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ACTIVITY OF NEONICOTINOIDS AGAINST PESTS AND PREDACEOUS ARTHROPODS IN COTTON IN SOUTH CAROLINA

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Abstract

Three neonicitinoid insecticides (acetamiprid, thiomethoxam, and imidacloprid) and one organophosphate insecticide (dicrotophos) were evaluated for control of the cotton aphid (*Aphis gossypii* [Glover]). In addition, the effects of these chemistries on populations of predators and pests were monitored throughout the season in both conventional and Bollgard cotton. Acetamiprid and thiomethoxam provided adequate control of *A. gossypii*, whereas dicrotophos, at times, flared populations. Imidacloprid was less effective in controlling *A. gossypii* than either acetamiprid or thiomethoxam. Dicrotophos, controlled stink bugs and plant bugs, but had an adverse impact on predators which resulted in higher populations of lepidopterous pests later in the season (Tables 1-2). The neonicotinoids exhibited varying activity against stink bugs, cotton fleahoppers, predaceous arthropods and later populations of lepidopterous pests.

Table 1. Influence of treatment applications on incidence of predators and *H. zea* in B.t. cotton in 2002.

Treatment	Mean No. Predators[1] in 3m of row (8/12)[2]	Mean No. *H. zea* in 3m of row (8/12)[2]
Acetamiprid (0.047 lb ai/A)	45.33 ± 6.90 a	1.17 ± 0.40 abc
Thiomethoxam (0.047 lb ai/A)	23.17 ± 3.15 b	2.33 ± 0.71 a
Imidacloprid (0.047 lb ai/A)	41.67 ± 5.23 a	0.83 ± 0.31 bc
Dicrotophos (0.50 lb ai/A)	6.17 ± 1.49 b	2.00 ± 0.77 ab
Untreated	55.50 ± 10.97 a	0.33 ± 0.21 c

[1]*Geocoris, Orius,* ants and spiders.
[2]3 days after second application.

Table 2. Influence of treatment applications on incidence of predators and *Spodoptera frugiperda* in B.t. cotton in 2002.

Treatment	Mean No. Predators[1] in 3m of row (8/12)[2]	Mean No. *Spodoptera frugiperda* in 3 m of row (8/27)[3]
Acetamiprid (0.047 lb ai/A)	45.33 ± 6.90 a	2.67 ± 0.99 b
Thiomethoxam (0.047 lb ai/A)	23.17 ± 3.15 b	10.33 ± 2.14 a
Imidacloprid (0.047 lb ai/A)	41.67 ± 5.23 a	5.17 ± 0.95 b
Dicrotophos (0.50 lb ai/A)	6.17 ± 1.49 b	6.33 ± 0.88 b
Untreated	55.50 ± 10.97 a	3.50 ± 0.89 b

[1]*Geocoris, Orius,* ants and spiders.
[2]3 days after second application.
[3]18 days after second application.