

Application of Molecular Markers in Vegetable Crops

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Abstract—Breeding the vegetable crops with the conventional methods is very time consuming and less efficient approach. With the advancement of technology and due to the availability and easy handling of several molecular markers, breeding of several vegetables have become very easy, now these days. Several marker assisted approaches like marker assisted backcross breeding, gene pyramiding, associating mapping, linkage mapping and also the genome sequencing have been carried out in a very competent manner. The transfer of several genes including quality traits, resistance to biotic and a biotic stresses and for male sterility, have been carried out by utilizing the several markers. Several molecular markers including RAPD, SCAR, SSR, ISSR and SNP's have been utilized for the varietal development in various vegetable crops like cauliflower, cucumber, tomato, capsicum, carrot, onion, eggplant, muskmelon, watermelon, bitter gourd, and pea and beans. Since the molecular markers are associated at the genetic level and gives high throughput efficiency, hence offers more reliability than any other approaches. At the same time, the development of a molecular marker is very laborious and costly affair with a prerequisite understanding of the marker system, constrained by the complexity of the genome of the several vegetables like okra, onion and many perennial crops. Therefore the exploitation of the molecular markers has shown a great potential to develop new varieties and hybrids of various vegetables in this new era of science and technology.

Keywords: *Breeding, molecular markers, vegetable crops.*