

## **KUALITAS PUPUK ORGANIK CAIR KOMBINASI URIN KAMBING DAN LIMBAH CAIR INDUSTRI TAHU DENGAN PENAMBAHAN STARTER EM-4**

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### **INTISARI**

Penelitian ini bertujuan untuk mengetahui kualitas kimia pupuk cair organik yang dibuat dari urine kambing yang dikombinasikan dengan limbah tahu cair dengan tambahan starter EM-4. Penelitian ini dibagi menjadi dua perlakuan yaitu yang pertama tanpa penambahan EM-4 dan perlakuan kedua menggunakan EM-4 sebesar 1% dari total sampel pupuk organik cair (300 ml) dengan pengulangan sebanyak 3 kali. Limbah cair tahu yang digunakan sebesar 0%, 25%, 50%, 75% dan 100%. Perlakuan yang dilakukan yaitu T0a menggunakan urin kambing tanpa EM-4 dan T0b urin kambing yang ditambah EM-4, T1a menggunakan urin kambing ditambah limbah cair 25% dan T1b urin kambing yang ditambah EM-4 dengan limbah cair 25%, T2a menggunakan urin kambing ditambah 50% limbah cair dan T2b urin kambing fermentasi ditambah EM-4 dengan limbah cair 50%, T3a menggunakan urin kambing ditambah dengan limbah cair 75% dan T3b urin kambing ditambah EM-4 dengan limbah cair 75%. T4a menggunakan 100% limbah cair dan T4b limbah cair ditambah EM-4. Lama fermentasi yang dilakukan adalah 12 hari dan parameter yang diamati adalah kandungan C-organik, N, P, dan K. Rancangan yang digunakan adalah Rancangan Acak Lengkap (RAL) Pola Tersarang, perbedaan yang signifikan dilanjutkan dengan uji *Duncan's New Multiple Range Test* (DMRT). Hasil penelitian menunjukkan komposisi urin kambing dan limbah cair tahu tidak menunjukkan perbedaan yang nyata ( $P>0,05$ ) terhadap kadar phosphor dan C-organik, begitu juga dengan adanya penambahan EM-4 pada pembuatan pupuk organik cair tidak menunjukkan perbedaan nyata ( $P>0,05$ ). Komposisi urin kambing dan limbah cair tahu menunjukkan perbedaan yang nyata ( $P<0,05$ ) terhadap kadar nitrogen dan kalium. Penambahan EM-4 pada pembuatan pupuk organik cair menunjukkan perbedaan nyata ( $P<0,05$ ) terhadap kadar nitrogen dan kalium. Kesimpulan penelitian penambahan limbah cair tahu pada pupuk organik cair kambing tidak mempengaruhi kualitas pupuk cair.

Kata kunci : Urin kambing, Limbah cair, Pupuk organik cair, Fermentasi, C-organik, N, P, K.

## **LIQUID ORGANIC FERTILIZER QUALITY FROM COMBINATION GOAT URINE AND LIQUID WASTE FROM TOFU INDUSTRY WITH ADDITIONAL STARTER EM-4**

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### **ABSTRACT**

This research was aimed at the chemical quality of organic liquid fertilizer which was prepared from goat urine combined with liquid tofu waste with the additional of EM-4 starter. The research was grouped into two treatments: one without adding EM-4, and another with EM-4 addition as much as 1% from the total liquid organic fertilizer sample (300 ml) with 3 replicate. The tofu liquid waste was added from 0%, 25%, 50%, 75%, and 100%. The treatments T0a were goat urine without EM-4; T0b was goat urine with EM-4; T1a was goat urine with 25% liquid waste; T1b was goat urine with EM-4 and 25% liquid waste; T2a was goat urine with 50% liquid waste; T2b was fermented goat urine with EM-4 and 50% liquid waste; T3a was goat urine with 75% liquid waste; T3b was goat urine with EM4 and 75% liquid waste; T4a was 100% liquid waste; and T4b was liquid waste with EM-4. The fermentation is conducted for 12 days and the observed parameters include C-organic, N, P, and K contents. Data were analyzed using a completely randomized design (CRD) with nested pattern, while significant differences are tested with Duncan's New Multiple Range Test (DMRT). The results of the research showed that the goat urine and tofu liquid waste proportion, as well as EM-4 addition into organic liquid fertilizer, do not affect significant difference ( $P>0.05$ ) to Fosfor and C-organic levels. However, the goat urine and tofu liquid waste proportion reveal a significant difference ( $P<0.05$ ) to nitrogen and potassium levels. This research shows that the addition of EM-4 into organic liquid fertilizer affect a significant difference ( $P<0.05$ ) to phosphor and potassium levels. In conclusion, the addition of tofu liquid waste to goat urine liquid fertilizer did not effect to the quality of goat urine liquid fertilizer.

**Keywords :** Goat urine, Liquid waste, Organic liquid fertilizer, Fermentation, C-organic, N, P, K.