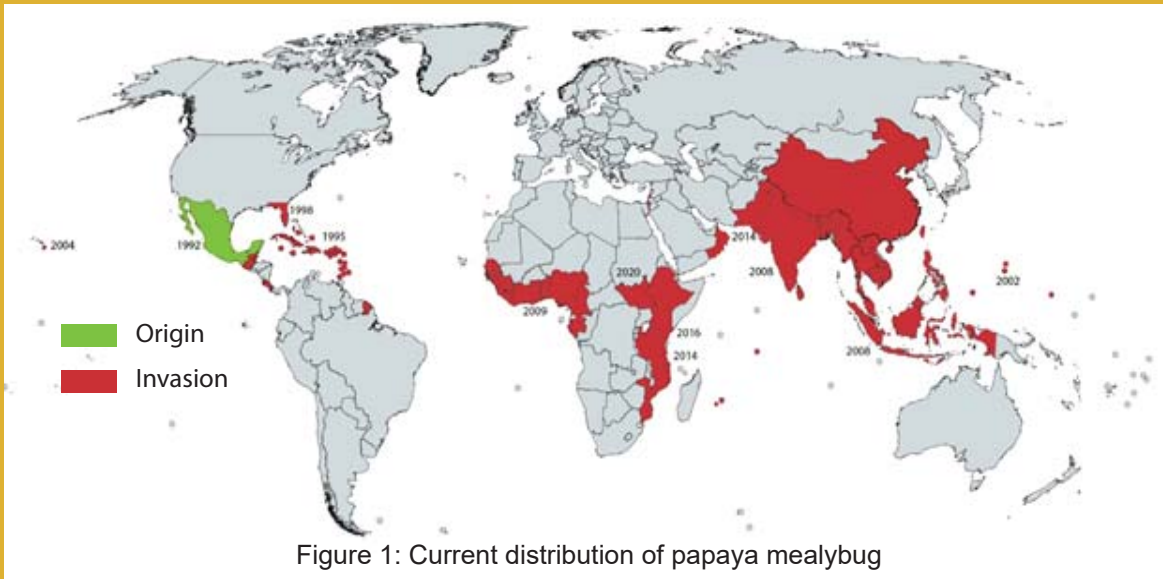




Papaya Mealybug *Paracoccus marginatus* in Bangladesh

Papaya Mealybug

Papaya mealybug, *Paracoccus marginatus* Williams & Granara de Willink 1992 (Hemiptera: Pseudococcidae) is a native to Mexico and is an invasive and polyphagous pest that infests over 80 species of plants, including several cultivated crops. The pest started to spread to other countries around 1995 and it reached India in 2008 and Bangladesh in 2009 (Muniappan et al. 2009; 2011). Since then, it has spread all over Bangladesh. Currently, it has established in most Asian countries except Central Asia and is spreading in sub-Saharan Africa.



Host Plants: papaya (*Carica papaya*), cassava (*Manihot esculenta*), hibiscus (*Hibiscus rosa-sinensis*), plumeria (*Plumeria rubra*), cotton (*Gossypium spp.*), eggplant (*Solanum melongena*), mulberry (*Morus alba*), mango (*Mangifera indica*), guava (*Psidium guajava*), and several species of plants belonging to the families Euphorbiaceae, Fabaceae, Annonaceae, Malvaceae, Convolvulaceae, and Asteraceae.



Figure 2: Papaya mealybug infested fruits and leaf

Life cycle: Papaya mealybug reproduces sexually. An adult female is 2-3.5 mm long, slightly flat, and elongate. It forms a waxy filamentous ovisac and lays 230-400 eggs. Eggs hatch in 7-14 days and females undergo three instars and males undergo four instars. In general, papaya mealybug has 11-15 generations in a year depending upon the weather conditions. They are most active in warm and dry weather.

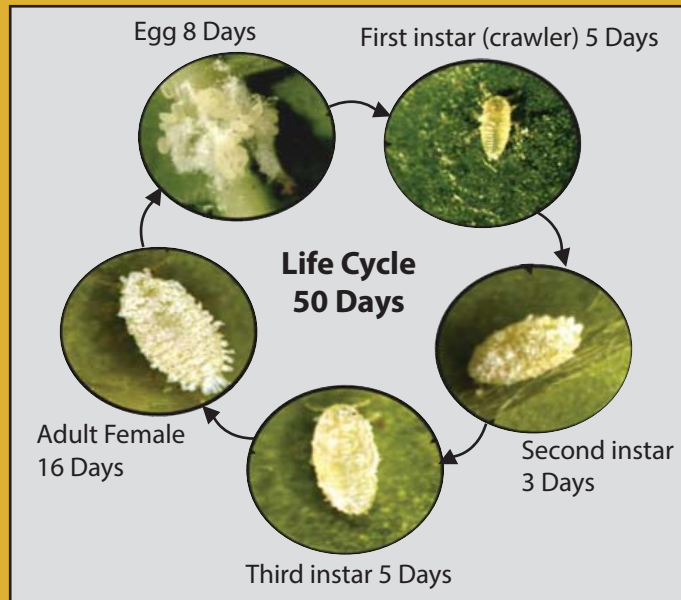


Figure 3: Life cycle of Papaya mealybug (semanticscholar.org)

Damage: With the piercing and sucking mouthparts, the mechanical damage caused by papaya mealybug is of minor importance, but what it does do is drain the sap from the plant and exudes copious honeydew. Additionally, its saliva contains enzymes that alter the physiology of the host plant and ultimately affects plant growth. Physical expressions due to papaya mealybug infestation include distortion, stunting, wilting, dieback of stems, twisting, yellowing, curling, distortion of leaves, leaf drop, and premature fruit drop (CABI, 2021). Papaya fruits affected by this mealybug become hard and bitter in taste. The copious honeydew excreted by the mealybug induces growth of sooty mold, which covers both leaves and fruits. Sooty mold growth on leaves reduces photosynthesis by blocking sunlight.

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Management:

Mechanical: In home gardens, a jet of water has been used to wash mealybugs from fruits and leaves.

Bio-pesticide: Fytoclean (Potassium salt of fatty acid 40%) does not have adverse effects on human and environmental health and compatible with biocontrol agent. So, this biopesticide can be a suitable management option @ 5-7ml/L of water against mealybug infesting papaya.

Insecticidal: The waxy covering of the mealybugs, in general, reduces the efficacy of contact chemical insecticides.

Classical biological control: The Agricultural Research Service (ARS) of the U.S. Department of Agriculture (USDA) has identified three host specific parasitoids, including *Acerophagus papayae*, *Pseudleptomastix mexicana*, and *Anagyrus loeckii* of papaya mealybug in Mexico. These parasitoids reared in a laboratory in Puerto Rico were imported to India and field released in 2010. Of these, *A. papayae* has proven effective in controlling papaya mealybug in India and it fortuitously spread to Bangladesh in 2014 (Muniappan 2014). Currently, this parasitoid is keeping papaya mealybug in control in Bangladesh and only sporadic and temporary infestation of papaya mealybug is noted in the country.



Figure 4: *Acerophagus papayae* (NBAIR, Bangaluru, India)

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