

**Entry No. IRRC-0147**

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Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Pest management
Keyword 2	: Ecological approaches
Keyword 3	: Sustainable management practices
Title of Entry	: Status of insecticide resistance development in brown planthopper <i>Nilaparvata lugens</i> (Stal.) in Gangavathi region of Karnataka State, India.
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Abstract : Brown planthopper-BPH is considered to be the most devastating pest of rice in India. In Gangavathi region of Karnataka state, rice is grown in extensive area with high yielding varieties, application of high doses of fertilizers and pesticides. BPH has become the most important pest due to the indiscriminate use of insecticides and the insecticide resistance may be one of the reasons for the flare up of the pest. Monitoring of insecticide resistance in BPH in Gangavathi region was done during 2016-17 by collecting the field populations of BPH and multiplying them in the Indian Institute of Rice Research Glasshouse. The insecticides viz., imidacloprid 17.8 SL, thiamethoxam 25 SG, ethiprole 40%+ imidacloprid40% (glamore 80 WG), dinotefuron 20 SG, monocrotophos 36 SL, dichlorvos 76 EC, chlorpyriphos 20 EC, acephate 75 WP, fipronil 5 SC and pymetrozine 25 WG were used after diluting them to recommended concentration. They were sprayed at different concentrations on 45 days old TN1 rice plants upto runoff stage and the plants were shade dried, and 20 third instar BPH nymphs were released on the sprayed plants which are confined by mylar tubes with muslin cloth. Observations on insect mortality were recorded after 24, 48 and 72 hours of spraying. Final concentrations for each insecticide were chosen after initial exploratory trials so that 3 concentrations resulted in mortalities below 50% and three in mortalities above 50%. Tap water is used as the control. LC50 and LC90 values were calculated by probit analysis. Resistance ratios were calculated by using IRR greenhouse BPH population which is not sprayed for so many years as susceptible population. Resistance levels were classified as follows: susceptibility-(RR=1), decreased susceptibility-(RR=>3-5), low resistance-(RR=>5-10), moderate-resistance-(RR=>10-40), high resistance-(RR=>40-160), and very- high- resistance- (RR>160). BPH populations from Gangavathi acquired very high level of resistance to imidacloprid 17.8 SL (272-888 fold), ethiprole 40%+ imidacloprid40% (glamore 80 WG) ( 173-504 fold) and buprofezin 25EC (1403 fold). High level of resistance was developed to thiamethoxam 25 SG (60-114 fold) and ethiprole (72-108 fold). BPH remained susceptible to dinotefuron 20 SG, monocrotophos 36SL, dichlorvos 76EC, chlorpyriphos 20EC, acephate 75WP, fipronil 5SC and pymetrozine 25WG.

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