Evaluation of Genetic Variation among Wild Populations and Local Varieties in Rice

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Cultivated rice (*Oryza sativa* L.) is derived from the Asian wild rice (*O. rufipogon* Griff). Ancient humans are thought to have started rice domestication about 10,000 years ago, and early domesticates and local varieties have been generated. In this study, the following two surveys were carried out to examine the genetic variation among wild and cultivated rice groups using molecular markers.

(1) Evaluation of genetic diversity among local varieties in Vietnam.

A survey on genetic diversity among 222 Vietnamese rice local varieties was carried out using ten microsatellite markers. Based on the marker genotype data, genetic distances among eight Vietnamese rice groups were calculated and a phylogenic tree was constructed. There were two main clusters consisting of south and north Vietnamese rice groups. Glutinous rice groups were widely differentiated, probably due to the human preference.

(2) Evaluation of genetic diversity among wild rice populations in Myanmar and Vietnam

A large number of samples in six wild rice populations (one annual and five perennial) under natural condition were collected in Myanmar and Vietnam. A degree of variation among populations was analyzed with five microsatellite markers. In general, a level of allelic diversity was much higher in wild rice than in cultivated rice. Phylogenetic analysis suggested that there is no clear geographical differentiation among six populations. An annual population consisted of a few homozygous genotypes and widely differentiated from the rest five.

In tropical Asia, many wild rice plants are observed near the paddy fields. Therefore, hybridization between wild and cultivated plants may frequently occur. The possibilities of such gene flow and dynamics of cultivar migration will also be discussed.