Interpopulation crosses, inheritance study, and genetic variability in the erown planthopper complex, Nilaparvata lugens(Homoptera: Delphacidae).

ABSTRACT

Studies on hybridization, inheritance, and population genetics of brown planthoppers that infest rice and weeds were undertaken using starch gel electrophoresis to determine whether the weed-infesting population represents a biological race or a species. F(1) and F(2) generations were produced by crosses between parental insects from the two populations with little indication of hybrid sterility. Gpi, Mdh, and Idh loci were inherited in a simple Mendelian fashion in families of two sympatric populations. Sixteen populations of Nilaparvata spp. from eight locations were collected. The Mdh, Idh, Pgm, Gpi, 6Pgd, and Acp loci were polymorphic. The N. lugens of rice with high esterase activity were clustered into a group and characterized by the presence of alleles Gpi (110) and Gpi (120), whereas N. lugens from weeds with low esterase activity were clustered into another group and characterized by Gpi (100) and Gpi (90) . There was a lack of heterozygotes between the common alleles of the two populations. This means that the two groups of individuals belong to different gene pools.

Keyword: Hybridization; Allozymes; Inheritance study; Genetic variability; Brown planthopper complex.