

Pengujian Kemurnian Genetik Benih Jagung Hibrida Varietas Jafran 1 Berbasis Marker *Simple Sequence Repeats* (SSR) (Genetic Purity Testing of Hybrid Corn Seeds of Jafran 1 Variety Based on SSR Markers *Simple Sequence Repeats*) Pembimbing; **Moh. Rosyadi Adnan, S.Si., M.Sc.**

Wida Kusumawati
Study Program of Seed Production Technique
Department of Agricultural Production
Program Studi Teknik Produksi Benih
Jurusan Produksi Pertanian

ABSTRACT

The genetic purity of F1 hybrid corn seeds greatly determines the quality and productivity of the plant. Conventional methods through field growth tests (Grow Out Test) have limitations such as requiring a long time, large areas, and being influenced by environmental factors. This study aims to evaluate the effectiveness of a molecular method based on Simple Sequence Repeats (SSR) markers in testing the genetic purity of F1 hybrid corn seeds of the JAFRAN 1 variety and determine SSR primers that are able to detect hybridity consistently compared to morphological tests in the field. The study was conducted from August to December 2025 at the Innovation Garden and Bioscience Laboratory of Jember State Polytechnic using corn seeds of AR 6 (female parent), AR 18 (male parent), and JAF 1 F1 varieties. The study used a non-factorial Completely Randomized Block Design with three varieties, each with 62 plants per plot. Molecular testing included DNA extraction from young leaves 5 days after planting using the CTAB protocol, PCR amplification with 15 SSR primers spread across 10 corn chromosomes, and electrophoresis on a 1-2% *agarose gel*. Of the 10 corn chromosomes with 15 primers tested on 3 varieties, only 7 primers showed positive results. Primer Phi083 (710) (chromosome 2) showed the best amplification results and the primer that only appeared in its male parent was UMC1963 (chromosome 4). GOT observations indicated that the JAF 1 F1 variety showed high performance in all quantitative parameters. SSR markers can accelerate purity testing from a minimum of one planting cycle to several days after germination. This study recommends the use of primers UMC1363 (chromosome 1), Phi083 (710) (chromosome 2) and UMC1963 (chromosome 4) as markers to differentiate between parents and their hybrids.

Keywords: genetic purity, *Grow Out Test*, hybrid corn, PCR, SS