

Fruit crops as alternate hosts of Cotton mealybug

S. Vennila and Meenu Agarwal

National Centre for Integrated Pest Management, L.B.S. Centre, Pusa, New Delhi-110 012
<svennila96@gmail.com>

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Cotton mealybug, *Phenacoccus solenopsis* Tinsley invaded India and Pakistan around 2005, and caused severe damage and yield reduction to cotton. The propensity of mealybugs to multiply in large numbers in shorter time along with their high dispersal ability makes their management difficult.

A study was conducted between July 2008 and June 2010 through fortnightly surveys to document the host range of *P. solenopsis* in three representative States of Indian cotton growing zones viz., Haryana of North zone, Maharashtra of Central zone and Tamil Nadu of South zone. Present study reports

Table 1. Seasonality and severity of *Phenacoccus solenopsis* on fruit crops.

Botanical name	Seasonality			Severity		
	North	Central	South	North	Central	South
<i>Mangifera indica</i>	–	Off season	Off season	–	Grade 1	Grade 1
<i>Annona squamosa</i>	–	Off season	Off season	–	Grade 3	Grade 3
<i>Carica papaya</i>	Throughout year	Throughout year	Throughout year	Grade 4	Grade 4	Grade 4
<i>Psidium guajava</i>	Off season	Off season	Off season	Grade 1	Grade 1	Grade 1
<i>Punica granatum</i>	Throughout year	Off season	Off season	Grade 2	Grade 1	Grade 1
<i>Ziziphus mauritiana</i>	Throughout year	Off season	Off season	Grade 2	Grade 1	Grade 1
<i>Achras zapota</i>	–	Throughout year	Throughout year	–	Grade 1	Grade 1
<i>Vitis vinifera</i>	Off season	–	–	Grade 2	–	–

– indicate absence of the *P. solenopsis* infestation

the fruit crops as alternate hosts of *P. solenopsis* observed across the cotton growing zones. Severity of mealybug infestation was noted on 0-4 rating scale viz., 0 – no mealybug; Grade 1 (G1) – scattered appearance, Grade 2 (G2) – severe incidence of mealybug on any one branch Grade 3 (G3) – severe incidence of mealybug on more than one branch and Grade 4 (G4) – severe incidence of mealy bug on the whole plant.

The eight fruit crops constituted 4% of the 194 total host plants documented in India belonging to 50 families (Vennila *et al.*, 2011). Makadia *et al.* (2009) reported *Maconellicoccus hirsutus* was attacking custard apple in Junagadh area. Vijay and Suresh (2013) reported five fruit crops from North and South zones, respectively as hosts for *P. solenopsis*. While grapes was an exclusive host of *P. solenopsis* at North zone, four hosts viz., papaya, guava, pomegranate and ber were common at North, Central and South zones. Two species of citrus from South zone add to the 8 fruit hosts making the total number of fruit hosts for *P. solenopsis* to be 10 in India. While the exclusive host of grapes in North zone had *P. solenopsis* infestation only during off season, papaya across all three zones and sapota at Central and South zones harboured throughout the year. Guava as an

alternate host of *P. solenopsis* gains significance during off season. Mango and custard apple also served as carry over hosts during off season (Das & Baruah 2010) thus, played an important role in the spread of pest to cotton (Table 1).

P. solenopsis severity on the fruit crops ranged between G1 and G4, the highest severity being on papaya across all three zones indicating the spatial and temporal suitability of the crop. Among all the off season hosts, custard apple had higher severity (G3). Lowest severity (G1) on mango, guava, sapota, pomegranate and ber indicated the lesser preference by *P. solenopsis*. Since papaya is one of all season fruit species across the globe, and the infestation by *P. solenopsis* was severe and continuous year round, periodical monitoring is needed. Considering the importance of fruit crops as alternate hosts of *P. solenopsis* it becomes imperative to monitor especially papaya throughout the year across all zones. Care has to be taken to remove the affected parts if *P. solenopsis* infestation severity is Grade 3.

References

- Das, Debanand and Mayuri Baruah (2010). Sustainable practices for pest and disease management of Horticultural crops. *Ann. Pl. Protec. Sci.* 18: 357-361.

Table 1. Population fluctuation and damage of *Bandicota bengalensis* in rice field (2009-10 & 2010-11).

Months	LBC/ha	Trap Index	Cut tillers (%)
January	18.67	1.12	1.8
February	15.67	1.57	1.9
March	16.33	2.67	2.1
April	18.00	4.12	4.6
May	32.00	6.02	4.6
June	28.33	5.78	6.0
July	26.67	5.57	2.6
August	29.33	6.67	2.8
September	36.00	7.12	4.0
October	42.67	9.06	8.8
November	37.33	7.78	6.6
December	29.00	6.76	4.6
S Ed±	1.67	0.74	0.82
CD (P=0.05)	2.38	1.52	1.34

LBC (Live Burrow Count); TI (Trap Index)

May to June, the rodent incidence in terms of LBC/ha (32.00 to 28.33 no./ha) and trap index (6.02 to 5.78) was recorded and as may be due to the *Summer rice* grown in the field. Rao and Kishore (2013) reported the maximum incidence in terms of live burrow during the month of August in *kharif* season.

From the observations, it was found that the % cut tillers were recorded maximum in the month of October (8.8%) followed by November (6.6%) and June (6.0%). The % cut tillers was recorded to be minimum in the month of January (1.8%) and February (1.9%). These findings were in agreement with Sasikala and Neelananarayan (2008). It has been reported that *B bengalensis* breeds throughout the year with peak activity coinciding with the maturity of *kharif* crops (Borah & Bora, 2012). Sakthivel and Neelananarayan (2007) also reported similar results on sunflower.

References

- Borah, R.K. and D.K. Bora (2012). Incidence and damage of *Bandicota bengalensis* in rice based cropping system in Upper Brahmaputra Valley Zone of Assam. *Ann. Pl. Protec. Sci.* **20**: 380-382.
- Rao, N.S. and M.N. Kishore (2013). Baiting through PVC pipe bait stations-A low cost baiting techniques for rodent control in Rice. *Ann. Pl. Protec. Sci.* **21**: 167-171.
- Sakthivel, P. and P. Neelananarayan (2007). Extent of rodent depredation in sunflower. *Ann. Pl. Protec. Sci.* **15**:273-274.
- Sasikala, G. and P. Neelananarayan (2008). Perception of rice farmers on rodent management in Tiruchirappalli Dist., T.N.. *Ann. Pl. Protec. Sci.* **16**: 505-506.