



Population dynamics of mango mealybug, *Drosicha mangiferae* Green (Margarididae: Hemiptera) and its relation with weather parameters in subtropical climatic conditions

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ABSTRACT

Dynamics of mango mealybug in the mango growing agro-ecology of Lucknow region of Uttar Pradesh, India was studied during three seasons (2013-2015). Wider variations in the occurrence of mango mealybug were inferred from the study across 22 locations and three seasons. Weekly average mealybug incidence was tabulated against standard meteorological weeks (SMW), a range of 0.09 to 2.05, 0.13 to 1.57 and 0.11 to 2.56 mealybug per panicle during 2013, 2014 and 2015 was observed respectively. Peak incidence of 2.05, 1.57 and 2.10 mealybug per panicle was observed at mango orchards of Ulrapur (Fixed II), Navipana (Fixed I) and Ulrapur (Fixed I) respectively. The peak incidence of mango mealybug was found at 7th, 3rd, 10th SMW during the mango seasons of 2013 2014 and 2015 respectively. The mango mealybug incidence had significantly positive relation with maximum relative humidity and rainfall across the seasons. The linear regression models had explained upto 61 per cent of variation in the mealybug population with the weather variables. Thus the study concluded wide spread dynamics of mango mealybug incidence across mango orchards of 22 locations. The seasonal changes were also depicted.

Key words: Agro-ecology, Mango, Mealybug, Population dynamics, Weather parameters

Mango (*Mangifera indica* L.) is an economically important fruit crop, popularly known as king of fruits. This crop suffers from several pest infestations through its growth period. Among them mango mealybug, *Drosicha mangiferae* Green (Margarididae: Hemiptera) is a polyphagous insect pest, feeds on 71 plant species (Srivastava 1997). Infestation due to this pest leads to significant loss in size and weight of fresh mango fruits and causes yield loss up to 80 per cent (Karar *et al.* 2012). Mango mealybug is considered as serious pest in India, Bangladesh, Pakistan and China. In India, infestation of this pest is quite serious in Punjab, Uttar Pradesh, Bihar and Delhi. The nymphs and adults are damaging stages and they suck sap from inflorescence, tender leaves, shoots as well as fruit peduncles. As a result, the affected inflorescences are shriveled and get dried. Severe infestation affects the fruit set and causes fruit drop. They secrete honey dew over infested part, on which sooty mould develops. Due to the growth of sooty mould on the leaves, photosynthetic activity is affected (Karar *et al.* 2010). Important management options for mango mealybug includes ploughing of orchard, soil application of dusts/granular insecticides, banding of tree trunk with alkathene above ground level, application of entomopathogenic fungi, *Beauveria bassiana*, spraying

of 5 per cent neem seed kernel extract (NSKE) around tree trunk, spraying of botanicals and spraying of insecticides as a last resort (Hussain 2012).

The population fluctuation as well as the distribution of the mealybug pests depends largely upon the prevailing environmental factors, as this pest known to multiply tremendously during favourable weather conditions leading to population outbreaks (Amarasekare *et al.* 2008). Climatic conditions also influence natural enemy populations such as parasitoids and predators either directly or indirectly (Thomson *et al.* 2010). For developing an early warning weather based system for any pest in a specific agro-ecosystem, it is necessary to have basic information regarding population dynamics in relation to prevalent weather parameters. This will help in determining appropriate times for intervention, and application of suitable methods for management. Population dynamics and impact of weather parameters on the incidence of mango mealybug have been studied by various workers (Yadav *et al.* 2004; Pandey and Kumar 2009). In this study effect of weather parameters on variations in the population dynamics of mango mealybug was carried out through correlation and regression analysis under subtropical agro-ecological region.

MATERIALS AND METHODS

A field experiment was conducted for three consecutive seasons (2013-15) in Lucknow, Uttar Pradesh, India at 22

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