

Management of pinkbollworm, *Pectinophora gossypiella* (Saunders) with PB ropel and IPM approach

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Pheromone monitoring indicated advancement of pink bollworm activity to as early as August during 2004-05. Soon after emergence, the PBW larvae enter the fruiting body. As a result, farmers remain totally ignorant about the damage caused by PBW and do not exercise any target specific control measures about it. Considering the emerging status of this pest investigations were undertaken to find out suitable measures to contain PBW, a large scale demonstration was undertaken in the farmers fields to evaluate the suitability of PB Rope L. Moth catches in the control plot were comparatively very high(12,478) throughout the crop season as compared to PB Rope L treated plots(198). Thus the PB Rope L treated plot recorded the lowest percent boll and locule damage compared to untreated plot and recorded highest yield and highest per cent good kapas.

Key words : Pinkbollworm, IPM, PB ropel, Control.

INTRODUCTION

PINK bollworm (PBW) *Pectinophora gossypiella* (Saunders) has been economically the most destructive insect pest of cotton and causes maximum seed cotton loss in quantity and quality. In Andhra Pradesh, PBW is emerging as a serious pest and its activity is observed for a brief period from January to till the end of the season in April. In the recent past, the pest has been frequently noticed from early flowering. Soon after emergence, the PBW larvae enter the fruiting body. As a result, farmers remain totally ignorant about the damage caused by PBW till the boll opening and hence could not exercise any target specific control measures against the pest.

Considering the changed behaviour of this pest, investigations were undertaken to know the seasonal incidence of pink bollworm and to find out a suitable measure to contain PBW, these studies were contemplated in the farmers fields to understand seasonal incidence and measures to manage the pest.

MATERIALS AND METHODS:

Large scale trials were laid out in farmers fields during the season 2004-05 in 110 acres at Nossam village, Sanjamala Mandal of Koilakuntla division in Kurnool district (Andhra Pradesh). In the demonstration block PB ropes were manually tied by loosely twisting the dispenser around central shoot of cotton plant at first pin square (around 45-50 days after sowing) stage @ 80 per acre (one rope per every 50 Sq m. area). Care was taken to apply the dispensers in all boarder rows at 3 mts. interval and in field at 6 mts. interval. In order to compare the data, a control block of same area was maintained at a far of place from the demonstration block (PB Rope L treated block) and plant protection measures were taken as per the farmers choice.

To monitor the moth activity in the demonstration block, pheromone traps @ 1 per 5 acres were installed in both the blocks. The height of the traps were kept at 30 cm above the crop canopy and lures were regularly replaced at fortnightly interval till the end of the trial.

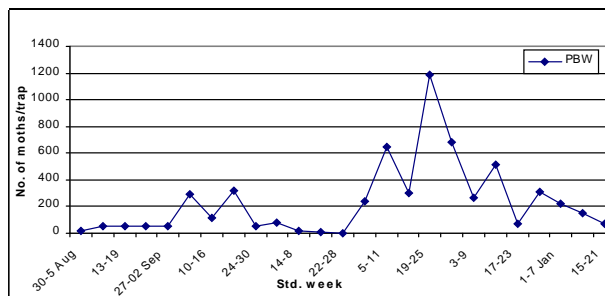
Observations were recorded in the pheromone trap catches everyday. Larval counts and boll damage due to pink bollworm were recorded by destructive sampling on an average 400 bolls /month. Data on good and bad kapas and the final yield were recorded.

RESULTS AND DISCUSSION

Activity of pink bollworm :

Monitoring with the pheromone traps indicated that the activity has been advanced to as early as August month (2004-2005). However, the peak activity of the pest was consistently high during the end of the season. The present findings are in accordance with pest behaviour reported by Swamy *et al.* (2004) and Ali (2002) (Fig.1).

Fig. 1 : Pheromone trap catches of pink bollworm during the year 2004-05 at RARS, Nandyal.



