DNA MARKERS IN COTTON

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Abstract

Non-radioisotope DNA markers have several advantages over radioisotope-labeled molecular markers because they are less expensive, time consuming, laborious and environmentally hazardous and are simple in application. The objective of this study was to compare two non-radioisotope methods for DNA markers: simple sequence repeat (SSR) and silver stained amplified fragment length polymorphic (AFLP) DNA markers in cotton. We used an intra-specific population of parents PD-3-14, Simian-2, and the F1 samples. The over all AFLP method used an AFLP starter primer kit from GibcoBRL, Life Technologies Inc. following the manufacturer's protocol and the polymorphic amplified sequences were resolved on a 6% denaturing polyacrylamide gel using a modified silver staining method of Promega Inc. The overall SSR methods followed the manufacturer's (Research Genetics) protocol. Our initial results revealed that out of 140 SSR markers, 13% of the total markers and 17% of the primer sets were polymorphic, more than 60% were dominant and, on an average, one SSR marker per primer combination was found with a size range from 110 to 700 base pairs. We observed that with 63 primer combinations an average of 47 AFLP markers/primer combination, ranging from 20 to 740 bp in size. One percent of the total markers and 65% of the primer sets were polymorphic, dominant markers. However, the number of polymorphic markers and the dominant nature of the SSR or AFLP markers may depend on the genomic sequence of the germplasm and on the PCR conditions used.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 1:594-594 (1998)
National Cotton Council, Memphis TN