



RESEARCH ARTICLE

# Survival of solenopsis mealybug, *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) on cotton in relation to abiotic and biotic factors

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## ABSTRACT

Survival of solenopsis mealybug, *Phenacoccus solenopsis* Tinsley, on cotton was studied under field conditions, both under caged and exposed during *Kharif*, 2009 at CCS Haryana Agricultural University, Hisar. First instar nymphs (crawlers) were released on cotton plants during different months and observations on the number surviving after 10 and 20 days of release were recorded. The results indicated that as compared to exposed conditions, mealybug survival was higher under caged conditions, and the rate of decline of mealybug population was also quite slow. The ambient conditions of temperature and relative humidity did not seem to have much effect on mealybug population. However, sharp reductions in mealybug populations were observed after heavy rains. It signified the role of heavy rains in suppressing mealybug population. Among the biotic factors, the mealybug parasitoid, *Aenasius bambawalei* Hayat, was found to be active on mealybug colonies through out the observation period (i.e. July to October) and caused on an average 32.6, 42.4, 6.6 and 16 per cent reduction in the mealybug population during July, August, September and October, respectively, when observed after 20 days of release of crawlers.

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## INTRODUCTION

Solenopsis mealybug, *Phenacoccus solenopsis* Tinsley, (Hemiptera: Pseudococcidae), has recently emerged as a major pest of cotton in India (Dhawan *et al.*, 2007; Nagrare *et al.*, 2009). In Gujarat during 2006 *P. solenopsis* caused 50 per cent reduction of yield in highly infested cotton field (Jhala *et al.*, 2008) and in Punjab during 2007, the pest emerged in a serious proportion causing 30 to 40 per cent losses in the yield of cotton in Punjab (Dhawan *et al.*, 2007). In Haryana, the pest was initially observed attacking cotton crop in Dabawali area of Sirsa district during 2006. Later on, the pest spread to several districts of the state causing serious crop losses in certain pockets during 2007 and 2008 (Saini and Ram, 2008).

Survival of mealybug is affected by various biotic and

abiotic factors. However, information on these aspects is scanty. Therefore, the present investigations were carried out during *Kharif* season, 2009 at Research Farm of Department of Entomology, CCS Haryana Agricultural University, Hisar.

## MATERIALS AND METHODS

The studies on survival of solenopsis mealybug, *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) on cotton in relation to abiotic and biotic factors was studied during *Kharif* season, 2009 under field conditions of Research Farm of Department of Entomology at Chaudhary Charan Singh Haryana Agricultural University, Hisar (Haryana).

Freshly emerged crawlers from the ovisacs of the adult females were collected in glass vials from the laboratory