A REVIEW OF GAUCHO® SEED TREATMENT INSECTICIDE TRIALS ACROSS THE MIDSOUTH AND SOUTHEAST

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Abstract

GAUCHO (*Imidacloprid)* is an insecticide from a new class of chemistry *chloronicotinyls* featuring a unique mode of action. It was discovered by chemists at Nikon Bayer in Japan. Gustafson, Inc., in cooperation with Bayer, Corp., U.S., is marketing GAUCHO 480 for seed treatment use on cotton. *Imidacloprid* exhibits a high degree of toxicological and environ-mental safety.

Introduction

GAUCHO is active against several early season sucking insect pests that affect cotton. Its spectrum of insect activity includes *Frankliniella fusca* (tobacco thrips), S*ericothrips variabilis* (soybean thrips), *Thrips tabaci* (onion thrips), and *Aphis gossypii* (cotton aphids). Heavy thrips and aphid infestations can inhibit plant growth, which can lead to delayed crop maturity; and in some cases, heavy thrips populations can damage growing terminals. GAUCHO does not control lepidopterous insects, mites or nematodes.

GAUCHO is highly systemic. Uptake occurs by diffusion of GAUCHO through the seed coat into the cotyledons. GAUCHO is also taken up through the root system and transported through the vascular tissues into developing true leaves. GAUCHO is both directly toxic to target sucking insects, and elicits an antifeeding response from thrips and aphids feeding on treated tissues. Although adult insects may remain alive on treated plants, their feeding stops within minutes of contact to the insecticide. Consequently, there is little or no feeding and little or no reproduction by insects on the treated plants.

Materials and Methods

Results in this paper were obtained from small plot trials and conducted by university cooperators across the Midsouth and Southeast. A total of fifteen locations involving eight universities was evaluated. Cotton was grown using normal commercial practices for each area.

Common treatments at each location were the following: RTU® Baytan® Thiram + Apron® @ 3.0 + 0.75 (insecticide check); RTU Baytan Thiram + Apron @ 3.0 to 0.75 + GAUCHO 480 FL @ 8.0 fl oz/cwt.; RTU Baytan Thiram + Apron FL @ 3.0 + 0.75 + Temik® 15G @ 0.5 lbs. a.i./acre. Data collected from these locations included adult and immature thrips per plant, thrips damage ratings, and yields.

Results and Discussion

Cotton plants treated with GAUCHO had slightly lower adult thrips per plant when compared to the check but above the economic threshold of one adult per plant (Table 1.). GAUCHO showed substantially fewer immature thrips when compared to the check (Table 2.). GAUCHO had slightly less damage than Temik, with both having less damage than the economic threshold of 3.0 (Table 3.). Ratings were taken from fourteen evaluations averaged over three to five weeks from planting.

GAUCHO and Temik produced average yields of 171 and 158 pounds of lint per acre more, respectively, than untreated check plots.

Summary

The results from these trials combined with the novel mode of action of imidacloprid, suggests that economic thresholds of one adult thrip per plant may have to be modified when GAUCHO seed treatment is used. While GAUCHO may not initially reduce the adult thrips populations, immature thrips and yield results are equal to, or surpass, in-furrow insecticides such as Temik.

Table 1. Average number of adult thrips per plant on cotton treated with GAUCHO seed treatment or Temik in-furrow. 13 ratings from universities in Miss., La., Tenn., Ark., Ala., Mo.

Treatment	Rate	Adult Thrips/ Plant
Check	---	1.6
GAUCHO 480 FL	8.0 oz/cwt.	1.3
Temik 15G	3.5#/acre	0.6

Table 2. Average number of immature thrips on cotton treated with GAUCHO seed treatment or Temik in-furrow. 13 ratings from universities in Miss., La., Tenn., Ark., Ala., Mo.

Treatment	Rate	Immature Thrips/ Plant
Check	---	5.7
GAUCHO 480 FL	8.0 oz/cwt.	1.0
Temik 15G	3.5#/acre	1.0

Table 3. Average thrips damage across Midsouth and Southeast. 14 ratings from Universities in Miss., Tenn., Ark., Ala., S.C., Mo.

Treatment	Rate	Thrips Damage (1-5, 1=No Damage)
Check	---	3.6
GAUCHO 480 FL	8.0 oz/cwt.	2.1
Temik 15G	3.5#/acre	2.3

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Table 4. Average lint yield (# of lint/acre) results across the Midsouth and Southeast. 15 university locations.

Treatment	Rate	Yield Lbs. Lint/Acre
Check	---	766
GAUCHO 480 FL	8.0 oz/cwt.	937
Temik 15G	3.5#/acre	924