ABSTRACT

Tarisha Azzahra. 24020122130101. **Morphological and Molecular Characterization of *Melothria pendula* L. (*Cucurbitaceae*) in Bogor Using ISSR Markers**. Supervised by Lilih Khotimperwati and Mentari Putri Pratami.

Melothria pendula L. has a wide distribution, including populations in Bogor. Its broad distribution may contribute to the emergence of morphological and genetic variation. This study aimed to investigate the morphological variation, ISSR-based genetic variation, and phenetic grouping patterns of *M. pendula* accessions. A total of 10 accessions originating from Balungbangjaya, Baranangsiang, Cibinong 1, Cibinong 2, Curugmekar, Ciomas, Cangkurawok, Ciampea, Menteng, and Margajaya were used in this study. Morphological characterization was conducted using 50 selected morphological characters encompassing both vegetative and generative organs. DNA was isolated using the CTAB method, and DNA amplification was performed using five ISSR primers. Morphological and molecular data were analyzed phenetically using the UPGMA method and the Simple Matching (SM) coefficient. Principal Component Analysis (PCA) was also performed based on both datasets. The results revealed morphological variation in stem diameter, petiole length, abaxial leaf pubescence, leaf length, leaf width, leaf blade shape, leaf margin lobation, number of petal lobes, flower pedicel length, ovary length, fruit shape, fruit length, fruit width, fruit pedicel length, seed number, seed length, and seed width. ISSR band analysis generated a total of 28 alleles, all of which were polymorphic, resulting in a polymorphism percentage of 100%. The PIC values ranged from 0.29 to 0.40, indicating that the primers used were moderately informative. Dendrograms constructed from morphological and ISSR data produced grouping patterns that were not entirely congruent, indicating that morphological similarity does not always correspond to genetic similarity among accessions.

Keywords: Cucurbitaceae, ISSR, morphological characterization, Melothria pendula, intraspecific taxonomy.