

INTRODUKSI TOLERANSI GENANGAN BERBANTUAN MARKA *sub1* PADA VARIETAS CIHERANG

(Sub1 Marker-Assisted Introduction of Submergence Tolerance into Rice C.V.
Ciherang)

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ABSTRAK

Perubahan iklim global yang sulit diramalkan mendesak perlunya pengembangan varietas padi toleran banjir/genangan. Mengingat varietas alami toleran genangan kurang ekonomis untuk kultivasi skala besar, maka penelitian ini bertujuan untuk memperkenalkan toleransi genangan pada varietas populer dengan produktivitas tinggi (Ciherang). Metoda introduksi dilakukan secara persilangan terarah (*site-directed crossing*), dimana donor *sub1* disilangkan dengan *host* Ciherang, dan F1 *backcross* dengan Ciherang untuk mendapatkan BC1F1. Pada setiap generasi persilangan/*backcross* dilakukan uji genangan, diikuti PCR dengan marka *sub1*, yang dipilih berdasarkan hasil validasi berbagai marka *sub1* kodominan (RM464A, RM219) dan dominan (C173, AEX1) yang tersedia pada saat ini. Hasil penelitian mendapatkan F1 dan BC1F1 Ciherang toleran genangan. Marka dominan AEX1 merupakan marka *sub1* yang paling sesuai. Hasil analisis PCR mendapatkan pita *sub1* pada progeni (F1, BC1F1) yang tadinya tidak ada. Menunjukkan keberhasilan transfer gen *sub1* dari donor ke *host* dan mengkonfirmasi toleransi genangan progeni timbul akibat intrograsi *sub1*, bukan karena mekanisme *escape*.

Keywords : Toleransi genangan, *sub1*, marka dominan/kodominan, AEX1, Ciherang.

ABSTRACT

Unpredictable global climate changes have triggered the need for engineered submergence-tolerant rice. Due to in-economical of native submergence tolerant varieties for large scale cultivation, therefore, this research aims to introduce submergence tolerance into high productivity popular rice. Introduction was carried out through site-directed crossing, where *sub1* donor was crossed with Ciherang *host*, and the F1 progenies were further *backcrossed* to Ciherang to obtain BC1F1 progeny. Submergence test was performed in every cross/*backcross* generation, followed by PCR using *sub1* marker, which was chosen based on validation results of currently available co-dominant (RM464A, RM219) and dominant (C173, AEX1) *sub1* markers. F1 and BC1F1 submergence-tolerant Ciherang were obtained. AEX1 dominant marker was the most appropriate for this research. PCR results showed additional *sub1* band within progeny (F1, BC1F1) that was not presence previously. Indicating the success of *sub1* gene transfer from donor to host, as well as confirming that progenies-submergence tolerance was due to *sub1* introgression, not escape mechanisms.

Keywords : Submergence, *sub1*, dominant/co-dominant marker, AEX1, Ciherang.