ABSTRACT

MISNEN, Screening Genotypes of Physic Nut (Jatropha curcas L.) for Tolerance to Drought. Under supervision of YUDIWANTI WAHYU E.K., ENDAH RETNO PALUPI, and MUHAMAD SYUKUR.

The improvement of Jatropha curcas drought tolerance is one of the key points in cultivating the species extensively due to fast area of available marginal land. The objective of this study was to determine drought tolerance genotypes based on morphological, physiological and biochemical characters. The research was completed in two experiments. The first experiment was aimed at determining the moisture content of the media to generate drought stress and screening genotypes of Jatropha curcas for tolerant to drought. In this experiment a split-plot design was used with moisture content as the main plot and genotypes as sub-plot. Four levels of moisture content were applied, i.e. 22-23%, 27-28%, 32-33%, and 37-38%. The nine genotypes were Dompu-1, Gunung Tambora, Bima representing dry area of origin; Aceh Besar, IP-2P, Komering representing wet area of origin; and IP-1M, Papua, Yogyakarta representing some what in between. The result showed that 22-23% moisture content of the media is suitable for drought tolerance testing in Jatropha curcas. The first experiment show that Aceh Besar and IP-1M were tolerant to drought; Papua, Gunung Tambora, Dompu-1 dan Bima genotypes were moderately tolerant; IP-2P, Komering, and Yogyakarta genotypes were sensitive to drought. Based on trial in field, the highest potential productivity is Yogyakarta, followed by genotype IP-2P and Dompu-1. The second experiment was screening of genotypes using the appropriate media moisture content as a result from first experiment. Twenty three genotypes were screened for drought tolerance under 22-23% moisture content of the medium. The result show that Dompu-2, Indralaya, and China were tolerant to drought; Sukabumi-1, Sukabumi-2, Pidi, Lahat, Kupang, Lampung-2, Lampung-3, Sumba, IP-2M, and IP-2A genotypes were moderately tolerant; Curup, Bogor-1, Bogor-2, Bogor-3, Pontianak, Pagar Alam, Palembang, Saweli, Jenepongo, and Medan genotypes were sensitive to drought. Variables that can be used for selecting seedling for drought tolerance is height of plant and leaf area.

Keywords: Jatropha curcas, the water content of media, genotype, coefficient of variability, drought sensitivity index, coefficient of correlation