

ABSTRACT

SSR Specific Marker For Confirming The Hybridity Of Intraspecific And Interspecific Sugarcane (*Saccharum* sp.) Crosses

Commercial sugarcane varieties which widely planted in Indonesia and around the world were originated from intraspecific and/or interspecific hybridization of *Saccharum* spp and it hybrid. Hybrid identification is the important step that should be done after hybridization. However, polyploidy, aneuploidy and the high chromosome segregation which results various phenotypic variations and due to environmental effects become limiting factors to identify the hybrids based on morphological characteristics. Microsatellite as one of molecular marker which has codominance inheritance, multiallelic, abundant in the genome and was not influenced by environmental factor is the best tool to assess accurately the crossing fidelity. This research aimed to identify specific *Simple Sequence Repeat* (SSR) genetic marker of male and female parents which were then used to fidelity test of intra and interspecific hybridization of sugarcane (*Saccharum* sp.) and distinguished the hybrid as true hybrid, selfed or contaminant. This study was carried out in Molecular Genetic laboratory, Indonesian Sweetener and Fiber Crops Research Institute (ISFCRI) Malang, from August 2016 to July 2017. Eighty six (86) F1 intra- and interspecific hybrids, three commercial sugarcane varieties (PSJT941, PS881 and VMC7616) and two wild types (*S.spontaneum* dan *Erianthus* sp.) were assessed genetically by three selected SSR markers. Identification of SSR genetic markers and fidelity test were conducted by comparing the band results from electrophoresis of each male and female parent through their hybrids. All primers could identify *Saccharum* spp. and *Erianthus* sp. genetic markers. There were one to eleven *Saccharum* spp. and *Erianthus* sp. genetic markers which could be identified as many as 2-11 PS881-specific alleles; 2-3 VMC7616-specific alleles; 1-5 PSJT941-specific alleles; two *S.spontaneum*-specific alleles and 1-2 *Erianthus* -specific alleles. Moreover, all primers could identify 62.7%; 52.44% and 38.89 % true hybrid, in crosses among sugarcane commercial varieties, between sugarcane commercial varieties and *S.spontaneum* and between sugarcane commercial varieties and *Erianthus* sp. Further. The primers also identified 8.02 %; 30.21% and 24.44% selfed hybrid among sugarcane commercial varieties, between sugarcane commercial varieties and *S.spontaneum* and between sugarcane commercial varieties and *Erianthus* sp, even 29.42 %; 17.46% and 36.11% contaminants from crosses among sugarcane commercial varieties, between sugarcane commercial varieties and between *S.spontaneum* and crossing sugarcane commercial varieties and *Erianthus* sp.

Key words: *Erianthus* sp, intraspecific, interspecific, F1, PSJT941, PS881, *Saccharum spontaneum*., SSR, Sugarcane, VMC7616