

TESTING THE QUALITY OF LIQUID ORGANIC FERTILIZER FROM VARIOUS KINDS OF WASTE WITH FERMENTATION TO PROVIDE ENVIRONMENTALLY-FRIENDLY FERTILIZER

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ABSTRACT

There are many negative impacts from the use of chemical or inorganic fertilizers and chemical pesticides, so the government has promoted organic agriculture towards sustainable agricultural development. The large amount of vegetable and fruit waste in the market encourages researchers to deal with the problem of waste originating from vegetable scraps, fruits produced by vegetable and fruit traders, livestock waste, household waste, especially rice washing water which is always produced in household to be used as MOL (Local Microorganisms) in the manufacture of Liquid Organic Fertilizer (POC). Therefore this study aims to determine: 1. Quality of Liquid Organic Fertilizer (POC) from various local microorganisms with reference to the standard of Liquid Organic Fertilizer according to SNI,

2. The effectiveness of Liquid Organic Fertilizer (POC) from various local microorganisms on the growth and production of cayenne pepper (*Capsicum frutescens* L.). Through the use of Liquid Organic Fertilizers from various local microorganisms, it is hoped that healthy plants free from chemical fertilizers can be obtained to become organic and environmentally friendly agriculture. In addition, it also inspires organic farmers to use materials available in their environment as organic fertilizers and pesticides.

The research will be carried out at the Green House of the Department of Biology Education, FMIPA, Yogyakarta State University from May to October 2018. Making Liquid Organic Fertilizer (POC) from various Local Microorganisms (MOL leftover vegetables, MOL leftover fruits, MOL cow urine, MOL of rice juice) is carried out by means of fermentation starting from 15 days, 22 days and 29 days until according to SNI standards. The POC quality test includes macro nutrient content such as total N, P (P₂O₅), K (K₂O), pH, C-organic, and C / N ratio, micro nutrient content such as Mn (Manganese), B (Boron) and Zn (Zinc) and heavy metal Pb carried out at the Department of Soil Science, Faculty of Agriculture, Gadjah Mada University, Yogyakarta. Furthermore, a descriptive analysis was carried out by comparing the quality of POC according to SNI. To test the effectiveness of POC from various kinds of MOL, experiments were carried out using the Lenkap Randomized Design consisting of 6 treatments, namely negative control (without POC), POC from MOL from leftover vegetables, POC from MOL from leftover fruits, POC from MOL from cow urine, POC from MOL of raw washing water and factory compound POC as positive control with 5 repetitions each. The parameters observed included plant height, number of primary branches, number of leaves, fruit wet weight and fruit dry weight. The data obtained were then analyzed using analysis of variance (ANOVA), followed by Duncan's test with a significance level of 5%. The most significant liquid fertilizer is liquid fertilizer from washing rice waste followed by liquid fertilizer from cow urine

Kata Kunci: *Liquid Organic Fertilizer, Fermentation, Environmentally Friendly Fertilizer*