

EFFECT OF GAUCHO ON INCIDENCES OF DISEASES IN UPLAND COTTON, *Gossypium hirsutum* IN BANGLADESH

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ABSTRACT

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Fuzzy seeds of both smooth and hairy variety of cotton were treated with 5 rates of Gaucho as seed dresser in Sadarpur, Dinajpur during 2005-2006. The results of the damaged bolls were compared with the foliar monocrotophos and untreated control. It revealed that cotton plants received higher dosages of Gaucho recorded significantly lower boll damaged compared to monocrotophos. Lower dosages of Gaucho however, were inferior to monocrotophos in many instances. Control plants showed maximum damaged bolls than treated plants.

Key words: *gaucho, monocrotophos, fuzzy, lint*

INTRODUCTION

Cotton plants are susceptible to several deadly diseases viz. leaf spot, blight, boll rot, root rot, anthracnose, stenosis, wilt etc. Some diseases are seed born and some are soil born. Infection may start from cotyledon leaves to the later stage also. Makkouk *et al.* (2001) observed the effectiveness of using seed treatment with imidacloprid (Gaucho) to reduce the incidence of bean leaf role virus (BLRV). It causes reduction of yield by affecting germination, killing the plants, lowering their productivity and also by affecting the quality of lint. Seed treatment is a modern tool for crop protection and integral part of crop management. Epperlin *et al.* (1997) studied in German to monitor the effect of imidacloprid treated maize seed. He found that seed treatment reduced the transmission of the persistent barley yellow dwarf lutes virus (BYDLV). Altman *et al.* (1992) suggested that the imidacloprid seed treatment significantly reduced the virus diseases due to long lasting control of vectors. It is an advanced and economic delivery system for crop protection and the genetic potential of the seed against pests and diseases. Several authors found that imidacloprid controlled the aphid vectors (Harvey *et al.* 1995) control of barley yellow dwarf lutes virus, reduces spotted tomato wilt (Mcpherson *et al.* 2005), declined potato leaf role virus (Mowry *et al.* 2002 and Makkouk *et al.* 2001). Seed treatment is the most targeted, cost effective as well as friendly application of crop protection, fits very well with the concept of integrated management system.

MATERIALS AND METHODS

The trial was carried out at the cotton research station, Sadarpur, Dinajpur during the year 2005-06. Cultivars CB-3 (smooth) and CB-9 (hairy) with fuzzy and delinted seeds. Plot dimensions were 10m x 10m, laid out in a randomized complete block design, 7 treatments and replicated four times. The spacing between plot to plot 1m and 2m foot path respectively. Counting started from the Juvenile stage to the later part of the plant. It was done once in a week. The sampling was random; taking 5 plants from each replication. Total numbers of bolls and damaged bolls were counted. The mean values of both smooth and hairy variety were recorded. The seed was treated with the seed dressing chemical, Gaucho-70ws by different doses and compared it with the standard dose of monocrotophos-40wsc and untreated check. The treatments were:

- a) Gaucho-70ws-1.50gm/kg seeds
- b) Gaucho-70ws-2.50gm/kg seeds
- c) Gaucho-70ws-3.50gm/kg seeds
- d) Gaucho-70ws-4.50gm/kg seeds
- e) Gaucho-70ws-5.50gm/kg seeds
- f) Monocrotophose-40wsc-1120ml/ha
- g) Untreated check (water spray)

The fuzzy and delinted seeds of both varieties soaked in water within a plastic boll for half an hour and then remove water to make it a little bit dry. The powdered Gaucho poured into the bowl and stirred for 10-15 minutes for complete adherence of the chemical to the individual seed coat. It was dried in the sun for 30-45 minutes over a clean floor or on paper and was sown in the trial plot. Thorough examination of plants was done randomly in the field. Five plants were taken from each replication by random selection. Twenty plants were scouted from each treatment unabashedly. Sprays were applied when the pest levels exceeded the relevant threshold at regular weekly counts. Monocrotophos 40wsc was applied to suppress the pest below ETL. In case of untreated check only water was sprayed. Spraying was done by the knapsack spray using the rate 1120ml & volume 100-200 liters/ha.

