk	4.50	1,400	1.25
HOE-00661	1.0	1 wk	4.75	1,607	1.25
HOE-00661	2.0	1 wk	5.00	1,723	.75
HOE-00661	3.0	3 wk	5.00	1,696	1.00

¹0 = no desiccation, 5 = 100% desiccation.

²Dallis recovery rating 0 = no dallis, 1 = <10% dallis stand, 2 = 25% dallis stand, 3 = 50% dallis stand, 4 = 75% dallis stand, 5 = 100% dallis stand.

³Crop oil at 1 qt/A.

recovered the following year.

One-eighth pound of Fusilade was necessary for good sod desiccation. Under good fall moisture conditions, 0.06 lb may have been adequate. Rates of 0.25 lb were phytotoxic as shown by the poor dallisgrass recovery the following summer. The low ryegrass production when Fusilade was applied 1 week before planting may be due to poor sod desiccation or phytotoxicity to the ryegrass. All rates of HOE-00661 did an excellent job of sod desiccation, but resulted in poor dallisgrass recovery. However, they were not as phytotoxic as Glyphosate.

1983 to 1984 Study

Paraquat, Glyphosate, and the 0.12 and 0.25 lb/A rate of Fusilade provided good dallisgrass sod desiccation as they had the year before (Table 2). Dowco 453 which was tested for the first time also resulted in good dallisgrass desiccation. Ryegrass stands and growth were very poor because

of unusually cold temperatures in late December. Temperatures remained below freezing for 4 days with a minimum temperature of 14°F. Glyphosate, Dalapon, Dowco 453, and the two high rates of Fusilade produced the best ryegrass. Dallisgrass recovery the following summer was very poor except for Paraquat, Poast, and the low rates of Fusilade and CGA-82725.

None of the chemicals tested provided the ideal combination of quick and persistent fall desiccation with good dallisgrass recovery the following summer. Poast had poor desiccation at ryegrass planting but good dallisgrass recovery the following summer. Desiccation at planting might be improved by applying Poast 3 to 4 weeks before planting instead of one. Previous observations indicate that bermudagrass is more tolerant to these chemicals than dallisgrass. Further studies should be carried out on other warm season perennial grasses and with other potential chemicals.

TABLE 2. HERBICIDE EVALUATION AS SOD DESICCANTS ON DALLISGRASS 1983-84

Herbicide	Rate (A.I.) lb/A	Application before seeding	Desiccation rating ¹	Ryegrass	First	Dallisgrass
				stand	ryegrass	
				%	lb DM/A	
Control	—	—	0	6	30	5.00
Paraquat	0.5	1 day	4.0	10	23	4.75
Glyphosate	0.5	1 wk	5.0	100	527	0.75
Dalapon	3.75	3 wk	1.75	100	541	1.00
Fusilade	.06 + C.O. ³	3 wk	2.0	14	110	3.75
Fusilade	.12 + C.O.	3 wk	4.5	72	437	1.00
Fusilade	.25 + C.O.	3 wk	5.0	100	607	0.25
Poast	.12 + C.O.	1 wk	1.0	11	44	4.50
Poast	.25 + C.O.	1 wk	2.25	18	168	3.25
Dowco 453	.06 + C.O.	3 wk	5.0	100	453	1.00
Dowco 453	.12 + C.O.	3 wk	5.0	100	364	0
CGA-82725	.12 + C.O.	3 wk	2.75	14	54	3.25
CGA-82725	.25 + C.O.	3 wk	2.75	22	127	2.00
L.S.D. .05			0.6	9	118	1.00

¹0 = no desiccation, 5 = 100% desiccation.

²Recovery ratio 0 = no dallisgrass, 1 = 20%, 2 = 40%, 3 = 60%, 4 = 80%, 5 = 100% recovery.

³Crop oil at 1 qt/A.