

Application of Morphological Traits and Allele-Specific Markers on Rice ‘Taitung 35’ Variety Identification.

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Abstract

The newly aromatic rice cultivar, ‘Taitung 35’ possesses good agronomic traits like erect plant type, transparent grain appearance with low chalkiness, and the good eating quality. The identification of varieties in crops is important for breeding, seed propagation and protection of plant breeders' rights. The purpose of this study is to establish the morphologic traits and allele-specific markers for ‘Taitung 35’ identification. As the result of investigation and analysis, there are five morphological traits: the intensity of leaf green color, leaf blade pubescence, the lemma pubescence, the number of tillers per plant and caryopsis shape could distinguish ‘Taitung 35’ from control variety, ‘Taichung 194’. In addition, allele-specific markers designed base on SNP database and resequencing results of *badh2.10* were assessed for genotyping. To improve the specific and reliable discrimination of AS-PCR, in which an artificial base pair mismatch was introduced within -2 or -3 nucleotides from the 3’ terminus of the primer in addition to the 3’ mismatch with the nonspecific allele. Among the 20 candidates AS markers, there are 19 unambiguously discriminated between ‘Taitung 35’ and whose parentages. These results concluded that in addition to the five distinct morphological traits, the reliable AS-PCR genotyping method can be applied to the identification of ‘Taitung 35’ comprehensively.

Keywords: Taitung 35, Cultivar identification, DUS testing, Allele-specific marker

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