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1974 SOYBEAN HERBICIDE PERFORMANCE IN SOUTHEASTERN KANSAS



AGRICULTURAL EXPERIMENT STATION
Kansas State University, Manhattan
Floyd W. Smith, Director

SOUTHEAST KANSAS BRANCH
Mound Valley
Fred W. Boren, Superintendent

1974 Soybean Herbicide Performance in Southeastern Kansas

Louis J. Meyer, Agronomist
Fred W. Boren, Station Superintendent

Thirty herbicide treatments were evaluated to determine: 1) how well they control weeds in soybeans, and 2) soybeans' tolerance of them. Nontreated, weed free, and cultivated plots were compared. The site was a Cherokee silt loam soil (1.4% organic matter). Herbicides were applied in 25 gallons of water per acre using a tractor-mounted plot sprayer with 30 pounds pressure, and size 8003 nozzles. Plots were 10 feet wide (four 30-inch rows) and 30 feet long. Fertilizer was 15 pounds N, 50 pounds P₂O₅, and 50 pounds K₂O per acre. No rain fell the first two weeks after herbicides were applied June 19. July 4 it rained 0.21 inch, July 15, 0.61 inch.

Procedure

Preplant incorporated (PPI) herbicides were applied June 19 to clean-tilled plots; then plots were tandem-disked once. Next, the plots were overseeded with a mixture of weed seeds (containing primarily pigweed and crabgrass), springtoothed once, and drag harrowed once. Columbus soybeans were planted June 19 at 10 seeds per foot and covered 1.5 inches deep. Preemergent herbicides (PRE) were applied immediately after soybeans were planted. All plots were rotary hoed June 23. Cultivation-only plots were cultivated July 17 and August 1. Postemergent (POST) treatments were applied August 1 and August 27. The center two rows of each plot were harvested October 24 by a self-propelled plot combine.

Results

Lack of rainfall after planting resulted in poor weed emergence, but enough large crabgrass (Digitaria sanguinalis) emerged for July 25 control ratings. A second crabgrass germination flush followed late summer rains. On September 4 we evaluated control of late germinating crabgrass.

Soybean yields correlate well with early crabgrass control percentages, and demonstrate that controlling weeds increases soybean yields. No visual soybean injury occurred from any herbicide treatment tested.

Amiben, Treflan, and Lasso + Lorox were included as standards of comparison. For the July 25 date, Treflan controlled crabgrass best of those three and gave the highest soybean yield. No herbicide tested did better. Several soybean herbicides give excellent grass control (even under droughty conditions as we experienced), but if large-seeded, broad-leaved weeds like velvetleaf, cocklebur, sunflower, jimsonweed, and morninglory are present, a herbicide effective against them should be used along with a good grass herbicide.

FMC 25213 gave only partial crabgrass control early in the season, and apparently did not persist long enough to provide control late in the season. FMC 25213 in combination with Sencor controlled crabgrass better than either material alone did.

Mobil 8475 and Mobil 8479 both gave excellent control of early crabgrass, but only 8479 at 2 lbs. AI/a gave acceptable late season control. The 8475 + Modown combination gave excellent control the entire season.

CGA 24705 and CGA 17020 did not effectively control crabgrass early in the season. Late season control with 24705 was excellent. Rate of 17020 we used was too low for our soil. That was at least partially responsible for its relatively poor performance.

Velsicol 5052 did not effectively control crabgrass when used alone or in combination with Sencor.

Probe gave excellent full-season crabgrass control, but soybeans yielded more treated with other herbicides that controlled crabgrass. Probe may have injured the soybeans even though no injury was visible.

Soyex was highly effective when used in combination with Sencor, but used alone it gave only partial control of early season crabgrass.

Bladex with Treflan was no better than Treflan alone. In combination with Lasso, Bladex was more effective on early season crabgrass than Lasso + Lorox; less effective on late season crabgrass.

Planavin + Sencor gave excellent control with shallow incorporation before planting except that control did not persist the entire growing season. Applied before soybeans emerged, the combination was only partially effective.

Amex 820 + Sencor provided excellent early season crabgrass control, but only partial control later in the season.

Basagran + HOE 23408 are both postemergent herbicides. Because Basagran effectiveness on grassy weeds is limited, results should primarily reflect HOE 23408 effectiveness. Crabgrass not germinating uniformly prevented properly timed applications and adversely affected performance. Crabgrass was too large (4-6 inches) for good control when HOE 23408 was applied August 1. However, excellent control of late season crabgrass indicates 23408 has some activity in the soil. The August 1 application was a few days before late season crabgrass emerged. August 27, early season crabgrass was too large to control; late season crabgrass (3-4 inches) was partially controlled. Rainfall totaling 1.55 inches the first 24 hours after August 27 applications probably reduced herbicide effectiveness.

