



Characterization and molecular mapping of a dwarf mutant in wheat

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ABSTRACT. A spontaneous dwarf mutant of wheat was found in an F₅ generation line derived from a cross between Huamai No. 9 and Een No. 1 in 1998; it was named Huaai 01. We characterized the genetic pattern of Huaai 01 and mapped the gene controlling the dwarf trait. This dwarf mutant was found insensitive to exogenous gibberellic acid treatment, based on the length of the first leaf and the coleoptile at the seedling stage, suggesting that it plays a crucial role in the gibberellin response pathway. Genetic analysis revealed that a single gene that is partially recessive controls the dwarf phenotype in Huaai 01. We named the dwarfing gene *Rht-B2*. Simple sequence repeats (SSR) were examined as identifying markers linked to the *Rht-B2* gene in an F₂ population. We screened 904 pairs of primers and identified 5 SSR markers linked to the *Rht-B2* gene. Two markers, *barc1096* and *xgwm495*, were located on the flanking region of the *Rht-B2* gene at genetic distances of 2.9 and 3.3 cM, respectively. Based on published SSR linkage data for wheat, the *Rht-B2* gene was mapped to the long arm of chromosome 4B. This identification and characterization of the *Rht-B2* dwarfing gene will facilitate its utilization in wheat breeding.

Key words: Wheat; Genetic analysis; Gibberellic acid; Dwarf mutant; SSR analysis