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The Plant Bug, *Megacoelum biseratense* (Distant) : New Potentially Key Pest of Cotton

Praparat Hormchan[1] **and Arunee Wongpiyasatid**[2]

ABSTRACT

The study showing the plant bug, *Megacoelum biseratense,* potentially become key pest of cotton, was conducted at Suwan Farm during 1996-1998. AP_1 and AP_2, the mutant lines, moderately resistant to the american bollworm, and SR_2, the recommended variety, were used in the test employing RCB with 4 replicates. The result revealed 2 major insects attacking cotton at almost every growing stage. The plant bug numbers found on AP_1 and AP_2 in 1996 and 1997 were significantly different from those in 1998 while the opposite was noticed in SR_2. Comparing with the jassid, the present cotton key pest, whose number significantly decreased in years in all 3 variety/lines, the amount of plant bug increased with time. The shedding of squares and bolls also indicated the increasing importance of the plant bug.

Key words: plant bug, *Megacoelum biseratense*, cotton, key pest

INTRODUCTION

The plant bug (Hemiptera: Miridae) has long caused problems for cotton and other crops especially in Gramineae and legumes. While the tarnished plant bug, *Lygus lineolaris* is an economic pest of cotton in the eastern half of United States cotton belt, *Lygus hesperus* is important primarily in the irrigated areas of the western United States (Maxwell and Jenning, 1980). *Lygus simonyi* is another species of mirid that injures cotton in Africa, particular in Uganda (Painter, 1951). The plant bug, *Megacoelum biseratense* found in cotton fields at Pak Chong and See Que was also originally described as *Lygus biseratensis* by Distant (1903). It has been recently reported as new record in Thailand (Hormchan *et al*., 1998) whereas its existence has long been observed in Burma, Malaysia, Mentawei, Ceylon and Sumatra (Calvaho, 1981). In conducting study on cotton resistant to some insects during the past few years, *M. biseratense* was noticed to gradually increased each year. No report on cotton insects was found to mention such occurrence in Thailand. It may be due to the fact that the adult is very active and difficult to be seen in the field. The shedding of the flower buds by the mirid may also be confused with those caused by the bollworm. This paper intends to show the tendency of *M. biseratense* potentially becoming key pest of cotton in the near future as the other lygus bugs do around the world.

1 Department of Entomology, Kasetsart University, Bangkok 10900, Thailand.

2 Department of Applied Radiation and Isotopes, Kasetsart University, Bangkok 10900, Thailand.

MATERIALS AND METHODS

Two new mutant lines, AP_1 and AP_2, moderately resistant to the bollworm and jassid, together with the recommended variety, SR_2, were used in the studies conducted at Suwan Farm for 3 growing periods of 1996, 1997 and 1998. RCB was employed with 4 replicates, 3 variety/lines in each rep. Each variety/line was grown in 5 rows, each row of 20 meters long. Spacing of row x plant was 1.0 x 0.5 meters. Weeding, watering and fertilizing were treated as required. Six plants from 3 middle rows, 2 for each row, of each variety/line, were randomly tagged after squaring. The number of major insects were then checked from tagged plants , 1 leaf and 5 squares per plant, at every other week for 5 consecutive weeks.

RESULTS AND DISCUSSION

The results presented in the 2 tables show two major sucking insect pests, jassid (*Amrasca biguttata*) and plant bug (*Megacoelum biseratense*) attacking cotton during the 3-year period. While the jassid was mostly found on lower surface of the leaf when cotton was one-month old, the plant bug appeared after squaring in both small and big squares, dried-out flower as well as young boll. The quite large amount of this mirid was firstly become noticable in the year 1996.

Table 1 expresses the mean number of *M. biseratense* of AP_1 and AP_2 of 1996 to be significantly different from those in 1998, but not significantly higher than 1997. Yet, the opposite was found in SR_2. Comparing to the jassid whose amounts were reducing every year in all three variety/lines (Table 2) and were noticed to be

Table 1 Mean number of the plant bugs, *Megacoelum biseratense* from 4 reps of the three variety/lines found in 1996, 1997 and 1998.

