

SOYBEAN RESPONSE TO FOLIAR DIMILIN, BORON, AND N APPLICATIONS

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ABSTRACT: A study was conducted during the 2001 growing season at Verona, Mississippi, to evaluate the influence a foliar application of Dimilin (diflubenzuron) alone or in combination with boron or liquid slow release nitrogen, applied as a foliar spray, had on soybean insect pests control, soybean maturity and yield. All applications were made to soybean in R4 stage of growth (one $\frac{3}{4}$ inch pod in the upper 4 nodes of the plant). Insect infestations were light. All foliar treatments or treatment combinations had no effect on delaying maturity (defoliation), yield, or test weight.

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KEY WORDS: Soybean, Dimilin, Boron, nitrogen.

MATERIALS AND METHODS: A field study was conducted as a randomized complete block with 4 replications on a Leeper silty clay loam soil, Verona, Mississippi. Plot size was 8 (30-inch) row x 80 ft. Fertilizer nutrients P and K were applied according to soil test recommendations. The P was high level and only Potash (K_2O) at 200 lb/ac was applied as a surface broadcast application on 10/04/00.

The whole study received no tillage for land preparation. The study was planted no-till with AgriPro AP 588, soybean in 30-inch rows 5/02/01. The study site received a burndown application of Roundup Ultra (glyphosate) at 1.0 lb ai/ac, on 3/28/01. Gramoxone (paraquat) + surfactant at 0.5 lb ai/ac + 0.5 pt/ac was applied as a burndown at planting on 5/02/01. Roundup Ultra at 1.0 lb ai/ac was applied postemergence on 5/17/01 and repeated on 6/12/01 and 6/26/01.

Foliar applications of Dimilin, CoRoN (25-0-0) a controlled release nitrogen, CoRoN NB5 (12-0-0, 0.5% Boron) controlled release nitrogen, and Solubor (20% boron) alone or in selected combinations were applied to soybeans in the R4 stage of growth (one pod $\frac{3}{4}$ inches long in upper 4 nodes of the plant) on 7/31/01 (Table 1). The applications were made at 15 gpa with TXVS-12 nozzles and a boom pressure of 34 psi.

Observations were made for delayed maturity (foliar defoliation rating), lodging, height at maturity, and grain yield. The center 2 rows of each plot were harvested for grain yield with a plot combine. The harvested soybean seed samples were weighed and seed moisture was determined with a Dickey John[®] GAC II grain analyzer. All seed yield were adjusted to 13% moisture and treatment means were separated with Fisher protected LSD at 5% probability.

RESULTS AND DISCUSSION: Rainfall during the growing season ranged from low in early May with no rainfall for 25 days from mid-July through early August. This was followed by 8.66 inches rainfall for August. The mean soybean yield for the study was 39.4 bu/ac (Table 1). Insect infestation levels of bean leaf beetle or green cloverworm were below threshold level in 2001. The results indicated that neither Dimilin, boron, or liquid N foliar applied alone or in selected combinations had any effect, on soybean maturity, lodging, or yield. Possibly, earlier foliar applications (mid R1 and R2) may have resulted in yield differences.

Table 1. Foliar fertilizer and insecticide application influence on soybean production in 2001, Verona, MS

Foliar treatment	Lb ai/ac	10/01/01 Defoliation rating ¹	Yield	Bushel test weight
		- % -	bu/ac	lb/bu
1. Check	----	78	40.2	54.6
2. Dimilin 2FS + surfactant	0.03 + 0.25% v/v	70	39.4	54.8
3. Dimilin 2FS + Solubor (20%B) + surfactant AG98	0.03 + 0.25 + 0.25% v/v	63	38.8	54.7
4. Solubor (20%) + surfactant	0.25 + 0.25% v/v	80	37.2	55.0
5. Dimilin 2FS + CoRoN NB5 (12-0-0, 0.5% B) + surfactant	0.03 + 4 pt + 0.25% v/v	69	40.6	54.7
6. CoRoN NB5 (12-0-0, 0.5% B) + surfactant	4 pt + 0.25% v/v	81	38.5	54.5
7. CoRoN (25-0-0) + surfactant	2 pt + 0.25% v/v	74	40.4	54.8
8. CoRoN (25-0-0) + surfactant	4 pt + 0.25% v/v	83	40.0	54.8
Grand Mean		74.8	39.4	54.7
LSD (0.05)				
% CV				

¹Defoliation rating was on a scale of 1 (no leaf drop) to 100 (all leaves dropped from the plant).

Table 2. Foliar fertilizer influence on soybean production in 2000, Verona, MS.

Foliar treatment	Lb ai/ac	10/31/00 Defoliation rating ¹	Yield	Bushel test weight
		- % -	bu/ac	lb/bu
1. Check	-----	90	39.7	55.1
2. Dimilin 2FS	0.03	90	38.4	55.5
3. Dimilin 2FS Solubor (Boron 20%)	0.03 0.25	86	37.8	55.2
4. Solubor (Boron 20%)	0.25	91	37.3	54.7
5. Dimilin 2FS CoRoN NB5 (12-0-0, 0.5% B)	0.03 4 pt	90	41.0	55.1
6. CoRoN NB5 (12-0-0, 0.5% B)	4 pt	88	37.9	55.4
7. CoRoN (25-0-0)	2 pt	88	38.8	54.6
8. CoRoN (25-0-0)	4 pt	86	38.3	54.9
Grand Mean		89	38.6	55.0
LSD (0.05)		NS	NS	NS
% CV		6	6.5	1.2

¹Defoliation rating was on a scale of 1 (no leaf drop) to 100 (all leaves dropped from the plant).