Pheromone trap catches:

In general, moth catches of PBW was quite high in the month of September. Moth catches in the control plot were comparatively very high throughout the crop season as compared to PB Rope L treated plots (Table 1). Once the PB Rope L was applied in the experimental area, the moth catches of PBW in the traps immediately declined to nearly zero and low till the end of December. These results have clearly established the efficacy of PB Rope L pheromones for mating disruption in pink bollworm populations.

Boll and Locule Damage:

The data for the period from October to November, revealed that the boll damage in the demonstrated block was 5.88 % in big bolls and 1.78% in small bolls as against 12.47% and 3.81% in big and small bolls respectively in control block. The locule damage was 2.85% and 0.84% in demonstrated block for big and small bolls respectively as against 5.00% and 2.94% in control block (Tables 2 and 3).

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Quality of Kapas:

In the demonstration block, the per cent bad kapas was 7.82, 5.66 & 7.68 in the first, second and third pickings. Whereas control block recorded 11.02, 10.82 and 8.78 respectively. On an average the demonstration block showed 7.05 per cent bad kapas as against 10.20 per cent bad kapas in control block (Table 4).

cessation of insecticide sprays.

Thus, based upon the results it could be concluded that trap sampling is the effective tool for establishing the efficacy of PB Rope L in disrupting mating in the adult population of pink bollworm, particularly when the demonstration is laid on large area.

Table 1: Pheromone trap catch of pink bollworm from PB ROPE L demonstration and control block during 2004-05 at Nossum village of Kurnool district

Treatment	Moths / 24 traps / Month					Total
	September	October	November	December	January	
Demonstration block	4	17	0	0	177	198
Control block	1490	3341	2712	1826	3109	12,478

Table 2 : % Boll damage by pink bollworm in PB ROPE L demonstration and control block during 2004-05 at Nossum village of Kurnool district

Treatment	October		November		December		Average	
	Big	Small	Big	Small	Big	Small	Big	Small
Demonstration block	5.61	2.77	2.66	1.61	9.37	0.97	5.88	1.78
Control block	13.33	2.72	4.08	6.43	20.0	2.29	12.47	3.81

Table 3 : Per cent Locule damage by pink bollworm in PB ROPE L demonstration and control block during 2004-05 at Nossum village of Kurnool district

Treatment	October		November		December		Average	
	Big	Small	Big	Small	Big	Small	Big	Small
Demonstration block	1.48	0.71	1.93	1.23	5.13	0.59	2.85	0.84
Control block	3.45	0.73	3.19	5.57	6.35	2.53	5.00	2.94

Table 4: Per cent bad and good kapas in different pickings from PB ROPE L demonstration and control block

Treatment	First		Second		Third		Average	
	Bad Kapas	Good Kapas	Bad Kapas	Good Kapas	Bad Kapas	Good Kapas	Bad Kapas	Good Kapas
Demonstration block	7.82	92.18	7.68	92.32	5.66	94.34	7.05	92.94
Control block	11.02	88.98	10.82	89.18	8.78	91.22	10.20	89.79

Table 5: Pink bollworm control by mating disruption pheromone during 2004-05

Male moths	% control with PB Rope L		Yield (q/ha)	
	Boll Damage	Locule damage	Demonstration	Control
98.41	52.95	53.40	24.95	22.45

Yield:

Demonstration block recorded 24.95 q/ha yield of seed cotton against 22.45 q/ha in control block (Table 5). Thus the PB Rope L treated plot recorded the lowest per cent boll and locule damage compared to untreated plot and recorded higher yield and per cent good kapas. These results are in conformity with the findings of Patil *et al.*, (2004).

CONCLUSION

However, the sampling for boll damage has indicated marginal decrease of pest activity and marginal increase in yield in the demonstration block compared to untreated control mainly due to the fact that the emerging pest populations were equally suppressed in both the blocks by the insecticide sprays given by the farmers for control of *Helicoverpa armigera* till the middle of December. This could be attributed for a sharp raise in pest activity in both the blocks from the beginning of January after

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