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Problems with and a system to eliminate single-primer PCR product contamination in simple sequence repeat molecular marker-assisted selection in soybean

J. Ma, S.C. Guan, D. Yao, Y.F. Wei and P.W. Wang

Biotechnology Center, Jilin Agricultural University, Changchun, P.R. China

Corresponding author: P.W. Wang
E-mail: winter0106@163.com

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ABSTRACT. Polymerase chain reaction (PCR) provides a foundation for simple sequence repeat molecular marker-assisted selection (SSR MAS) in soybean. This PCR system and its various conditions have been optimized by many researchers. However, current research on the optimization of the PCR system focuses on double-primer PCR products. We compared single- and double-SSR primer PCR products from 50 soybean samples and found that the use of single-PCR primers in the reaction system can lead to amplified fragments of portions of the SSR primers in the PCR process, resulting in both false-positives and fragment impurity of double-primer PCR amplification, inconvenient for subsequent analysis. We used "single-primer PCR correction" to eliminate interference caused by single-primer nonspecific PCR amplification and improve PCR quality. Using this method, the precision and success rates of SSR MAS in soybean can be increased.

Key words: Soybean; SSR molecular marker-assisted selection; False-positive exclusion; Single-primer PCR correction

