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A simplified genomic DNA extraction protocol for pre-germination genotyping in rice

Y.B. Duan[1], F.L. Zhao[1], H.D. Chen[1], H. Li[2], D.H. Ni[2], P.C. Wei[2], W. Sheng[1], J.T. Teng[1], A.M. Zhang[1] and J.P. Xue[1]

[1]Key Laboratory of Resource Plant Biology of Anhui Province, College of Life Sciences, Huaibei Normal University, Huaibei, China
[2]Key Laboratory of Rice Genetics Breeding of Anhui Province, Rice Research Institute, Anhui Academy of Agricultural Sciences, Hefei, China

Corresponding author: J.P. Xue
E-mail: xuejp@163.com

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ABSTRACT. Genotyping is a critical step for molecular marker-assisted selection in rice. Rice genomic DNA samples for genotyping are typically isolated from living tissues such as seedlings. This requires the germination of all candidate seeds and extraction of DNA from the seedlings. Currently, an ideal individual is selected from a very large number of plants, which is time- and labor-consuming, requiring several transplantations of materials and sampling processes. In this study, we developed a simplified genomic DNA extraction protocol in rice by using amylase to treat half-seeds. The yields of genomic DNA from a half-seed of *Indica* and *Japonica* rice were greater than 203.8 ± 32.5 and 143.2 ± 25.5 ng, respectively, and the 260/280 nm absorbance ratio was 1.75-2.10. The DNA was confirmed to be sufficient for polymerase chain reaction amplification and can be used in a marker-assisted selection program.

Key words: DNA extraction; Half-seed; Polymerase chain reaction; Pre-germination genotyping; *Oryza sativa* L.

