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.)

**KEY WORDS**: Ambient CO$_2$, Brown plant hopper, Elevated CO$_2$, 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 3$^\text{rd}$ and 4$^\text{th}$ instar Brown planthopper, *Nilaparvata lugens* (Stal.) nymphs was undertaken in glass jar arena with ‘3’ spiders under both ambient CO$_2$ and elevated CO$_2$ conditions. Under elevated CO$_2$ 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 CO$_2$ condition. The feeding rate of the spider under elevated CO$_2$ was slightly higher than ambient CO$_2$ condition because elevated CO$_2$ 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 CO$_2$ compared to ambient CO$_2$. 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 CO$_2$ as well as elevated CO$_2$ 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 CO$_2$ compared to ambient CO$_2$ condition.