

## PENINGKATAN KUALITAS PUPUK ORGANIK CAIR URIN KAMBING DENGAN PENAMBAHAN LIMBAH CAIR INDUSTRI SUSU BUBUK

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### INTISARI

Penelitian ini bertujuan mengetahui kualitas kimia pupuk organik cair dari urin kambing dengan penambahan limbah cair industri susu bubuk. Rancangan yang digunakan adalah Rancangan Acak Lengkap (RAL) Pola Tersarang, perbedaan yang signifikan dilanjutkan dengan uji *Duncan's New Multiple Range Test* (DMRT). Penelitian ini dibagi menjadi dua perlakuan yaitu yang pertama tanpa penambahan EM4 dan perlakuan kedua menggunakan EM4 sebesar 1% dari total sampel pupuk organik cair (300 ml) dengan pengulangan sebanyak 3 kali. Limbah cair susu bubuk yang digunakan sebesar 0%, 25%, 50%, 75% dan 100%. Perlakuan yang dilakukan yaitu T0A menggunakan urin kambing tanpa EM4 dan T0B urin kambing yang ditambah EM4, T1A menggunakan urin kambing ditambah limbah cair 25% dan T1B urin kambing yang ditambah EM4 dengan limbah cair 25%, T2A menggunakan urin kambing ditambah 50% limbah cair dan T2B urin kambing fermentasi ditambah EM4 dengan limbah cair 50%, T3A menggunakan urin kambing ditambah dengan limbah cair 75% dan T3B urin kambing ditambah EM4 dengan limbah cair 75%. T4A menggunakan 100% limbah cair dan T4B limbah cair ditambah EM4. Lama fermentasi yang dilakukan adalah 12 hari dan parameter yang diamati adalah kandungan C-organik, N, P, dan K. Hasil penelitian menunjukkan proporsi urin kambing dan limbah cair industri susu bubuk tidak menunjukkan perbedaan yang nyata ( $P > 0,05$ ) terhadap kadar nitrogen dan C-organik, begitu juga dengan adanya penambahan EM4 pada pembuatan pupuk organik cair tidak menunjukkan perbedaan nyata ( $P > 0,05$ ). Proporsi urin kambing dan limbah cair industri susu bubuk menunjukkan perbedaan yang nyata ( $P < 0,05$ ) terhadap kadar phosphor dan kalium. Penambahan EM4 pada pembuatan pupuk organik cair menunjukkan perbedaan nyata ( $P < 0,05$ ) terhadap kadar phosphor dan kalium.

Kata kunci : Urin kambing, limbah cair, pupuk organik cair, fermentasi, C-organik, N, P, K.

## THE INCREASE OF QUALITY IN ORGANIC LIQUID FERTILIZER WITH GOAT URINE BY ADDING POWDERED MILK INDUSTRIAL LIQUID WASTE

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### ABSTRACT

This research aims to examine the chemical quality of organic liquid fertilizer made of goat urine by adding liquid waste from a powdered milk industry. The research uses a completely randomized design (CRD) with nested pattern, while significant differences are tested with Duncan's New Multiple Range Test (DMRT). The research is grouped into two treatments: one without adding EM4, and another with EM4 addition as much as 1% from the total liquid organic fertilizer sample (300 ml) up to 3 times. The powdered milk industrial waste is added from 0%, 25%, 50%, 75%, and 100%. The treatments are as follows: T0A uses goat urine without EM4; T0B uses goat urine with EM4; T1A uses goat urine with 25% liquid waste; T1B uses goat urine with EM4 and 25% liquid waste; T2A uses goat urine with 50% liquid waste; T2B uses fermented goat urine with EM4 and 50% liquid waste; T3A uses goat urine with 75% liquid waste; T3B uses goat urine with EM4 and 75% liquid waste; T4A uses 100% liquid waste; and T4B uses liquid waste with EM4. The fermentation is conducted for 12 days and the observed parameters include C-organic, N, P, and K contents. The results of the research show that the goat urine and powdered milk industrial liquid waste proportion, as well as EM4 addition into organic liquid fertilizer, do not affect significant difference (both  $P > 0.05$ ) to nitrogen and C-organic levels. However, the goat urine and powdered milk industrial liquid waste proportion reveal a significant difference ( $P < 0.05$ ) to phosphor and potassium levels. As a conclusion, this research shows that the addition of EM4 into organic liquid fertilizer affect a significant difference ( $P < 0.05$ ) to phosphor and potassium levels.

Keywords : goat urine, liquid waste, organic liquid fertilizer, fermentation, C-organic, N, P, K.