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Controlling Johnsongrass in Soybeans

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This study evaluated how well herbicides control johnsongrass in soybeans and if herbicides injure soybean plants. The study was on johnsongrass-infested, creek-bottom land near Bartlett, Kansas. The 1973 treatments were superimposed on similar 1972 treatments. Two methods of control were evaluated. One method used high rates of Treflan, Amex-820, or Tolban, applied preplant incorporated (PPI-incorporated into the soil surface before johnsongrass emerged and before soybeans were planted). The other method used Dowpon M, Asulox, or Roundup, applied preplant (PP-before planting soybeans, after johnsongrass was 12-18 inches tall, without disturbing the soil).

Summary

Highest yields were achieved when johnsongrass control exceeded 90% and soybean plants were not injured. Soybeans were noticeably injured only in 1972 and only with Dowpon M. An extremely wet fall and winter in 1972 may have reduced herbicide carryover and prevented 1973 injury on plots heavily treated with PPI herbicides.

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**Soybean yields and johnsongrass control achieved with indicated herbicide applications,
Merlin Lewis farm, Bartlett, Kansas.**

Treatment	Lbs. AI/a		Application time	Yield (bu/a) ²			% johnsongrass control ²		
	1972	1973		1972	1973	Mean	1972	1973	Mean
No treatment .....	....	....	....	0.8	10.4	5.6	0	0	0
Hand weed .....	....	....	....	44.8*	50.0*	47.4	100	100	100
Amex-820	2	4	PPI	26.1	39.6	32.9	68	61	65
Amex-820	3	3	PPI	32.3	38.8	35.5	77	72	75
Tolban	1.5	1.5	PPI	30.5	41.6	36.1	63	83	73
Asulox	3	3	PP	32.9	38.9	35.9	82	56	69
Dowpon M	5.1	5.1	PP	30.8	36.9	33.9	96	65	81
Treflan	2	2	PPI	27.4	44.9*	36.2	65	92	79
Treflan	3	3	PPI	29.3	46.8*	38.1	70	96	83
Roundup	1	1	PP	38.7*	46.1*	42.4	95	93	94
Roundup	1.5	1.5	PP	40.1*	47.3*	43.7	97	94	96
LSD .05				9.4	6.5		11	12	

* Highest yielding group.

1. PPI refers to preplant, incorporated treatments; PP refers to preplant applications made when the johnsongrass was 12-18 inches tall.

2. Average of four replications, yields at 12.5% moisture.

Plot size: 20' x 40'

Soil type: Verdigris silt loam—1.8% organic matter.

	1972	1973
Variety	Cutler 71	Columbus
Date soybeans planted after PPI applications	June 5	June 12
Date soybeans planted after PP applications	June 12	June 12
Date harvested	December 18	October 19
Date of PPI applications	May 15	May 21
Date of PP applications	June 5	May 21
Date weed-control ratings were made	August 21	August 24
Spray volume	28 gal/acre-PPI 56 gal/acre-PP	28 gal/acre, all treatments
Spray pressure	40 lbs/sq. in.	40 lbs/sq. in.
Nozzle size	8004	8004

Treflan (trifluralin) killed more johnsongrass than other PPI herbicides after two consecutive years. Acceptable control was not achieved until 1973. The double rate is required only on infested areas. Such areas should be disked four times, twice in crossing direction before the herbicide is applied, and twice immediately afterward. Treflan two years at double rate is

required for acceptable control. A third year at the normal rate should minimize herbicide residue.

Tolban (profluralin) at rates used was inferior to Treflan in 1973; and control was less consistent. Higher Tolban rates might give better results.

Amex-820 (A-820, experimental) provided acceptable control in 1972, with no improvement the second year.

Roundup (glyphosate) gave superior first year control, but it can not be applied until johnsongrass is 12-18 inches tall; tillage and soybean planting then must wait until about one week later. Roundup translocates (moves to the roots and kills plants from the roots up), and will not control plants that emerge after it is applied. Other weed control measures are needed for seedling johnsongrass and annual weeds. We used cultivation in 1972 and Lasso in 1973. Roundup should be available for use on soybeans in 1975.

Asulox (asulam) also translocates. In our tests it partially controlled johnsongrass, but was inferior to Roundup. Rhodia Inc., Chipman Div., (the producer) is currently investigating ways to improve Asulox translocation.

Dowpon M (dalapon) gave excellent control in 1972, but control decreased in 1973. It was the only herbicide we tested that noticeably injured soybeans (1972 only)—probably because of dry weather between June 5 (application date) and June 12 (planting date). Initially soybeans were stunted and yellowed with crinkled leaves. Recovery was good, but the soybeans were shorter than others at harvest.

Information in this report is for farmers, producers, agents, industry cooperators, and other interested persons. It is not a recommendation or endorsement and is from only two years of research.

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