

**CONFIRM AS A USEFUL ALTERNATIVE FOR  
IPM AGAINST THE BEET ARMYWORM IN  
COTTON IN NORTHERN MEXICO**

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**Abstract**

Control of beet armyworm larvae was tested in Northern Mexico in Chihuahua and Tamaulipas under commercial cotton and lab conditions from July to September 1996 with a growth regulator insecticide, Confirm 2F. This insecticide showed rapid, satisfactory control of beet armyworm larvae. From L1 to L2 were killed in 2-3 days. Under lab conditions, L4 larvae were killed in 2-4 days, but in commercial cotton beet armyworm larvae needed 6-8 days to die, due mainly to higher temperatures in the lab than in the field. Literature reports Confirm action is affected by low temperature. Confirm 2F was applied at 330 cc/ha in commercial cotton (4 Has.) that had 3-5 larvae/lineal meter. The main species of beneficial insects present, *Chrysopa* and *Cotesia marginiventris*, were not affected by this insecticide. The product appears useful for IPM programs for cotton growers.

**Introduction**

The beet armyworm in Mexico historically has been a sporadically destructive pest of cotton. However, between 1992 and 1996, the beet armyworm emerged as a consistently serious pest of cotton in Northern Mexico (States of Sonora, Chihuahua, Coahuila, Tamaulipas). The main reason for this problem was the failure of many insecticides to provide satisfactory control. The persistence of this problem has evoked an interest by chemical companies to use growth regulator insecticides in order to provide good control of beet armyworm without any substantial impact on populations of natural enemies which help control the pest.

**Materials and Methods**

Beet armyworm larvae were collected in September 1996 from 4 has. of commercial cotton in Delicias, Chihuahua, Mexico. Under lab conditions, cotton leaves were placed in a cup and Confirm 2F was applied at the equivalent of 330 cc/ha to leaves. Beet armyworm larvae collected from the field were then put on the leaves. In the second treatment field-collected larvae were placed in a cup with leaves and

Confirm 2F was applied directly to both. Each treatment had 4 replicates. In another study, one application of Confirm 2F (330 cc/ha.) was applied in a commercial cotton field (4 has.) in Delicias, Chihuahua, Mexico by airplane. There were 3-5 beet armyworm larvae/lineal meter.

**Results and Discussion**

Tables 1, 2, and 3 present results of Confirm 2F testing. Confirm 2F is a growth regulator insecticide. It shows good control of beet armyworm larvae at a dosage of 330 cc/ha (80 g a.i./ha). It best controls L1 and L2 larvae, 3 to 8 worms/lineal meter or 4 worms/100 bolls. Confirm 2F is safe to the beneficial insects *Chrysopa* (an aphid predator) and *Cotesia marginiventris* (a beet armyworm parasitoid). Ruberson et al. (1993) reported organophosphate and pyrethroid insecticides affected *Cotesia marginiventris*. In contrast, the carbamate thiodicarb and insect growth regulator diflubenzuron were considerably less toxic to these parasitoids. They concluded that *C. marginiventris* can have a substantial impact on beet armyworm populations. Confirm 2F is a good alternative for IPM programs.

**Reference**

Ruberson J.R., G.A. Herzog and W.J. Lewis. 1993. Parasitism of beet armyworm, *Spodoptera exigua* in south Georgia cotton. Proc. Beltwide Cotton Production Research Conferences. pp 993-997.

Table 1. Effect of Confirm 2F (330 cc/ha) on beet armyworms under lab conditions. Delicias, Chihuahua, FCAyF, Univ. of Chihuahua, Mexico. 1996.

Days after treatment	% affected L1-L2AL	% affected L3-L4AL	% affected L1-L2ADWL	% affected L1-L2AL
one	20	10	50	25
two	60	30	80	50
three	80	40	100	70
four	100	70	100	100
five	100	100	100	100

AL = Applied Confirm 2F to leaves, then put beet armyworm larvae on those leaves.

ADWL = Applied Confirm 2F directly to beet armyworms and leaves.

Table 2. Effect of Confirm 2F (330 cc/ha) on beet armyworms under lab conditions. Delicias, Chihuahua, FCAyF, University of Chihuahua, Mexico. 1996.

Days after treatment	% killed L1 - L2 AL	% killed L3-L4 AL	% killed L1 - L2 ADWL	% killed L3-L4 ADWL
one	0	0	0	0
two	10	5	70	25
three	60	40	100	30
four	100	70	100	100
five	100	100	100	100

AL = Applied Confirm 2F to leaves, then put beet armyworm larvae on those leaves.

ADWL = Applied Confirm 2F directly to beet armyworms and leaves.

Table 3. Number of beet armyworms by lineal meter with CONFIRM 2F under Commercial field cotton. Delicias, Chihuahua, Mexico. FCAyF University of Chihuahua, Mexico. 1996.

Treatment	g a.i./ha	cc/ha	days after treatment			
			0	7	16	24
CONFIRM 2F	80	330	3	0	1	5
UNTREATED	0	0	5	3	2	8

Table 4. Number of beet armyworms by lineal meter with Confirm 2F in cotton. Gonzalez, Tamaulipas, Mexico. 1996.

Treatment	g a.i./ha	days after treatment		
		-1	6	12
Confirm2F	60*	6	3	1 ***
Confirm 2F	60**	5	1	1
Confirm 2F	80*	6	2	1
Confirm 2F	80**	6	4	2
Intrepid	30*	8	1	0
Intrepid	30**	5	1	0
Lorsban 480EM	930**	6	7	5
Untreated		5	3	2

\* with Latron CS @ 0.25V/V

\*\* With Trylox 5909 @ 0.5 V/V

\*\*\* Number of beet armyworm per lineal meter