



# Occurrence of a new cryptic species of *Bemisia tabaci* (Hemiptera: Aleyrodidae): an updated record of cryptic diversity in India

Mehzabin Rehman · Prosenjit Chakraborty · Bhaben Tanti · Bikash Mandal · Amalendu Ghosh 

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**Abstract** *Bemisia tabaci* (Hemiptera: Aleyrodidae) is a polyphagous, phloem-feeding insect infesting more than 600 plant species worldwide. It is considered as a complex of morphologically indistinguishable cryptic species that differ in biological, physiological, and genetic traits. To date, 45 such cryptic species of *B. tabaci* have been identified worldwide with up to 4% genetic divergence of mitochondrial cytochrome oxidase subunit I (mtCOI) sequences, and nine of these cryptic species have been reported in India. However, north-eastern India on the verge of two biodiversity hotspots, Eastern Himalaya, and Indo-Burma, remained unexplored until now. The present study included a large number of populations from diverse ecological niches of north-eastern India and updated the cryptic diversity of *B. tabaci*. *B. tabaci* Asia II 5, Asia I, and Asia II 1 were widespread in north-eastern India. In Bayesian phylogenetic inference and genetic divergence study, an isolate of *B. tabaci* branched separately within China clade, closest to China 3, and was proposed as a new cryptic species, *B. tabaci* China 7. Based on the available se-

quence data, we reported occurrence of nine established and one new cryptic species of *B. tabaci* in India. *B. tabaci* Asia II 1 and Asia I were predominant in northern and central India, whereas Asia I and Asia II 7 were in western India. Predominant occurrence of *B. tabaci* Asia 1, Asia II 5, and Asia II 8 were recorded in southern India. The present study proposed to update the global diversity of *B. tabaci* to 46 cryptic species under 11 genetic groups. The genetic divergence between the cryptic species and genetic groups of *B. tabaci* ranged from 4.1–23.4 and 11.7–21.2%, respectively. The findings will help to understand the epidemics of *B. tabaci* and formulate effective management strategies against *B. tabaci* and *B. tabaci*-transmitted viruses.

**Keywords** Silverleaf whitefly · mtCOI sequences · Bayesian phylogenetic inference · Genetic divergence · North-Eastern India

Mehzabin Rehman and Prosenjit Chakraborty contributed equally to this work.

M. Rehman · B. Tanti  
Department of Botany, Gauhati University, Guwahati, Assam  
781014, India

P. Chakraborty · B. Mandal · A. Ghosh (✉)  
Insect Vector Laboratory, Advanced Centre for Plant Virology,  
Division of Plant Pathology, Indian Agricultural Research  
Institute, New Delhi 110012, India  
e-mail: amal4ento@gmail.com

## Introduction

Silverleaf whitefly, *Bemisia tabaci* (Gennadius) (Hemiptera: Aleyrodidae) is considered as a complex of morphologically indistinguishable cryptic species that differ in biological, physiological, and genetic structure (De Barro et al., 2011). *B. tabaci* feeds on phloem and infests more than 600 plant species (Chowda-Reddy et al., 2012; Legarrea et al., 2015; Nombela & Muniz, 2010; Rekha et al., 2005). The adult *B. tabaci* could be identified morphologically by a yellow body, red