Table 1. Soybean herbicide performance test, Columbus, 1974.

| Treatment | Lbs. AI/a | When applied ¹ | Yield ² bu/a | % Crabgrass control ² | |
|-------------------------|------------|---------------------------|----------------------------|----------------------------------|---------|
| | | | | July 25 | Sept. 4 |
| No treatment | --- | --- | 25.4 | 0 | 0 |
| Weed free | --- | --- | 31.5 | 100 | 100 |
| Cultivation | --- | --- | 30.6 | 88 | 2 |
| Amiben | 3 | PRE | 28.8 | 65 | 90 |
| Treflan | 0.75 | PPI | 31.2 | 100 | 95 |
| Lasso + Lorox | 2 + 1 | PRE | 28.6 | 73 | 98 |
| FMC 25213* | 1 | PRE | 26.8 | 43 | 10 |
| FMC 25213* | 1.5 | PRE | 27.2 | 43 | 5 |
| FMC 25213* | 2 | PRE | 28.4 | 45 | 3 |
| Mobil 8475* | 1 | PPI | 29.0 | 98 | 3 |
| Mobil 8475* | 2 | PPI | 30.7 | 100 | 7 |
| Mobil 8479* | 1 | PPI | 29.5 | 97 | 10 |
| Mobil 8479* | 2 | PPI | 30.1 | 98 | 85 |
| CGA 24705* | 3 | PRE | 27.8 | 35 | 93 |
| CGA 17020* | 0.5 | PRE | 27.3 | 40 | 48 |
| Velsicol 5052* | 4 | PRE | 28.5 | 18 | 15 |
| Probe 75 WP* | 2 | PRE | 25.1 | 93 | 90 |
| Soyex | 4.5 | PRE | 28.3 | 63 | 95 |
| Sencor | 0.5 | PRE | 27.6 | 13 | 13 |
| FMC 25213 + Sencor* | 1.0 + .375 | PRE | 30.2 | 78 | 38 |
| Amex 820 + Sencor* | 1.5 + .375 | PPI + PRE | 29.8 | 98 | 57 |
| Velsicol 5052 + Sencor* | 4.0 + 0.5 | PRE | 28.2 | 27 | 15 |
| Soyex + Sencor* | 3.0 + .375 | PRE | 29.1 | 88 | 90 |
| Soyex + Sencor* | 3.0 + 0.5 | PRE | 27.5 | 95 | 90 |
| Mobil 8475 + Modown* | 1.0 + 1.5 | PPI + PRE | 30.1 | 100 | 92 |
| Treflan + Bladex* | .75 + 1.0 | PPI + PRE | 30.5 | 98 | 92 |
| Lasso + Bladex* | 2.0 + 1.0 | PRE | 30.0 | 82 | 3 |
| Planavin + Sencor* | .5 + .375 | PRE | 26.7 | 48 | 30 |
| Planavin + Sencor* | .5 + .375 | Shallow PPI | 27.4 | 100 | 18 |
| Basagran + HOE 23408* | 1.0 + .75 | Post Aug. 1 | 27.8 | 20 | 93 |
| Basagran + HOE 23408* | 1.0 + .75 | Post Aug. 27 | 25.2 | 0 | 23 |
| Basagran + HOE 23408* | 1.0 + 1.0 | Post Aug. 27 | 25.4 | 0 | 38 |
| Basagran + HCE 23408* | 1.0 + 2.0 | Post Aug. 27 | 26.0 | 0 | 63 |
| LSD .05 | | | 2.3 | 7 | 4 |

1. PRE = before soybeans emerge; PPI = incorporated before planting; POST = after soybeans and weeds emerge.
 2. Means of three replications. Yields are at 12.5% moisture.
- * When these treatments were applied, they were not labeled for field use in Kansas, and may be used by growers only when approved. Some may be approved for field use in 1975.

Table 2. Herbicides used, Columbus, 1974.

| Trade name | Formulation ¹ | Common name |
|---------------|--------------------------|-------------|
| Amiben | 6 lb/gal | chloramben |
| Basagran | 4 lb/gal | bentazon |
| Bladex | 80 WP | cyanazine |
| Lasso | 4 lb/gal | alachlor |
| Lorox | 50 WP | linuron |
| Planavin | 4 lb/gal | hitralin |
| Probe | 75 WP | bioxone |
| Sencor | 50 WP | metribuzin |
| Soyex | 3 lb/gal | fluorodifen |
| Treflan | 4 lb/gal | trifluralin |
| Amex 820 | 4 lb/gal | ----- |
| CGA 17020 | 4 lb/gal | ----- |
| CGA 24705 | 6 lb/gal | ----- |
| FMC 25213 | 4 lb/gal | ----- |
| HOE 23408 | 3 lb/gal | ----- |
| Mobil 8475 | 2 lb/gal | ----- |
| Mobil 8479 | 2 lb/gal | ----- |
| Velsicol 5052 | 2 lb/gal | ----- |

1. WP refers to wettable powders, the number preceding it is the percentage of active ingredient in the powder. Liquids are pounds of active ingredient contained in a gallon.

Many herbicides or combination of herbicides mentioned in this report are experimental and not approved for use on soybeans. They are not commercially available and may not be used until approved. Rates of experimental herbicides used are not necessarily the rates that will be recommended when herbicides are approved.

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