Year	Mean number of plant bugs		
	SR_2	AP_1	AP_2
1996	9.90 a	2.9 a	2.75 a
1997	3.0 b	3.1 a	2.25 a
1998	8.75 a	8.95 b	7.8 b

Means followed by the same letter in the column are not significantly different at the 5% level by DMRT.

Table 2 Mean number of jassids from 4 reps of the three variety/lines found in 1996, 1997 and 1998.

Year	Mean number of jassids		
	SR_2	AP_1	AP_2
1996	15.8 a	15.1 a	25.3 a
1997	9.1 b	9.5 b	11.6 b
1998	6.5 bc	4.7 c	4.3 c

Means followed by the same letter in the column are not significantly different at the 5% level by DMRT.

significantly different from one another, the number of plant bug, on the other hand, enhanced by years. The results indicate the increasing importance of the plant bug which has potentiality to become a threat to cotton in the near future.

The plant bug appeared at the squaring stage until harvesting whereas the other occasional pests, such as, aphid, white fly, thrip and even the bollworm were encountered at each growing stage only. It was able to seriously affect squares and young bolls causing drying out and sheddings of such parts (Hormchan *et al*., 1998). The blasting pinhead square of cotton was also caused by its feeding, thus the small buds were destroyed. The young nymphs (Figure 1) were found in the small squares hiding between bracts and flower buds while the late nymphal instars (Figure 2) or adults (Figure 3) were noticed between bracts and wilting flowers or bolls. The adults would take a sudden flight when the bract was opened. The immature was sometimes noticed present among the black lygaeids, *Oxycareus laetus*, congregating in the square. The adult and 4th and 5th instar nymphs appeared to be the most injurious. The results agreed with the report of Butler (1968).

Since the plant bug is considered an economically important pest of cotton as well as other cultivated plants wherever it is found (Grosby and Leonard, 1914), it is not surprising to find plant bug also be a serious pest of cotton in Thailand. In addition, the jassid which is now the most destructive insect of cotton found almost the whole growing season, similar occurrence exists in this mirid as well. The reason no one has taken the insect seriously before may be due to the active flight of the adult which would take place immediately after the hiding place is exposed. The 1st and 2nd instar nymphs may be easily overlooked because they are quite small and always run in hiding whenever disturbed. The late instar nymphs are easily

Figure 1 Young nymph of *M. biseratense.*

Figure 2 Later nymphal instar of *M. biseratense.*

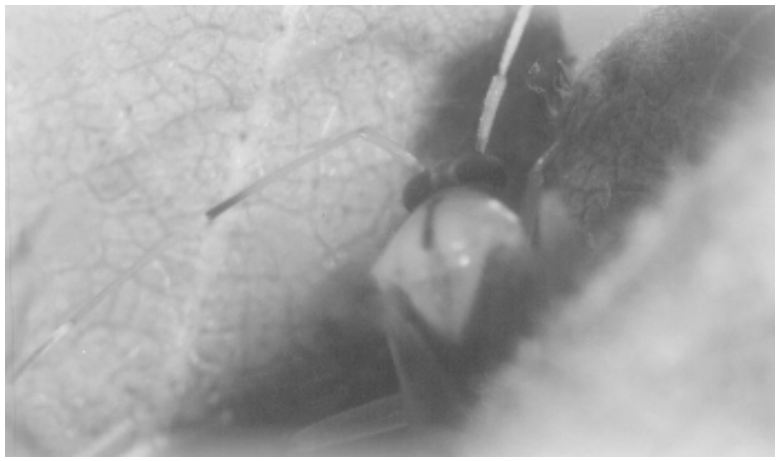

Figure 3 Adult of *M. biseratense.*

encountered, but since the insect is not known, they, then did not attract much interest. The nature of damage may also be confused with that caused by the american bollworm owing to the shedding of squares. However, the fall-out squares produced by the bollworm were not so dried as those caused by the plant bug. Most reports in Thailand state this *M. biseratense* only as the mirid bug and no real damage has ever been mentioned.

CONCLUSION

The larger amount of *M. biseratense* and the more shedding of squares and bolls along with the history of being cotton pest as well as the other economic plants around the world may indicate the insect potentiality of becoming key pest of cotton in Thailand in the near future. However, the correlation between yield and number of this mirid, the distribution and alternate host plants needs to be furthurly studied for confirmation of the assumption.

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