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HERBICIDAL CONTROL OF ANNUAL RYEGRASS IN WHEAT

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SUMMARY

This study was conducted to determine the most efficient rates of Hoelon and Glean when applied as a mixture to control Italian annual ryegrass in wheat. Results indicate that a mixture of Hoelon at 4 oz ai/ac plus Glean at 0.2 oz ai/ac controlled ryegrass equally as well as did higher rates of the herbicides. These rates are below the recommended rates of the herbicides and should save wheat growers money for control of ryegrass in wheat.

INTRODUCTION

Italian annual ryegrass (*Lolium multiflorum*) is a serious weed in winter wheat in East Texas. Herbicidal control is possible with the herbicides Hoelon (diclofop) or with Glean (chlorsulfuron). Both products are usually effective in the control of ryegrass, however each has some disadvantages. Hoelon does not control broadleaf weeds and treated plants cannot be grazed. Glean is a long-lived herbicide and can cause phytotoxic conditions to the following crops. For these reasons, we began mixing the two herbicides together and have had very good results. Advantages are that less total product (reduced cost) is required to effectively control ryegrass and broadleaf weeds. In addition, there should be little or no residue (from Glean) which could cause phytotoxic problems in subsequent crops. There is a label for mixing these two herbicides.

The objective of this experiment was to determine the most efficient or effective mixture of these two products for the control of annual ryegrass and broadleaf weeds in wheat.

PROCEDURES

Coker 983 wheat was planted in a field experiment on 8 November 1988 near Overton, Texas. Plots were 4 x 50 feet in size. Wheat was planted into 6 rows spaced 8 inches apart at a seeding rate of 75 lbs/ac. Gulf annual ryegrass was overseeded over the entire test at 30 lbs/ac. A chain was drug over the soil to cover the ryegrass seed. Herbicidal treatments were applied on the same day as preemergence treatment. The soil type was sandy loam with a pH of 6.5. Fertilizer treatments are provided in Table 1. Data were recorded for yield, test weight, freeze damage, % ryegrass control on two dates, and on broadleaf weed

control, and a wheat vigor rating was assigned.

RESULTS

Good stands of both wheat and ryegrass were obtained. A very warm fall and winter resulted in above normal growth of the wheat. A spring freeze after the wheat began to joint resulted in significant freeze damage and severely reduced grain yields. Therefore, grain yields were not different due to herbicidal treatments (Table 1). Herbicidal treatments did not affect freeze damage.

Differences in ryegrass control were apparent (Table 1). The recommended rate of Glean by itself is .333 oz ai/ac, while Hoelon by itself is recommended at at least 8 oz ai/ac. The Hoelon treatment at 8 oz was effective at this rate as 85% of the ryegrass was controlled. Glean, however, at the .333 oz rate, only controlled 42% of the ryegrass. The combinations of the two products increased % control. Note that 8 oz of Hoelon plus .333 oz of Glean increased control to 90%. Percent ryegrass control was not significantly reduced by reducing the Hoelon rate to 4 oz while the Glean rate was reduced to .2 oz ai/ac. Ryegrass control was only slightly reduced by the 4 oz Hoelon plus .1 oz Glean rate. However, the ryegrass control on May 2 for this treatment was reduced to 76%. This indicated that activity of this chemical combination had begun to be reduced at that rate.

Broadleaf weed numbers were quite low in this test site, however data indicates best control was with the higher levels of the Glean herbicide.

The vigor rating which was taken about 1 month after planting indicated a slight reduction in wheat vigor on some treatments. Treatments which had .2 oz Glean or higher seem to have reduced vigor slightly, however the wheat did recover and was not permanently damaged by the treatment. Hoelon by itself did not reduce plant vigor.

These results indicate a more economical rate for the mixture of the two herbicides to control ryegrass in wheat. These data suggest that a mixture of Hoelon at 4 oz ai/ac plus Glean at .2 oz ai/ac will control ryegrass without any loss of activity when compared to higher rates.

TABLE 1. HERBICIDE STUDY AT OVERTON, TEXAS 1988-89

Herbicide	Yield bu/ac	Test wt. lbs/bu	% Freeze Damage	Ryegrass Control 3-14-89	Ryegrass Control 5-2-89	% Broadleaf Control	Vigor Rating (5=best)
Hoelon 8 oz ai + Glean .1 oz ai/ac	22.7 a ¹	53.2	25.0 ²	88.7 ²	91.2 ²	45.0 ²	3.7 ³
Hoelon 8 oz ai + Glean .01 oz ai/ac	22.1 a	52.2	27.5	86.2	86.2	20.0	4.0
Hoelon 4 oz ai + Glean .2 oz ai/ac	22.1 a	53.7	35.0	92.5	87.5	52.5	3.0
Hoelon 4 oz ai + Glean .01 oz ai/ac	21.3 a	52.0	28.7	82.5	66.2	15.0	4.0
Hoelon 8 oz ai/ac	21.3 a	54.0	47.5	85.0	83.7	20.0	4.5

Hoelon 4 oz ai/ac	20.0 a	51.7	38.7	77.5	72.5	8.7	4.2
Hoelon 8 oz ai/ac + Glean .2 oz ai/ac	19.9 a	53.0	31.2	92.5	93.7	37.5	3.2
Hoelon 4 oz ai + Glean .1 oz ai/ac	18.9 a	52.0	31.2	87.5	76.2	46.2	3.7
Glean .2 oz ai/ac	17.4 a	52.0	35.0	65.0	32.5	75.0	3.5
Hoelon 8 oz ai + Glean .333 oz ai/ac	16.8 a	51.5	35.0	90.0	92.5	46.2	3.7

Glean only at .333 oz ai/ac	16.7 a	50.5	33.7	42.5	45.0	57.5	3.2
Control	16.3 a	52.0	30.0	0	0	12.5	4.7
Mean	19.6	52.3	33.2	74.1	68.9	37.7	3.7
CV	23.9	3.1	56.5	16.8	24.8	79.7	15.7
LSD ⁴	NS	2.3	NS	17.9	24.2	43.1	0.8

Planted November 8, 1988. Harvested June 15, 1989.

Fertilizer application rate: Preplant 78 lbs/ac of N, P₂O₅ and K₂O plus 72 lbs/ac of sulfur.

Topdressed with 60 lbs of actual N as ammonium nitrate on February 24, 1989.

¹Mean yields followed by the same letter are not significantly different as judged by Duncan's Test at the 0.05 level.

²Freeze damage, ryegrass and broadleaf control are a % plot damage and/or infested.

³Vigor ratings were on a scale of 0-5, where 0 = no plant stand and 5 = best plant stand recorded on December 22, 1988.

⁴Differences between means greater than the LSD value indicate a significant difference 95 times out of 100.