



## RESEARCH NOTE

### A Report on the occurrence of invasive papaya mealybug, *Paracoccus marginatus* Williams & Granara de Willink (Hemiptera: Pseudococcidae) on a medicinal herb, *Gymnema sylvestre* (R.Br) in Gujarat, India

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**ABSTRACT:** This paper reports the occurrence of invasive papaya mealybug, *Paracoccus marginatus* Williams & Granara de Willink (Hemiptera: Pseudococcidae) on a medicinal herb, *Gymnema sylvestre* (R.Br) in Gujarat, India. Considering the invasive nature of the pest, a strict monitoring and management with biocontrol agents is advocated.

**Keywords:** Papaya mealybug, medicinal plant, *Gymnema sylvestre*, Gujarat

*Gymnema sylvestre* (R.Br), commonly called *Madhunashini*, is an important medicinal climber acclaimed for its anti-diabetic properties. This climber is extensively used in almost all the Indian system of medicine as a remedy for rheumatism, cough, ulcer and pain in eyes (www.tnau.agtitecportal.in). Present investigation was conducted during the *rabi* season of 2018 at the ICAR-Directorate of Medicinal and Aromatic Plants Research, Boriavi, Anand, Gujarat, India located at 22° 60' N, 72° 93' E at an altitude of about 45.00 m above mean sea level. Field observations on occurrence of insect pests on this important medicinal plant resulted in record of a mealybug species, *Paracoccus marginatus*. It was found to damage various parts of the host plant including the leaves, stems, and young shoots. Sucking the sap by insect resulted in curling, crinkling, rosetting, twisting, general leaf distortion and finally sooty mould was developed (Plates 1 and 2). Although 30 randomly selected plants were taken into consideration for percent incidence calculation. Based on the insect damage observation, like number of infested plants present in total number of plants taken for observation, all the 30 plants were damaged by mealybug infestation and causing a 100 percent infestation along with decrease in the leaf yield of *Gymnema* in DMAPR campus. The mealybug was collected and processed by following procedure developed by Wilkey (1962) and observed and photographed using a Nikon Eclipse 80i compound microscope equipped with a Nikon Digital Sight camera. Keys developed by Williams (2004) for identifying mealybugs of southern Asia led to identification of

mealybug as *Paracoccus marginatus* Williams and Granara de Willink commonly known as Papaya mealy bug which is an exotic pest and caused serious damages to papaya and several other horticultural crops in the southern states of India. The extreme infestation not only contaminates the yield but also it leads to the destruction of whole plant. (Jithu *et al.* 2016).

The Papaya mealy bug is believed to be native to Mexico and Central America, where it never acquires the status of a serious pest, probably due to the presence of an endemic natural enemy complex (Tanwar *et al.* 2010). In India it was recorded in July 2007 at Tamil Nadu Agricultural University, Coimbatore and subsequently spread to neighboring districts. The pest has been reported in Tirupur, Erode, Salem, Namakkal and Karur districts of Tamil Nadu. The pest is now spreading to other districts too (Muniappan *et al.* 2009). From the extreme southern tip of India the wave of attack is spreading towards the North and from the current trend is from East to West. Recently, based on the visual observation the *Paracoccus marginatus* infestation was mentioned on *Gymnema sylvestre* in Tamil Nadu (Sakthivel *et al.*, 2012).

Biological control programme is to be initiated immediately by releasing the parasitoid, *Acerophagus papayae* imported from Puerto Rico since it has given excellent control in many states in India and other countries (Mani *et al.*, 2012). Investigation on the present study revealed occurrence of *P. marginatus* on *G. sylvestre* for the first time in Gujarat. Considering



**Plate 1. Healthy plant**

the importance this pest, necessary to study the seasonal incidence and population dynamics of the pest species, natural enemy complex and effective non chemical management strategies are required to management of the pest on *G. sylvestre* and a strict monitoring on the movement of plant material is required to prevent further spread to other parts of the country where it is not yet reported.

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#### REFERENCES

- Jithu Krishnan, U., Meera George, Ajesh, G., Jithine, J.R., Lekshmi, N.R. and Deepasree, M.I. 2016. A review on *Paracoccus marginatus* Williams, papaya mealy bug (Hemiptera: *Pseudococcidae*). *Journal of Entomology and Zoology Studies*. **4** (1): 528-533.
- Mani, M., Shivaraju, C. and Shylesha, A. N. 2012. Invasive papaya mealybug, *Paracoccus Marginatus* and its biological control - An overview. *Journal of Biological control*. **26**(3): 201-216.



**Plate 2. Plant infested with mealybug**

- Muniappan, R., Shepard, B. M., Watson, G.W., Carner, G. R., Sartiami, D., Rauf, A. and Hammig, M. D., 2008. First report of the papaya mealybug, *Paracoccus marginatus* (Hemiptera: Pseudococcidae), in Indonesia and India. *Journal of Agricultural Urban Entomology*, **25**(1):37.40.
- Tanwar, R. K., Jayakumar, P. and Vennila, S. 2010. Inn. Papaya mealybug and its management strategies. Technical Bulletin 22. *National Centre for Integrated Pest Management*. 533
- Sakthivel, R., Karuppuchamy, P., Kalyanasundaram, M. and Srinivas, T. 2012. Host Plants of Invasive Papaya Mealybug, *Paracoccus marginatus* (Williams and Granara de Willink) in Tamil Nadu. *Madras Agriculture Journal*, **99** (7-9): 615-619
- Schneider, S. A., LaPolla, J.S. 2010 Inn. Phylogeny and taxonomy of the mealybug tribe Xenococcini (Hemiptera: Coccoidea: Pseudococcidae) with a discussion of trophobiotic associations With *Acropygaroger* ants, *Systematic Entomology*; **114**(2):162-180. [www.tnau.agtitecportal.in](http://www.tnau.agtitecportal.in).

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