Thesis Title Restriction Fragment Length Polymorphisms in Selected Varieties of *indica* Rice

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ABSTRACT

Rice is a major staple food for more than half of the world population. Morphology and phenotypic characteristics have been primarily used to breed better rice varieties to be grown in different field locations. Until now, RFLP, an acronym for restriction fragment length polymorphism is claimed to be a powerful tool for characterization and cataloging organisms by analysing DNA pieces from varieties, subspecies, species or even among genera. Differences of DNA at various loci on diploid rice chromosomes (2n = 24) can be revealed by complete digestion of the extracted genomic DNA with some restriction endonucleases, such as BamH I, EcoR I, Hind III and Pst I, after electrophoresing in agarose gels, blotting them onto nylon membranes, and hybridizing with ^{32}P-labelled DNA probes.

From this rice germplasm survey of 33 genetic stocks of 18 *indica* varieties (*Oryza sativa* L.) and 3 genetic stocks of *O.officinalis* by using 61 probe-enzyme combinations, 33 out of 61 probe-enzyme combinations could detect DNA polymorphisms, while 4 probe-enzyme combinations can discriminate between alien varieties, Basmati 370 and IR 36, and Thai varieties. Considering restriction enzymes used, BamH I-digested genomic DNAs tended to produce larger DNA fragments than EcoR I and Hind III digested DNA. Pst I-digested genomic DNAs gave the smallest DNA fragments to most of DNA probes used, in general. The majorities of RFLP patterns of *indica* rice were dimophic and trimorphic patterns. DNA similarity among *indica* rice exist at a certain degree between *O.sativa* and *O.officinalis*. DNA similarities between pairs of genetic stocks of each rice variety vary from 0 up to 20 %, depending on the varieties.