

ABSTRACT

Coffee is a plantation commodity with high economic value. Coffee production in Indonesia reached 794,800 tons in 2022, a 1.10% increase from the previous year's 786,191 tons. This production increase also generates a significant amount of coffee husk waste, accounting for approximately 40–45% of the coffee processing output. Coffee husk waste contains 83–89% organic matter, 45–50% organic carbon (C-organic), and 1.8–2.5% nitrogen (N), making it a potential raw material for organic fertilizer. Black Soldier Fly (BSF) cultivation produces maggot waste, or frass, amounting to about 20–30% of the initial substrate weight—equivalent to 200–300 kg of frass per ton of organic waste. Frass contains 2.04% nitrogen, 0.39–5.34% phosphorus, and 3.13–3.47% potassium. This study aimed to determine the effect of varying ratios of coffee husk waste and maggot frass on the quality of solid organic fertilizer. A Completely Randomized Design (CRD) was employed, featuring eight treatments and three replications. Observed parameters included fermentation temperature, pH, moisture content, and nutrient levels (N, P, and K). Results showed fermentation temperatures ranging from 25.00°C to 28.33°C, with no significant differences observed between treatments. Total N content ranged from 0.086% to 1.248%, P_2O_5 from 0.096% to 1.328%, and K_2O from 0.153% to 0.981%. Based on the SNI 7763:2018 standard—which requires a minimum of 2% total macro-nutrients (N+P+K)—treatment T4 yielded a total macro-nutrient content of 3.317%, making it the recommended treatment.

Keywords: *Fermentation, Maggot Frass, Coffee Husk Waste, Solid Organic Fertilizer*