DAYFLOWER WEED CONTROL IN CORN

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SUMMARY:

The most effective control of erect dayflower was provided by 1.0 pt/A 2,4-D + 1 pt/A Dual Magnum + NIS (98.5% control). The next best product combinations were 2 pt/A atrazine + 2 pt/A Dual Magnum + NIS (80.8%) and 6.67 oz/A Celebrity + AMS + NIS (72.4%). Unfortunately, the products providing the best dayflower control were also the most expensive: $17.31, $29.56 and $34.28, respectively.

The most economical treatments were also the lowest in dayflower control, but they provided sufficient control to minimize seed development and there was no further reduction in yield.

OBJECTIVES:

The goal of this experiment and test location (Howard Book/Stephen Moreno Farm) was to evaluate various products for control of tropical dayflower in conventional (non-RR) corn. No herbicide combinations using glyphosate (Roundup) or its analogue (Touchdown) were to be used. This is important in that many corn growers have not elected to adopt RR technology due to cost.

In 2004 it was reported that during such a wet growing season, as much as 19.2 bu/A of corn were gained from herbicide treatments over and above the “untreated lay-by” or “cultivated” plots. In fact, every herbicide treatment to control dayflower had a positive yield response. Tropical (Erect) Dayflower is an aggressive perennial weed that is of particular concern in wet growing seasons. When not controlled, dayflower produces an abundance of seed after corn is laid-by, especially in the weeks while corn is maturing and drying down. This test was an attempt to prevent dayflower from blooming and; if possible, to destroy any dayflower growing at layby and to prevent subsequent germination of dayflower seed.

MATERIALS and METHODS:

On April 22, 2005, a dayflower control test was established on the Book/Moreno Farm, Victoria County, Texas, using seven herbicide combinations. Evaluations were compared to untreated checks, and each treatment was replicated four times. Plots were 40 feet long and 6-rows wide, and were established at lay-by time using a Spider self-propelled field sprayer. The prevalence of dayflower was surveyed in the center row of each treatment (100 ft2) and was recorded, in order to determine the efficacy of

each treatment. The producer reserved 48 30-inch rows of field corn for the test. In the preliminary dayflower survey (Table 2), substantially lower densities of Comminela erecta were found on the western 12 rows of the experiment site. This is relevant to the later decision to discard the "A" replication of the experiment. At the time of herbicide treatment, almost all dayflower was in the 2-3 leaf stages of growth. Densities of dayflower ranged from 0 to over 2.25 plants per square foot.

The producers planted Pioneer 31B13 on February 21st using a Caterpillar tractor and a White 6824 16-row planter. Conditions were marginal for planting (wet) as much rainfall had delayed field operations (3.6 inches in February). Herbicides used at planting included 1 qt/A atrazine on February 22 followed by 1 qt/A Honcho on the 24th. The producers also applied 14 oz/A of Basis Gold (labeled rate), which contains 82.44% atrazine and 1.34 oz/A of Accent (nicosulfuron) and an equivalent amount of Matrix (rimsulfuron). The last two ingredients are grass control herbicides. A 4 oz/A application was Clarity was also made on March 25th.

This test was established on the Book/Moreno site on top of what was already an aggressive herbicide program. The problem was, there was still as much as 2.5 DF/ft2 coming through those treatments.

A total of 8.35 inches of rainfall was received at the DaCosta weather station during the growing season (March 1 -to- July 11. The crop was made by two rainfall events (1.28 and 1.09 inches) received on 5/29 and 6/1, respectively. In the fall the site received 22 lb/A N and was supplied with an additional 90 lbs/A N with a spoke-wheel applicator on March 14th (21 DAP).

RESULTS and DISCUSSIONS:

The presence of erect dayflower was not uniform and was totally absent from one plot. Table 1 shows herbicides used, costs and percent dayflower control at harvest.

Table 1. Herbicide costs and actual counts of Asiatic Dayflower weeds and control, Texas Cooperative Extension, Howard Book/Stephen Moreno Farm, Victoria County, Texas, 2005.

Treatment	Herbicide $/ac	% Control	Yield Bu/Ac
0.75 oz/A Steadfast	17.13	61.5	155
2 pt/A atrazine + 2 pt/A DualMag	29.56	88.6	153
6.67 oz/A Celebrity + AMS	34.28	88.2	156
8 oz/A Clarity	13.50	38.1	154
4.0 oz/A Distinct + AMS	12.93	61.8	164
0.33 oz/A Aim + AMS	6.82	62.5	162
1 pt/A 2,4-D + 1 pt/A DualMag	17.31	97.1	152
UTC	–	2.7	163

Treatments included NIS; 3 replications; Post-Control counts conducted at harvest

A mid-course evaluation was made 15 June 2005, where dayflower counts were made from the center row-middle of each plot. Shading and a fairly uniform stand of

Texas panicum were useful in reducing dayflower growth. Most dayflower was kept in the 2-4 leaf stage (stunted) except for where noted. The untreated check produced some plants 7-8 inches in height. Some larger plants were also observed in treatments 4 (Clarity + NIS), treatment 3 (Celebrity + NIS) and treatment 7 (2,4-D + Dual Magnum). The cleanest plots appeared to be treatments 1 and 2, which contained Steadfast, Celebrity or atrazine + Dual Magnum. Evaluations were made on the reduction in the overall number of dayflower plants since treatment with herbicide, whether the dayflower bloomed during the corn's growth cycle, and the final number and size of dayflower.

It was determined that all treatments provided valuable reductions in dayflower populations, but the greatest suppression was with residual materials rather than burn-down products (Distinct, Aim, AMS).

Economically, the cost of this treatment goes far in reducing the number of dayflower plants surviving after corn harvest is completed. Control ranged from 96 to 100% using the 1 pt/A 2,4-D + 1 pt/A DualMagnum. Most impressive was the large number of dayflower present in some of these test plots where nearly full control was obtained.

ARM analyses revealed no significant yield differences between herbicide treatments. A very low CV of 4.82 was obtained. It is interesting that the dayflower populations and herbicide treatments did not seem to have any effect whatsoever on the yields of grain. Likewise, the layout of the test did not suggest that any particular patterns of yield occurred within the test.

Strangely, some of the highest yields were obtained where there was poor grass control and/or untreated check. In 2005 dayflower and grass pressure did not seem to affect grain yields. Grain yields in the untreated checks were on-par with all of the herbicide treatments. Because the late season drought and plant shading was suppressing dayflower growth, the herbicide treatments provided no economic advantage.

Every herbicide combination was effective in suppressing bloom and seed production during the course of the experiment. Only the untreated check plot produced dayflower bloom.

Based on 2004 and 2005 results, erect dayflower may only be a problem during wet growing seasons; subsequently, herbicide control at lay-by may not be necessary or economical when conditions are dry in May through July (harvest).

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