# *ABSTRACT*

Coffee is one of the plantation commodities that plays an important role as a source of foreign exchange and industrial raw materials. The oldest and most widely cultivated type of coffee in Indonesia is Arabica coffee. Limited information on the cultivation of Gayo Arabica coffee plants has led to a decrease in coffee quality and production. This study aimed to analyze morphological differences and the level of similarity of Gayo I arabica coffee plants based on altitude in Central Aceh Regency. This research was conducted in Kutepanang, Bebesen, and Kebayakan Districts of Central Aceh Regency and in the Agroecotechnology Laboratory, Faculty of Agriculture, Universitas Malikussaleh, from October to December 2024. The research method involved exploration and observation of plant morphology at three different altitudes: 1.200 meters above sea level (masl), 1.400 masl, and 1.600 masl, using a single-factor Randomized Block Design (RBD). Data was analyzed using NTSYS version 2.02 software and statistical tests, including F-test and DMRT at a 5% significance level. The results of the exploration of morphological characterization of Gayo I arabica coffee plants based on altitude show some differences including differences in leaf length, leaf width, young leaf color, leaf shape, leaf tip shape, fruit shape, fruit weight and fruit length. Based on the coefficient value which ranges from 0.45 to 0.89 where the smaller the coefficient value, it showed a low level of similarity based on the morphological characters of Gayo I arabica coffee plants. Based on the altitude of the place where the Accession group samples that have a high level of similarity at a coefficient value of 89%.



**Keywords:** *Altitude, Gayo I Arabica Coffee, Plant Morphology, Similarity Coefficient*