

## ABSTRACT

Wahyu Dewi Utari Haryanti, 24020111400008. **Characterization of Gogo Rancah Red Rice (*Oryza sativa* L.) Slegreng, Mandel Varieties and Mentik Wangi Cultivar Based on Morphological and Chloroplast Marker ORF100 and ORF29 Fragments.** This paper was supervised by Hermin Pancasakti Kusumaningrum and Anto Budiharjo

Rice (*Oryza sativa* L.) is the main staple food in Indonesia. Rice is highly dependent on climate change especially drought stress. Anticipated climate change on rice production need a strategy to selection of varieties rice relatively tolerance to drought. Characterization based on morphological and chloroplast marker Open Reading Frame (ORF)100 and ORF29 fragment has been done on gogo rancah red rice (*Oryza sativa* L.) Slegreng and Mandel varieties, and on Mentik Wangi cultivar. Morphological characterization was performed using 11 *Indica-Japonica* differentiation characteristics and analysis of chemical compounds of rice. Characterization of the chloroplast markers was conducted by the leaf rice chloroplast DNA isolation and followed by PCR amplification using cp1 and cp2 primers. Optimization annealing was identified at three different temperatures 53°C ; 55°C; and 56°C, and then the PCR products were fractionated on 1% agarose gel. In this study, annealing temperature 53°C exhibit the best result for showing ORF100 and ORF29. Analysis morphological characteristics Slegreng and Mandel were classified into *Japonica* subspecies, while Mentik Wangi classified into *Indica* subspecies. The analysis molecular marker showed that the ORF100 and ORF29 fragments can be amplified not only in varieties of Slegreng and Mandel but also in Mentik Wangi cultivar, and were classified into *Japonica* subspecies. The existence of ORF100 and ORF29 fragments as a key for molecular marker on local rice Slegreng and Mandel in classifying into the *Indica* or *Japonica* type. Using this molecular marker ORF100 and ORF29 fragments will support the previous classification system based on morphological characteristics.

**Key words:** red rice, morphological characterization, chloroplast DNA, *Indica-Japonica* differentiation