

SHORT COMMUNICATION

Reporting of Two Planthoppers and Six Leafhopper Species in Feni and Noakhali District of Bangladesh

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ABSTRACT

The present field experiment was conducted on the rice field of Feni and Noakhali district in Bangladesh to study on leafhopper and planthopper (Hemiptera: Auchenorrhyncha) morphologically during the period from February 2021 to November 2021. Samples were collected with the help of a sweeping net where five sweeps were done at different positions with three replications at each. Primarily the samples were prepared and studied under the laboratory of the Department of Agriculture, NSTU. A taxonomic study revealed four genera with six leafhoppers species namely *Nephotettix nigropictus*, *Nephotettix virescens*, *Nephotettix cincticeps*, *Coelidia brevis*, *Maiestas dorsalis* and *Cofana spectra* were recorded along with two planthoppers species from two genera viz. *Nilaparvata lugens* and *Sogatella furcifera*. Among the leafhoppers, *N. nigropictus* and *N. virescens* had upper hand in Noakhali while *C. brevis* and *M. dorsalis* were dominant in Feni. The other leafhoppers were low in number and not many distinctions existed there. In the case of planthoppers, the availability of *Nilaparvata lugens* in Feni was outnumbered as compared to Noakhali district.

Keyword: Leafhopper, planthopper, insect population density, rice, Bangladesh.

About 267 insect pest species have been identified in rice ecosystems of Bangladesh and 20 to 33 species of them are major insect pests having the highest impact on yield (Ali *et al.* 2021). Hoppers are considered the most destructive rice pest among them and can result in a 44% yield reduction in rice (Ali *et al.* 2021).

Previously recorded species of leafhoppers and planthoppers from Bangladesh are *Nephotettix nigropictus*, *Nephotettix virescens*, *Nephotettix cincticeps*, *Coelidia brevis*, *Cofana spectra*, *Orosius orientalis*, *Maiestas dorsalis*, *Nilaparvata lugens*, *Sogatella furcifera*, *Nephotettix malayanus*, *Nisia nervosa*, *Sardia rostrata* (Rahman *et al.* 2016; Faruq *et al.* 2017, 2018). They are the insects that feed on the cell sap having detrimental effects on plant performance. They reproduce extensively by laying eggs on the plant, which enables them to quickly reach enormous population densities. As a result, there is a decline in agricultural output, crop damage, and/or the spread of infectious diseases caused by bacteria, phytoplasma, or viruses (Krishnareddy 2013).

In Bangladesh, the planthopper outbreak occurred several times since the mid-1970s and caused considerable damage (Islam & Haque 2009). The

hoppers may be found all over Bangladesh but we conducted and survey in the topographically plain southeastern agricultural region of Bangladesh. The purpose of our survey was to find out the species diversity of leafhoppers and planthoppers associated with the rice ecosystem correctly in the Feni and Noakhali districts of Bangladesh.

The survey was carried out from February 2021 to November 2021, on the rice fields of the Feni and Noakhali districts in Bangladesh. A fine mesh nylon sweep net was used to capture them and collected individually using an aspirator with a relatively broad opening. Five different locations were selected in each district. In each location, five complete sweeps were made to collect the insects as closely as possible to the base of the plants. Collected specimens were killed in a particular way including direct immersion in 99% ethyl alcohol or freezing. Samples were separated and dried. After drying, all the specimens were placed into individual slides and examined under a compound microscope. To accurately identify the collected planthopper and leafhopper taxa, morphological features were examined and compared with previous works.

The current taxonomic study revealed that four genera with six leafhoppers species namely *Nephotettix nigropictus*, *Nephotettix virescens*, *Nephotettix cincticeps*, *Coelidia brevis*, *Maiestas dorsalis* and *Cofana spectra* were recorded along with two planthoppers species from two genera viz. *Nilaparvata lugens* and *Sogatella furcifera*.

The number of *N. nigropictus* per sweep was 3.8 ± 0.7 and 5.4 ± 0.9 for Feni and Noakhali respectively. The *N. virescens* was 2.0 ± 0.4 and 3.8 ± 1.1 in the same locations. Another species *N. cincticeps* was 1.0 ± 0.3 for Feni and 1.4 ± 0.2 for Noakhali. The *C. brevis* was 6.6 ± 0.8 for Feni and 3.0 ± 0.3 for Noakhali. In Feni, 3.2 ± 0.4 *M. dorsalis* was collected in each sweep

whereas 1.6 ± 0.2 in Noakhali. And 0.4 ± 0.2 *C. spectra* were recorded per sweep in Feni and 0.2 ± 0.2 in Noakhali. The number of *N. lugens* per sweep was 6.6 ± 0.8 and 3.0 ± 0.4 for Feni and Noakhali respectively. And for *S. furcifera* 0.6 ± 0.2 and 0.4 ± 0.2 was recorded respectively (Figure 1).

In the rice fields of the Feni and Noakhali districts, the predominance of two planthoppers and six leafhoppers was reported. All species were recorded previously from various regions in Bangladesh. They are the most destructive rice pest and have proven to be the vector of plant viruses. The result from this experiment showed their abundance and the information will guide to making an insect pest management program successful.

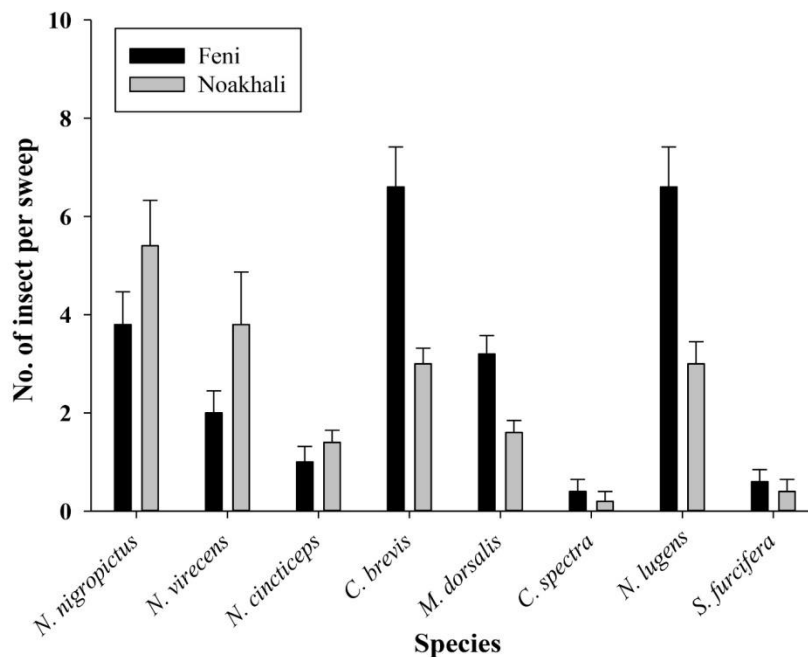


Figure 1: Comparison of the number of leafhoppers and planthoppers collected per sweep in the Feni and Noakhali districts of Bangladesh. Each bar represents the mean \pm standard error of five replicates.

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