

Effects of Tofu Waste Liquid Organic Fertilizer and Compound NPK on the Growth and Yield of Maize (Zea mays L.) Plants

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ABSTRACT

Maize is a major food commodity in Indonesia. However, declining production in several regions, including East Java and Jember Regency, poses a significant challenge. This decline is attributed to a decrease in soil fertility. The utilization of inorganic fertilizers in excess can have deleterious effects on soil quality. Therefore, the incorporation of environmentally sustainable alternatives, such as liquid organic fertilizer derived from tofu waste, which is abundant in macro and micro nutrients, is imperative. The objective of this study is to ascertain the impact of the interaction between Liquid Organic Fertilizer of tofu liquid waste and compound NPK fertilizer on the growth and yield of corn plants, and to determine the most efficacious treatment combination. The research was conducted in Patrang District, Jember Regency, using a two-factor factorial randomized design (RAKF), namely three levels of Tofu Waste Liquid Organic Fertilizer concentration (10 ml.l⁻¹, 20 ml.l⁻¹, 30 ml.l⁻¹ of water) and three doses of NPK fertilizer (100, 200, 300 kg/ha), resulting in nine treatment combinations with three replications. It is anticipated that the findings of this study will furnish farmers with the necessary knowledge to enhance corn yields in a manner that is both sustainable and environmentally responsible. Additionally, the study will serve as a valuable reference point for future research endeavors concerning the utilization of organic waste in agricultural contexts. The results of this study indicate that treatment with POC from tofu wastewater and compound NPK fertilizer had no significant effect for all observation parameters, namely plant height, flowering time, cob length without cornhusk, cob diameter without cornhusk, dry cob weight without cornhusk per plot, weigh of 100 seeds, and dry biomass of corn plants.

Keywords: Compound NPK Fertilizer, Maize, Tofu Waste Liquid Organic Fertilizer