

# EFFECTIVENESS OF *Trichoderma harzianum* PELLETS IN TEMPE WASTE LIQUID ORGANIC FERTILIZER (POC) TO INCREASE THE GROWTH OF *Brassica juncea* L.

## ABSTRACT

The waste obtained from the tempe processing cycle can be in the form of liquid waste. Tempe liquid waste that has been disposed of has high content such as 0.42% protein, 0.13% fat, 0.11% carbohydrates and 98.87% water. POC from tempe liquid waste serves as a food source for microbes if POC production is coupled with strong inoculants or activators, which can grow various soil microorganisms. The addition of *Effective microorganisms* and *Trichoderma* sp is proven to improve soil quality, improve growth and quality of crop yields. Mustard plant (*Brassica juncea* L.) has nutritional content such as K, A, C, E. The experiment used a Completely Randomized Design (CRD) with 4 treatments with concentrations namely P0 (control), P1 (60 ml/L), P2 (120 ml/L) and P3 (180 ml/L). The experiment was repeated 6 times so that there were 24 treatment units. Based on the results, it was found that the results of tests for NPK and C-Organic nutrients in the laboratory, namely N 0.20% P 0.060% K 0.24% and C-Organic 1.43%, showed that they did not meet the quality standard requirements in accordance with Ministerial Regulations Agriculture 2019. The growth of mustard green plants (*Brassica juncea* L.) by administering POC made from tempe waste at a dose of P3 (180 ml/L) along with a pH of 7 and a temperature of 29-30oC is the best dose for the growth of mustard greens which includes observing plant height, number leaf blade, leaf width, leaf area, wet weight of mustard greens and dry weight of mustard greens.

**Keywords:** Tempeh liquid waste, liquid organic fertilizer, mustard greens (*Brassica juncea* L.), *Trichoderma harzianum*, *Effective microorganism 4*

# EFEKTIVITAS PELET *Trichoderma harzianum* PADA PUPUK ORGANIK CAIR (POC) LIMBAH TEMPE UNTUK MENINGKATKAN PERTUMBUHAN *Brassica juncea* L.

## ABSTRAK

Limbah yang diperoleh dari siklus pengolahan tempe dapat berupa limbah cair. Limbah cair tempe yang telah dibuang memiliki kandungan yang tinggi seperti protein 0,42%, lemak 0,13%, karbohidrat 0,11% dan air 98,87%. POC dari limbah cair tempe berfungsi sebagai sumber makanan untuk mikroba jika produksi POC ditambah dengan inokulan atau aktivator yang kuat, dapat menumbuhkan berbagai mikroorganisme tanah. Penambahan *Effective mikroorganisme* dan *Trichoderma* sp terbukti dapat memperbaiki kualitas tanah, memperbaiki pertumbuhan serta mutu hasil tanaman. Tanaman sawi (*Brassica juncea* L.) memiliki kandungan gizinya seperti K, A, C, E. Percobaan menggunakan Rancangan Acak Lengkap (RAL) dengan 4 perlakuan dengan konsentrasi yaitu P0 (kontrol), P1 (60 ml/L), P2 (120 ml/L) dan P3 (180 ml/L). Percobaan diulang sebanyak sebanyak 6 kali sehingga terdapat 24 unit perlakuan. Berdasarkan hasil yang didapatkan bahwa hasil dari uji kandungan unsur hara NPK dan C-Organik pada laboratorium yaitu N 0,20% P 0,060% K 0,24% dan C-Organik 1,43% menunjukkan belum memenuhi syarat standar mutu sesuai dengan Peraturan Menteri Pertanian 2019. Pertumbuhan tanaman sawi hijau (*Brassica juncea* L.) dengan pemberian POC berbahan limbah tempe pada dosis P3 (180 ml/L) beserta pH 7 dan suhu 29-30°C merupakan dosis terbaik dalam pertumbuhan sawi hijau yang meliputi pengamatan tinggi tanaman, jumlah helai daun, lebar daun, luas daun, bobot basah sawi dan bobot kering sawi.

**Kata Kunci:** Limbah cair tempe, Pupuk organik cair, sawi hijau (*Brassica juncea* L.), *Trichoderma harzianum*, *Effective microorganism 4*