***Effect of Roasting Level Variations on the Physicochemical Properties of Gayo Arabica Coffee (Coffea arabica* L.)**

Sahara Mah Bengi
Coffea Plantation Management Study Program
Department Of Agricultural Production

ABSTRACT

Gayo Arabica coffee is one of Indonesia's specialty coffees, characterized by its distinctive flavor profile, complex aroma, balanced acidity, and high quality. Roasting is an important processing stage that affects the physical and chemical properties of coffee and determines the quality of the final product. This study aimed to determine the effect of roasting level variations on the physicochemical properties of Gayo Arabica coffee. A non-factorial Completely Randomized Design (CRD) was applied with three roasting level treatments, namely light roast, medium roast, and dark roast. All treatments used an initial roasting temperature of 160°C with roasting times of 12, 13, and 15 minutes, respectively, and each treatment was replicated six times. The observed parameters included color, weight loss, yield, apparent swelling, density, moisture content, ash content, chlorogenic acid content, and caffeine content. Data were analyzed using Analysis of Variance (ANOVA) followed by the Least Significant Difference (LSD) test at a 5% significance level. The results showed that roasting level variations affected the physicochemical characteristics of Gayo Arabica coffee. Increasing roasting levels resulted in darker bean color, higher weight loss and apparent swelling, while yield and density decreased. In terms of chemical properties, moisture content, chlorogenic acid content, and caffeine content tended to decrease as roasting levels increased, whereas ash content showed no significant difference among treatments. The light roast treatment tended to maintain higher yield, density, chlorogenic acid content, and caffeine content than medium roast and dark roast treatments, while the dark roast treatment produced higher weight loss and apparent swelling. It can be concluded that roasting level variations influence the physicochemical characteristics of Gayo Arabica coffee and may serve as a reference for determining roasting levels according to the desired coffee quality characteristics.

Keywords: *Caffeine, Chlorogenic Acid, Gayo Arabica Coffee, Physicochemical Properties, Roasting Level*