VARIABILITY AND PATH ANALYSIS OF QUANTITATIVE CHARACTERS AND LEAF ANATOMICAL WITH THE YIELD OF CAYENNE PEPPER (*Capsicum frutescens* L.) M2 GENERATION

By: Meidito Adiluhung

Supervised by: Bambang Supriyanta

ABSTRACT

The low productivity of cayenne pepper can be increased by developing new superior varieties through a mutation plant breeding program. Selection of mutant genotypes will be more efficient by looking at diversity, relationships between variables, and direct indirect effects between variables. This research aims to determine genetic diversity and the relationship between the anatomy of M2 cayenne pepper leaves resulting from gamma ray irradiation and yield. The research was carried out in June-October 2024 at the Wedomartani Experimental Garden, Faculty of Agriculture, UPN "Veteran" Yogyakarta using 6 mutant genotypes (M2) (OR2-448, OR2-453, OR2-454, OR3-413, OR3-416, OR3-443) and one Ori 212 variety. The field experiment method was prepared using a single treatment Complete Randomized Design (CRD) with 3 replications. The observation data were analyzed using analysis of variance (ANOVA) at the 5% level and continued with Duncan's Multiple Range Test (DMRT). The results of the research showed that broad genetic diversity values in the M2 population were obtained in the characteristics of flowering age, plant height, dichotomous height, harvest age, fruit weight per plant, stomata density and mesophyll thickness. High heritability values were found in the characteristics of flowering age, plant height, dichotomous height, harvest age, and stomata density. Meanwhile, cross-printing shows that there is a large direct influence on the results, namely on the character of the number of fruits. Genotypes G1 (OR2-448) and G2 (OR2-453) have the potential to be tested in the M3 generation to obtain early maturing plants.

Keywords: cayenne pepper, mutation, diversity, path analysis, leaf anatomical