

Intisari

PENGARUH DURASI FERMENTASI HIDROLISAT JEROAN LELE DENGAN ENZIM PAPAIN TERHADAP KANDUNGAN HARA PUPUK ORGANIK CAIR

Penelitian pupuk organik cair jeroan ikan lele sebelumnya menunjukkan bahwa parameter N, P, dan K belum memenuhi standar mutu sehingga diperlukan upaya yaitu dengan hidrolisis enzim papain. Penelitian ini bertujuan untuk menganalisis pengaruh waktu fermentasi terhadap mutu pupuk organik cair berbahan dasar jeroan ikan lele yang dihidrolisis menggunakan enzim papain. Metode penelitian meliputi hidrolisis dengan enzim papain 5% pada suhu 55°C, pH 7, selama 5 jam, dilanjutkan proses fermentasi pada hari ke-0, 3, 6, 9, 12, dan 15. Parameter mutu hidrolisat yang diamati meliputi derajat hidrolisis, kadar protein total, air, abu, lemak, karbohidrat, dan pH dengan nilai masing-masing 91,44%; 13,57%; 78,58%; 4,67%; 1,36%; 1,82%; dan 5,53. Parameter mutu pupuk organik cair yang diamati meliputi rendemen, kadar N, P, K, C-organik, kadar air, dan pH. Kadar N pada fermentasi hari ke-0, 3, 6, 9, 12, 15 masing-masing 0,203; 0,949; 1,877; 2,483; 2,143; 1,793%. Kadar P pada fermentasi hari ke-0, 3, 6, 9, 12, 15 masing-masing 0,205; 0,731; 1,542; 1,847; 1,427; 1,229%. Kadar K pada fermentasi hari ke-0, 3, 6, 9, 12, 15 masing-masing 0,182; 0,577; 1,403; 2,099; 1,553; 1,406%. Rendemen mengalami kenaikan seiring bertambahnya waktu fermentasi dengan nilai tertinggi 90,91% pada hari ke-12 dan 15. Kadar N, P, K, dan C-organik memenuhi standar mutu POC (Keputusan Menteri Pertanian No. 261/KPTS/ SR.310/M/4/2019). Hidrolisis enzim papain 5% dan waktu fermentasi hari ke-6 efektif menghasilkan mutu POC terbaik.

Kata Kunci: jeroan ikan lele, papain, hidrolisis, fermentasi, POC, mutu

Abstract

THE EFFECT OF FERMENTATION DURATION OF PAPAIN ENZYME HYDROLIZED CATFISH VISCERAS ON THE NUTRIENT CONTENT OF LIQUID ORGANIC FERTILIZER

Previous studies on liquid organic fertilizer derived from catfish viscera indicated that the nitrogen, phosphorus, and potassium parameters had not met the quality standards; therefore, an effort was required through enzymatic hydrolysis using papain. The study aims to analyze the effect of fermentation time on the quality of liquid organic fertilizer made from catfish offal hydrolyzed using papain enzyme. The research method involved hydrolysis with 5% papain enzyme at a temperature of 55°C and a pH of 7 for 5 hours, followed by fermentation on days 0, 3, 6, 9, 12, and 15. The quality parameters of the hydrolysate observed included the degree of hydrolysis, total protein, water, ash, fat, carbohydrates, and pH, with values of 91.44%, 13.57%, 78.58%, 4.67%, 1.36%, 1.82%, and 5.53, respectively. The quality parameters of liquid organic fertilizer observed included yield, N, P, K, organic C, moisture content, and pH. The N content on fermentation days 0, 3, 6, 9, 12, and 15 was 0.203; 0.949; 1.877; 2.483; 2.143; and 1.793%, respectively. The P content on fermentation days 0, 3, 6, 9, 12, and 15 was 0.205, 0.731, 1.542, 1.847, 1.427, and 1.229%, respectively. K levels on fermentation days 0, 3, 6, 9, 12, and 15 were 0.182; 0.577; 1.403; 2.099; 1.553; and 1.406%, respectively. The yield increased with fermentation time, reaching a maximum of 90.91% on days 12 and 15. The N, P, K, and organic C levels met the POC quality standards (Decree of the Minister of Agriculture No. 261/KPTS/SR.310/M/4/2019). Enzymatic hydrolysis with 5% papain and a fermentation time of 6 days effectively produced the best POC quality.

Keywords: catfish viscera, papain, hydrolysis, fermentation, LOF, quality