

COMPARISON OF SYSTEMIC INSECTICIDES APPLIED AS SEED OR GRANULAR FORMULATIONS ON SORGHUM FOR INSECT CONTROL

Darby and Howard Salge Farm, San Patricio County, 2000

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SUMMARY: Significantly greater plant stands were obtained with Adage and Gaucho treatments compared to the untreated sorghum. Counter treated sorghum plant stands were significantly lower than all other treatments. Greenbug numbers were generally lower in insecticide treated sorghum. No differences were observed in yellow sugarcane aphid numbers; their numbers were very low. Adage treated sorghum had a lower plant damage rating than Counter and untreated sorghum. Although Adage and Counter treatments produced statistically more sorghum compared with untreated sorghum, this difference would not pay for treatment at today's sorghum value.

OBJECTIVES: The field study on sorghum was established to compare Adage and Gaucho seed treatments and granular Counter for control of insect pests.

MATERIALS/METHODS: Cargill 839 hybrid sorghum (Concept III treated) was planted at 60,000 seed/acre on 6 Mar, 2000 in a Victoria clay soil in northwest San Patricio County at the intersection of County Road 10 and FM 1068. Sorghum had been grown on the land in 1999. The soil profile contained excellent moisture on the planting date and at the 4-inch depth was 77°F; very little additional rainfall was received during the season. Fertilizer applied was 51-26-0 and Dual II Magnum (7.64 lb ai/gal) was applied in a 14-inch band at-planting at 1.5 pt/acre for weed control. Plots 6-rows wide on 30-inch centers and 300 ft long were planted with a John Deere 7300 MaxEmerge air planter. Treatments were arranged in a randomized complete block design with 3 replications. Granular Counter was applied at-planting in a 6-inch band; Adage and Gaucho were seed treatments.

Treatment effects were assessed by (1) counting the number of plants on 17.4 ft row in each of the two center rows in each plot on 5 Apr, (2) counting the number of greenbugs and yellow sugarcane aphids on 10 lower leaves per plot on 20 Apr and 13 May (45 and 68 days after planting, respectively), (3) visually rating plots at two locations for damage (1 = no damage up to 5 = severe stunting, yellowing and thin plant stand) on 20 Apr, and (4) harvesting entire plots with a commercial combine on 1 Jul. Harvested grain weight was adjusted to 14% moisture.

RESULTS/DISCUSSION: Greenbug and yellow sugarcane aphid numbers were relatively low throughout the season (Table 1). Greenbugs reached a population of 28.4/leaf in untreated sorghum by 68 days after planting (DAP). Only Adage treated sorghum contained numbers statistically lower than untreated sorghum. There were no statistical differences in greenbug numbers at 68 DAP among the insecticides. Yellow sugarcane aphid numbers were extremely low on all inspection dates; statistical differences were not found.

Table 2 provides an overall visual damage rating, grain harvest moisture and yield. Adage treated sorghum damage ratings were significantly lower than untreated sorghum but not different from the other insecticides. No difference was detected in grain moisture at harvest. Numerically, all insecticide treated sorghum produced

more yield than untreated sorghum (104-249 lb/acre). Yields were statistically greater in Adage and Counter treated sorghum compared to untreated sorghum and Gaucho treated sorghum yields were not different from Adage and Gaucho. Yield increase due to insecticide was not great enough to offset treatment costs at the \$3.18/cwt value level for sorghum.

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Table 1. Greenbug and yellow sugarcane aphid numbers in sorghum treated with systemic insecticides at-planting, Darby and Howard Salge Farm, San Patricio County, TX, 2000.

Treatment (rate)	Plants (1000's/acre)	Number per 20 leaves			
		Greenbug		Yellow sugarcane aphid	
		45 DAP ^a	68 DAP	45 DAP	68 DAP
Adage 5FS (5.1 oz/cwt seed)	36.7 a	4.0 a	196.6 b	3.0 a	13.4 a
Gaucho 480FS (8.0 oz/cwt seed)	36.2 a	4.7 a	326.0 ab	2.3 a	36.0 a
Counter 15G (4.0 oz/1000 ft)	24.7 c	3.0 a	338.0 ab	4.7 a	0.0 a
Untreated	30.3 b	17.7 a	568.0 a	2.3 a	6.7 a
LSD (P = 0.05)	5.562	NS	258	NS	NS
P > F	.0056	.2301	.0615 ^b	.5575	.2266

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

^a DAP = days after planting corresponding to 20 Apr and 13 May, respectively.

^b Judged significant at P = .0615 instead of P = .05 or less.

Table 2. Plant damage rating, grain moisture at-harvest and yield from sorghum treated at-planting with systemic insecticide, Darby and Howard Salge Farm, San Patricio County, TX, 2000.

Treatment (rate)	Plant damage rating ^a	% grain moisture at-harvest	Yield (lb/acre)	Return \$/acre over untreated ^b
Adage 5FS (5.1 oz/cwt seed)	1.33 b	13.6 a	2214 a	Ⓒ
Gaucho 480FS (8.0 oz/cwt seed)	1.67 ab	13.9 a	2069 ab	-2.77
Counter 15G (4.0 oz/1000 ft)	2.67 a	13.6 a	2157 a	-3.67
Untreated	2.67 a	14.2 a	1965 b	
LSD (P = 0.05)	1.04	NS	152	
P > F	.0412	.0701	.0292	

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

^a Plant damage ratings range from 1 = no damage to 5 = severe stunting, yellowing and thin plant stand. Two measurements were made per plot on 20 Apr.

^b Gaucho 480FS (\$1.20/lb seed at a 4.5 lb/acre planting rate), Counter 15G (\$1.90/lb), application (\$0.25/acre for Counter) and harvesting/hauling the extra yield above the untreated sorghum (\$0.65/cwt).

^c Adage is an experimental insecticide for which a cost has not been established.