Genotype fingerprinting and differentiation of core collected soybean landraces by microsatellite analysis

Qijian Song[1,2], Kyo-Moon Shim[1], and Nam-Soo Kim[1]

[1]Department of Agronomy, Kangwon National University, Chunchon, Korea, 200-701

[2]Department of Agronomy, Nanjing Agricultural University, Nanjing, People's Republic of China, 210095

Collecting and maintaining different genotypes in plants are necessary for reserving valuable genetic resources for breeding purpose. Many thousands of new plants are being introduced into plant germplasm institutes around world each year. Genotyping each plant., then, is the first thing after they are introduced. Morphological chracteristics such as colorness, statue, and shape have long been used for distinguishing plants within a species. However, genotyping the individual plant based on the morphological characters can often lead to inaccurate diagnosis the genetic make-up. From misgenotyping the plants, many duplicated and redundant number of plants are stored and maintained in the plant germplasm institutes. Therefore, the accurate genotyping each plant can save lots of input in managing the plant germplasm. Moreover, the advent of Pant Variety Protection Act can require patent of the breeder's cultivars to protect their own varieties. Then, accurate genotyping is also mandatory to protect their plants by patent. Molecular genetical markers have been used for the alternative method for the morphological genotyping since these techniques can bypass many problems in the morphological method. Among the many available marker techniques, restriction fragment length polymorphism(RFLP) has been used frequently for this purpose. However, the technical complexities in performing RFLP analysis have been brought up problems in applying the routine application of RFLPs in large scale population analyses. PCR-based marker technologies have provided alternative selection strategies with relatively simpleness and quickness to perform. Although RAPD is the most popular PCR-based method, microsatellite repeat polymorphism has been proved to be a very good marker system for genotype fingerprinting in plant species due to its hypervariable nature. This paper describes the utilization of microsatellite repeat differences for genotype fingerprinting in core collected soybean landrace.