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# Plant Biology and Biotechnology Conferences 2018- Sequence-Related Amplified Polymorphism Molecular Markers: A Potent Tool for Plant Pathology and Plant Biotechnology

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Plant Biotechnology is known to have immense potential in the area of crop improvement. The target can be achieved by either transgenics or marker-assisted breeding. The latter one does not require biosafety regulations and has become quite popular in the previous decades. There are numerous molecular markers such as random amplified polymorphic DNA (RAPD), inter-simple sequence repeat (ISSR), amplified fragment length polymorphism (AFLP), restriction fragment length polymorphism (RFLP), Single nucleotide polymorphism (SNP), Microsatellites (SSR) etc., being used for improving target traits. SRAP (Sequence-related amplified polymorphism) is a novel and robust PCR based molecular marker technique developed by Li and Quiros (2001). It is based on ORFs (open reading frames) and therefore targets functional genes. It is highly variable and convenient to use marker having inherent biological significance. It offers many advantages over other marker systems as it is simple and reliable, requires a relatively smaller amount of template DNA and has clear high-intensity and co-dominant bands. It is not crop-specific and is highly economical as any of the forward primers can be combined with any of the reverse primers, hence a lot of primer combinations can be made which decreases the total cost. It offers easy isolation of bands for sequencing purpose and is more useful for genetic diversity, hybrid identification, horticultural and agronomic studies. SRAP is also employed for the development of QTL (quantitative trait loci) in advanced hybrids, genetic linkage map construction, sex determination, plant systematics, ecology, conservation, biogeography and fingerprinting studies due to its multi-loci and multi-allelic features. The applications of SRAP markers are now widespread and have been well recognized. SRAP is supposed to emerge as a highly productive marker system in case of crops where genome sequence is not available for marker-assisted breeding and related applications in coming years. Farmers are enthusiastically embracing this technology, especially corn, cotton and soybean varieties, consistent with USDA. This growing trend is predicted to continue, especially at a time when the us and therefore the world are trying to find science-based solutions to rising food and fuel prices. Agricultural biotechnology can help farmers feed the world's growing population, while minimizing impacts on the worldwide environment. In 2007, 12 million farmers in 23 countries – 12 developing and 11 industrialized – planted biotech crops, primarily soybeans, corn, cotton and canola. Eleven millions of those farmers worked small, resource-poor farms in developing countries. Biotech crops – most of which are currently disease-resistant, pest-resistant or herbicide tolerant – have helped farmers round the world to extend production, boost farmers' incomes and enable them to farm more sustainably, but the technology promises to supply solutions to other challenges also. Biotechnology is reducing agriculture's environmental footprint by reducing fuel use, soil tillage and run-off from farmer's fields. Studies show that since commercial plantings of biotech crops began in 1996, farmers have saved 551 million gallons of fuel due to reduced field operations. In 2006, 252 million acres of biotech crops reduced CO2 emissions by nearly 15 million metric tons, like removing nearly 6.56 million cars from the road for a whole year. Farmers using biotech crops can also use pesticides less frequently due to the pest resistance traits within the plants themselves. Within the us alone, biotech crop varieties eliminated the utilization of 70 million pounds of pesticide applications in 2005. Future crops designed to tolerate environmental stresses, like salty or toxic soils, drought, and freezing temperatures, will make agriculture more efficient and sustainable by producing more food, fuel and fibre on less land. Biotech plants being tested also use nitrogen more efficiently, resulting in the potential decrease in fertilizer usage. Biotechnology also can be wont to produce renewable

This work was presented on World Congress on Plant Pathology & Plant Biotechnology at September 24-25, 2018 held at Dallas, USA

plant-based energy and industrial products and biological agents to wash up contaminated soils.

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