RESEARCH ARTICLE

DEVELOPMENT AND PARASITIZATION OF *PHENACOCCUS SOLENOPSIS* TINSLEY (HEMIPTERA: PSEUDOCOCCIDAE) ON *BT* COTTON BY *AENASIUS BAMBAWALEI* HAYAT (HYMENOPTERA: ENCYRTIDAE)

S.R. Pawar*, H.R. Desai, G.R. Bhanderi and C.J. Patel

Main Cotton Research Station, Navsari Agricultural University, Surat-395007 (Gujarat), India
Email: grbhanderi@yahoo.co.in

Received-25.05.2017, Revised-26.06.2017

Abstracts: Studies on development and parasitization potential of *Aenasius bambawalei* Hayat on *Bt* cotton mealybug was carried out at the room temperature of 20.63 ± 0.60 ºC and humidity of 64.81 ± 3.02 per cent during January to February 2011 at bio-control laboratory of Main Cotton Research Station, Surat. The parasitoid, *A.bambawalei* preferred III instar nymphs (av. 51.48 ± 21.55 % parasitism) and newly emerged female adult (av. 38.15 ± 11.81 % parasitism) more compared to II instar nymphs of mealybug (av. 4.93 ± 4.96 % parasitism) for parasitism. The developmental period of *A. bambawalei* (oviposition of egg inside to adult emergence) was 10.29 ± 0.86, 10.49 ± 0.80 and 10.56 ± 0.97 days when female adult parasitoid exposed to II Instar nymphs, III instar nymphs and female adult mealybugs, respectively. Maximum parasitoid recovered on 10 days after exposure in both of the preferred stages of mealybug. *Aenasius bambawalei* was solitary endoparasitoid. Female was found parasitizing the mealybug by inserting ovipositor from the ventral side of the mealybug body. On dissection of the parasitized mealybug, white legless larva without appendages prior to mummy formation of parasitized mealybug and brownish black exarate type pupa within mummified body of mealybug observed under microscope. The single female adult of *A. bambawalei* parasitized on an average of 125 ± 13.2 mealybugs. Maximum parasitism (60.00 %) observed by 7-day old age female wasp when exposed to its preferred host (III instar mealybug). The longevity of female adult of *A. bambawalei* was 11 to 16 (av.13.8 ± 1.76) and of male was 1 to 2 (1.20 ± 0.45) days.

Keywords: *A. bambawalei*, Nymphs, Parasitoid, Parasitism, Mummified, Ovipositor, Exarate

REFERENCES

Anil, K., Kurtadikar, J. S., Wadnerkar, D. W. and Nemade, P. W. (2008). Studies on the safety of pesticides to grapevine mealybug predator, *Cryptolaemus montrouzieri* Aiyar. *Pestology*, **32** (4):17–27.

Ashfaq, M., Ghulam, S. S., Ali, R. N., Shahida P. A. and Shahid M. (2010). Report of a parasitic wasp (Hymenoptera: Encyrtidae) parasitizing cotton mealybug (Hemiptera: Pseudococcidae) in Pakistan and use of PCR for estimating parasitism levels. *Biocontrol Sci. and Tech.*, 20(6): 625-630.

Ben-Dov, Y. (1994). *A systemic catalogue of the mealybugs of the World*. Intercept Limited, UK, 686 p.

Dharajothi, B., Surulivelu, T., Sonai Rajan, T., Manjula, R. and Kumaran, N. (2010). Occurrence and seasonal dynamics of mealy bug, mirid bug and predators on cotton in Coimbatore district of Tamil Nadu. National Conference on Paradigm Shift in Cotton Research and Cultivation held on October 19-21, 2010 at Surat. Compendium of Abstracts. pp-12.

Dhawan, A. K., Singh, K., Saini, S., Mohindru, B., Kaur, A., Singh, G. and Singh, S. (2007). Incidence and Damage Potential of Mealybug, *Phenacoccus solenopsis* Tinsley, on Cotton in Punjab. *Indian J. Ecol*., **34**(2): 166-172.

Jhala, R. C., Bharpoda, T. M. and Patel, M. G. (2008). Occurrence of Mealy Bugs, *Phenacoccus solenopsis* Tinsley and *Phenacoccus solani* Ferris (Hemiptera: Pseudococcidae) on Cotton in Gujarat. *Insect Environ.*, **13**(4): 149-150.

Kumar, V., Maisuria, I. M., Patel, C. J., Desai, H. R., Sheth, D. B. and Seema Bhaduriya (2010). *Eco-friendly Management of Mealybug in Cotton*, Main Cotton Research Station, NAU, Athwa Farm, Surat 395 007.

Pala, Ram., Saini, R. K. and Vijaya (2009). Preliminary studies on field parasitization and biology of solenopsis mealy bug parasitoid, *Aenasius bambawalei* Hayat (Encyrtidae: Hymenoptera). *J. Cotton Res. Dev.*, **23**(2): 313-315.

Udikeri, S. S., Patil, S. B., Guruprasad, G. S., Vandal, N., Kundari, V., Kranthi S. and Sharma, R. M. (2010). Potential threat of mirid bugs and flower bud maggots for *Bt* cotton cultivation: status / report and case studies from Karnataka. National Conference on Paradigm Shift in Cotton Research and Cultivation held on October 19-21, 2010 at Surat. Compendium of Abstracts. pp-6.

*Corresponding Author