



RESEARCH ARTICLE :

Effect of climate change on functional response of the predator wolf spider, *Pardosa pseudoannulata* (Boesenberg and Strand) feeding on the brown planthopper, *Nilaparvata lugens* (Stal.)

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ARTICLE CHRONICLE :

Received :

12.07.2017;

Accepted :

25.07.2017

KEY WORDS :

Ambient CO₂, Brown plant hopper, Elevated CO₂, Wolf spider, Rice plant

SUMMARY : Study on effect functional response of wolf spider, *Pardosa pseudoannulata* (Boesenberg and Strand) in relation to different prey densities of 3rd and 4th instar Brown planthopper, *Nilaparvata lugens* (Stal.) nymphs was undertaken in glass jar arena with '3' spiders under both ambient CO₂ and elevated CO₂ conditions. Under elevated CO₂ condition, predator feeding rate increased from 10.0±3.24 to 31.0±4.36 hoppers/ predator with increase of prey density from 10 to 50 hoppers /predator compared to feeding rate (10.0±3.24 to 33.0±4.39) under ambient CO₂ condition. The feeding rate of the spider under elevated CO₂ was slightly higher than ambient CO₂ condition because elevated CO₂ probably lowered the quality of rice plant and ultimately reduced the quality of prey. In order to compensate for poor nutrient quality of prey, predators might have consumed more number of prey under elevated CO₂ compared to ambient CO₂. Based on predation study, number of attacked prey (H_a) and prey density per unit area over a period of time (HT) were determined. Regression of 1/H_a on 1/HT under ambient CO₂ as well as elevated CO₂ revealed functional type II response of wolf spider on BPH nymph. The attack rate (0.43), maximum attack rate (4.27) and efficiency parameters (0.53) of the predator were higher but handling time was lower (0.71) under elevated CO₂ compared to ambient CO₂ condition.

How to cite this article : Daravath, Veeranna, Rajashekhar, Mandla, Chander, Subash and Sharma, Sanghomitra (2017). Effect of climate change on functional response of the predator wolf spider, *Pardosa pseudoannulata* (Boesenberg and Strand) feeding on the brown planthopper, *Nilaparvata lugens* (Stal.). *Agric. Update*, 12(TECHSEAR-2) : 508-513; DOI: 10.15740/HAS/AU/12.TECHSEAR(2)2017/508-513.

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