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# ASSESSMENT OF GENETIC VARIABILITY IN RICE YELLOW STEM BORER POPULATIONS OF ODISHA USING RAPD MARKERS

**SUSHREE SHAILANI SUMAN**

Central Rice Research Institute, Cuttack, Odisha, India

## ABSTRACT

Yellow stem borer (YSB), *Scirpophaga incertulas* Walker is considered to be the most serious pest in irrigated and deep water rice in South-East Asia. It causes yield losses estimated at 15-20% and reaching up to 60% during severe out breaks. Application of insecticides for control of the pest possesses many problems. Ordinary ground applications are limited to the pre-flood period and spraying is not possible when water is deeper than 50 cm. The use of resistant varieties seems to be the best alternative. Host-plant resistance is likely to be more durable if it employs an array of resistance genes encoding diverse mechanisms of resistance using marker-assisted selection (MAS) breeding approach. Durability of resistance depends on the population structure and mobility of the insect; resistance is more likely to break down if the pest population is genetically diverse or if rates of mutation or migration are high. DNA fingerprinting of insect populations provides insight into genetic diversity of the insect populations, which help to develop varieties resistant to the pest. In the present study, we analyzed the genetic variability between geographically isolated populations of YSB from sixteen places of Orissa using RAPD marker technique. Ten arbitrary 10-mer oligonucleotide primers were used to amplify genomes of yellow stem borer populations. A total of 104 bands were amplified, of which 99(95.1%) were polymorphic. Thirty three unique bands were identified which will be useful for developing diagnostic markers. Genetic similarity among YSB populations varied from 0.24 to 0.651, with an average of 0.415 indicating that wide genetic variation exists between YSB populations at molecular level. All the populations could be uniquely distinguished from each other and grouped into three major clusters at 38% level of genetic similarity. Further study with host differentials can ascertain their biotype status.

**KEYWORDS:** Rice, Yellow Stem Borer (YSB), Genetic Variability, RAPD