



NEW RECORD OF SMALL BROWN PLANTHOPPER *LAODELPHAX STRIATELLUS* FROM DELHI

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ABSTRACT

The small brown planthopper *Laodelphax striatellus* (Fallen), an important pest as well as vector of rice diseases, is brought out as a new record from the National Capital Region (NCR) Delhi. Recent field surveys in the rice fields of NCR revealed this. A detailed redescription along with illustrations is provided, along with mtCOI analysis enabling its authentic identification. Perusal of >250 mtCOI sequences of *L. striatellus* available in NCBI GenBank reveal that this is the first submission from India. The blast results reveal its 100% similarity with the Chinese samples. The voucher material is deposited in the National Pusa Collection, Division of Entomology, ICAR-Indian Agricultural Research Institute, New Delhi.

Key words: Delphacidae, small brown planthopper, rice, Gramineae, redescription, illustrations, mtCOI, BLAST analysis

Delphacid planthoppers constitute important sucking pests of rice and other graminaceous plants. Some are major pests causing economic damage by feeding and transmitting the viral and mycoplasma diseases. One such destructive pest is the small brown plant hopper *Laodelphax striatellus* Fallen. It is polyphagous feeding on rice, maize, oats, oatgrass, wheat and barley and is a vector of *Rice Stripe Virus* (RSV), *Rice Black-Streaked Dwarf Virus* (RBSDV) and *Barley Yellow Stripe Mosaic Virus* (BYSMV) (Falk and Tsai, 1998), which cause epidemics in temperate and subtropical regions (Sanada-Morimura et al., 2015). The planthopper is widespread in Palearctic and Indo-Malayan region.

Delphacids can be identified by hind tibial spur (Calcar). Delphacinae can be identified by the flattened hind tibial spur, with teeth along margin or with a single tooth at the apex. Delphacini tribe can be distinguished by four apical spines on second segment of hind tarsi. *L. striatellus* was first identified and described by Fallen in 1806 with its type species *Delphax striata*; later, several nomenclatural changes led to *L. striatellus* as the most preferred name worldwide. *Laodelphax* was given genus status by Fennah in 1963. From India, it was first reported by Shukla in 1979 from Ludhiana, Punjab. Present study at the Delhi NCR led to its record as a pest on rice. Despite its economic importance, there is inadequate taxonomic account of this pest from India, and the present study provides a taxonomic account with detailed redescription and mtCOI analysis.

MATERIALS AND METHODS

The terminology followed in description is after Asche and Wilson (1990), but anal tube is referred as "segment10". The 'aedeagal complex' refers to structures viz., phallosome, connective, parameres, and post genital segments, when these structures have been separated from the pygofer. The heading 'genitalia' should be understood to refer to males and include the terminal segments Bartlett et al. (2014). Photographs were taken with a Leica DFC 425C digital camera on the Leica M205FA stereozoom microscope with automontage. Male genitalia dissections were carried out as described by Oman (1949) and Knight (1965). Voucher material is deposited in the National Pusa Collection (NPC), Division of Entomology, ICAR-Indian Agricultural Research Institute, New Delhi.

For mtCOI analysis, the DNA was extracted from whole specimen according to the manufacturer protocol, Qiagen QIAamp® DNA Kit. The isolated DNA was stored at -20°C until required. The DNA extractions were amplified for PCR products, using universal primers LCO1490: 5'-ggcacaacatacagaatattgg-3'; HCO2198: 5'-taaacttcagggtgacacaaaatca-3' which target the mitochondrial cytochrome oxidase subunit I (mtCOI) gene (Dietrich et al., 1997). The PCR protocol of Folmer et al. (1994) was followed. mtCOI was amplified in 25 µl reactions using DNA polymerase (Fermentas GmbH, St. Leon-Rot, Germany) under the following cycling protocol: 4 min. hot start at 94°C, 35

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