

***Effect of Drought Stress on the Growth of Several
Arabica Coffee (Coffea arabica L.)
Varieties at the Ready-to-Plant Stage***

Sepdian Luri Asmono, Dian Galuh Pratita, dan Annisa Lutfi Alwi

Soot Beni Wibowo

*Coffee Plantation Management Study Program
Department of Agricultural Production*

ABSTRACT

Drought stress is one of the environmental factors that can inhibit the growth of Arabica coffee seedlings by reducing water availability and disrupting the physiological processes of plants. This study aimed to determine the effect of drought stress on the growth of field-ready Arabica coffee seedlings and to identify the variety with better tolerance to water deficit conditions. The study was conducted from February to June 2025 using 8-month-old Arabica coffee seedlings of the Gayo, Komasti, and Yellow Caturra varieties after transplanting. The research employed a pre-test and post-test design on the same plants. Data on plant height increment, leaf number, and new branch number were analyzed using the paired t-test, while fresh weight, dry weight, root length, proline content, and reducing sugar content were used as supporting data. The results showed that drought stress reduced soil water content, soil moisture, electrical conductivity (EC), and the availability of nitrogen, phosphorus, and potassium. Drought stress significantly affected plant height increment in the Gayo and Yellow Caturra varieties and new branch formation in the Gayo and Komasti varieties, but had no significant effect on leaf number. The Indeks Sensitivitas Cekaman (ISC) indicated that the Komasti and Gayo varieties exhibited relatively better drought tolerance than the Yellow Caturra variety.

Key words: Arabica coffee seedlings, drought stress, drought tolerance, paired t-test, Stress Sensitivity Index (ISC)