

Classification and genetic finger-printing of horticultural crops using RAPD method.

Ali- Akbar Shahmejat-Bushehri

Asistant professor of Department of agronomy, Faculty of agriculture, University of Tehran

Phenotypic identification of breeding lines and cultivars is a critical activity for seed companies and seed laboratories. It allows them not only to control the propagation and marketing of their novel germplasm, but also to perform quality control of their products. For example, befor releasing to the market F1 hybrid cultivars, the company will have to determine the genetic purity of the product. Commonly phenotypic identification is based on morphological traits recorded in the field. However, they seldom serve as unambiguous descriptors, and have a limited use for cultivar identification. Furthermore, these methods involves a lengthg survey of plant growth that is costly, labor intensive and vulnerable to environmental conditions. As an alternative, a number of laboratory methods have been successfully developed in the past two decades, such as isozyme and seed storage protein electrophoresis, and high performance liquid chromatography of seed storage proteins. The main drawback of these techniques is the limited amount of polymorphism they are able to detect among closely related genotypes. With the advent of molecular techniques, DNA - based procedures have been proposed for cultivar identification and finger-printing of cultivars. Recently polymerase chain reaction (PCR) based on the amplification of random DNA sequences proposed that can be effectively used as genetic markers. The advantages of this technique are its ability to detect extensive polymorphisms, simplicity, rapidity and need for very small amounts of genomic DNA which allows the analysis of single seeds and young seedlings.