RESULTS AND DISCUSSION

The number of bolls in Gaucho treated plants varied from 20.00 - 27.75 while 21.00 in monocrotophos and 11.50 in untreated control. The increasing doses of Gaucho had greater effect in setting of bolls per plant. 5.5g Gaucho significantly produced higher number of bolls compared to other doses of Gaucho and monocrotophos. Untreated control gave significantly lower number of bolls.

Gaucho at 5.50g protected the bolls from diseases and gave significantly least damage among all the treatments. 1.5g Gaucho and control treatment gave the highest damage of bolls (table 1).

Table 1. Effect of Gaucho on disease incidence of smooth cotton during 2005-06

Treatments	Doses Gaucho/kg seed ml/ha	Total bolls/plant	Damage bolls/plant
Gaucho-70ws	1.50g	20.00b	4.00b
Gaucho-70ws	2.50g	21.00b	2.50a
Gaucho-70ws	3.50g	22.50b	2.50a
Gaucho-70ws	4.50g	23.00b	2.00a
Gaucho-70ws	5.50g	27.75c	1.75a
M-40wsc (std)	1120ml	21.00b	2.25a
Untreated check	-	11.50a	4.50b
LSD (0.05)	-	3.50	1.04

Means followed by same alphabets do not differ significantly ($P>0.05$) by DMRT

Small letters indicate comparison within column

Means of 4 replicates

The number of bolls varied from 19.75-29.75 due to Gaucho treated plants while 21.50 due to monocrotophos and 11.25 in the untreated control respectively. The increasing retention of bolls was found with the increasing doses of Gaucho. Significantly higher number of bolls (29.75) was recorded at 5.50g Gaucho and lowest number (11.25) as found in the untreated control.

The number of damaged boll was varied from 2.25 to 4.00 in Gaucho treated plants, 3.75 in monocrotophos and 4.50 in untreated control. The highest damage occurred in untreated control (4.50) followed by lowest doses of Gaucho (1.50) but least damage was at 5.5g Gaucho (table 2).

Table 2. Effect of Gaucho on disease incidence of hairy cotton during 2005-06

Treatments	Doses Gaucho/kg seed ml/ha	Total bolls/plant	Damage bolls/plant
Gaucho-70ws	1.50g	19.75b	4.00b
Gaucho-70ws	2.50g	22.00b	3.75b
Gaucho-70ws	3.50g	23.50c	2.75a
Gaucho-70ws	4.50g	25.50c	2.25a
Gaucho-70ws	5.50g	29.75d	2.25a
Monocro-40wsc (std)	1120ml	21.50b	3.75b
Untreated check	-	11.25a	4.50b
LSD (0.05)	-	3.28	0.90

Means followed by same alphabets do not differ significantly ($P>0.05$) by DMRT

Small letters indicate comparison within column

Means of 4 replicates

In Gaucho treated plants the number of damaged bolls recorded from 1.75-4.00 while in monocrotophos it was 2.25 and 4.50 in the untreated control of smooth variety (table 1). In hairy variety the damaged bolls in Gaucho treated plants varied from 2.25-4.0, in monocrotophos it recorded 3.75 and in the control plants it was 4.50 (table 2).

Impact of disease incidence according to imidacloprid was investigated by several workers Altman *et al.* (1992), Epperlin *et al.* (1997), Makkouk *et al.* (2001), Mckridy *et al.* (1997), Mcpherson *et al.* (2005), Mowry *et al.* (2002), Westwood *et al.* (1997), Sreekanth *et al.* (2003) and Harvey *et al.* (1995).

CONCLUSION

Cotton plants received higher dosages of Gaucho recorded significantly lower boll damaged compared to monocrotophos. Lower dosages of Gaucho were inferior to monocrotophos in many instances.

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