

## EVALUATION OF AT-PLANTING SYSTEMIC INSECTICIDES ON SORGHUM

Walter and Michael Kuck Farm, Lavaca County, 2000

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**SUMMARY:** Soil insects severely reduced plant stands resulting in a high damage rating and lower yields in untreated sorghum. Yield increase with insecticide ranged from 1,528 to 2,072 lb/acre.

**OBJECTIVES:** The experiment was established on sorghum to (1) compare seed and granular systemic insecticides, (2) measure insecticide impact on pest insects and (3) determine impact on yield.

**MATERIALS/METHODS:** Cargill 839 hybrid sorghum (Concept III treated) was seeded at 6 lb/acre (14,000 seed/lb) on 11 Mar 2000 with a John Deere model 7100, 6 row planter. The test site was in Lavaca County, 4 miles east of Texas Highway 95 on FM 1891 at the Kuck Farm. Individual plots were 3 rows on 38-inch centers by 638 ft and treatments were arranged in a randomized complete block design with 3 replications. Planting conditions consisted of excellent soil moisture, 67°F soil temperature at the 4-inch depth, 63°F air temperature, with a 15-20 mph north wind speed. The clay loam soil contained 1.7% organic matter with an 8.0 pH. Corn was grown on the site during the previous crop season. Fertilizer applied was 63-21-9 + 1 gal of 15% Zn per ton. Herbicide at-planting consisted of Bicep II Magnum (0.73 qt/acre) in a 14-inch band. In order to remove emerged weeds, herbicide was broadcast two days after planting consisting of 2, 4D (0.75 pt/acre) + Banvel (1.0 oz/acre) + Roundup Ultra (0.75 pt/acre). The granular Counter 20CR was banded (6-inch) over the seed furrow at planting. Adage and Gaucho were applied as seed treatments.

Treatment effects were assessed by (1) periodically examining the sorghum site for insect activity, (2) counting chinch bugs on and around 10 plants/plot on 25 Apr (45 days after planting), (3) assigning an insect damage rating based on 1 = no damage up to 5 = stunted plants, uneven plant size and reduced plant stand on 25 Apr, (4) counting plants on 25 Apr on 10-row ft in the center row of each plot and (5) harvesting entire plots with a commercial combine on 19 Jul. Grain weights were adjusted based on a 14% moisture standard.

**RESULTS/DISCUSSION:** Insect data, plant populations and yield data are provided in Table 1. Although no statistical differences were observed in chinch bug numbers, several fold more were found in untreated sorghum. Chinch bugs and soil insects (soil insects were not counted) severely reduced plant stands resulting in significantly greater insect damage ratings in untreated plots. Yield increase in Adage, Gaucho and Counter plots amounted to 1801, 2072 and 1528 lb/acre, respectively. Yields from all insecticide treatments were significantly greater than the untreated sorghum. Gaucho treated sorghum yields were statistically greater than Counter treated sorghum.

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Table 1. Chinch bugs, overall insect damage at 45 days after planting, plant population and yield in sorghum treated at-planting with seed and granular insecticide, Walter and Michael Kuck Farm, Lavaca County, TX, 2000.

Treatment/rate	Chinch bugs/10 plants 45 DAP <sup>a</sup>	Insect damage rating <sup>c</sup>	Plant population (1000's/acre)	Yield (lb/acre)	Return \$/acre over untreated <sup>d</sup>
Adage 5FS (5.1 oz/cwt seed)	1.7 a	1.3 b	70.0 a	3852 ab	<sup>e</sup>
Gaucho 480 FS (8.0 oz/cwt seed)	2.0 a	1.0 b	63.2 a	4123 a	45.22
Counter 20CR (3.49 oz/1000 ft row)	0.0 a	1.7 b	60.9 a	3579 b	30.61
Untreated	5.0 a	4.0 a	32.3 b	2051 c	
LSD (P = 0.05)	NS <sup>b</sup>	1.373	19.77	394.2	
P > F	.1170	.0063	.0140	.0001	

Means in a column followed by the same letter are not significantly different by ANOVA (LSD).

<sup>a</sup> DAP = days after planting

<sup>b</sup> NS = not statistically significant

<sup>c</sup> Overall insect damage ratings range from 1 = no damage to 5 = stunted plants, uneven plant size and reduced plant stands.

<sup>d</sup> Sorghum value based on \$3.18/cwt; costs include Gaucho 480FS (\$1.20/lb seed at 6 lb/acre), Counter 20CR (\$2.60/lb), application cost for Counter of \$0.25/acre and harvesting/hauling extra yield above the untreated sorghum (\$0.65/cwt).

<sup>e</sup> Adage is an experimental insecticide for which a cost has not been established.