

APLIKASI MARKA RM223 PADA INTRODUKSI AROMA PANDAN WANGI KE VARIETAS NONAROMATIK CIHERANG

(The use of RM223 Marker in The Introduction of Pandan Wangi Aroma Into Ciherang Variety)

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ABSTRAK

Marka-marka aromatik kodominan berbasis *badh2* (*badh2-based*) yang tersedia pada saat ini tidak dapat membedakan padi aromatik Indonesia kelompok 2 dari varietas nonaromatik. Pandan Wangi termasuk dalam kelompok tersebut. Pandan Wangi hanya dapat dibedakan dari varietas nonaromatik menggunakan marka aromatik kodominan terkait gen *badh2* (*badh2-related*), RM223. Penelitian ini merupakan studi awal *fragrant-genotyping* padi aromatik Indonesia dan aplikasi marka RM223 dalam rekayasa varietas aromatik baru berbasis Pandan Wangi. Introduksi dilakukan secara persilangan terarah (*site-directed crossing*) untuk menghindari produk transgenik yang pemasarannya terhambat oleh regulasi GMO (*Genetically Modified Organisms*) yang ketat. Pandan Wangi disilang dengan Ciherang, kemudian *backcross* dengan Ciherang sampai BC2F1. Pada setiap generasi persilangan/*backcross* dilakukan seleksi PCR berbantuan marka RM223. Hingga BC2F1 Ciherang-Pandan Wangi telah berhasil dikonstruksi. Selain itu didapatkan kemungkinan adanya 2 kelompok tipe mutasi ekson 7 gen *badh2* pada varietas aromatik Indonesia. RM223 dapat mendeteksi *native badh2* pada Ciherang, *badh2* termutasi pada Pandan Wangi serta heterozygot *badh2* pada progeni persilangan (F1, BC1, dan BC2).

Kata kunci : Backcross, RM223, Pandan Wangi, Ciherang, *badh2*, *site-directed crossing*.

ABSTRACT

Various codominant *badh2-based* fragrant markers are unable to discriminate group 2 Indonesia fragrant from non-fragrant rice. Pandan Wangi is one of group 2 member. Only *badh2-related* codominant fragrant marker RM223 has been able to distinguish Pandan Wangi from those of non-fragrant samples. In this research, preliminary fragrant-genotyping studies of Indonesia fragrant rice was carried out, as well as the use of RM223 as marker for new fragrant variety engineering based on Pandan Wangi. To avoid strict GMO (*Genetically Modified Organisms*) regulations, aroma introduction was carried out through *site-directed crossing*, to generate non-transgenic plant product, Pandan Wangi was crossed with Ciherang, and further *backcrossed* to Ciherang until BC2F1. RM223 marker-assisted PCR was used to select progeni in every cross and *backcross* generation. Up to BC2F1 Ciherang-Pandan Wangi has been successfully constructed. In addition, there may be at least 2 different group of exon 7 *badh2* gene mutation among Indonesia fragrant rice varieties. RM223 was able to identify native, mutated, and heterozygous *badh2* gene within Ciherang, Pandan Wangi, and progenies (F1, BC1F1, and BC2F1); respectively.

Keywords : Backcross, RM223, fragrant, Pandan Wangi, *badh2*, *site-directed crossing*.