

ABSTRAK

Limbah cair industri tahu mengandung bahan organik sehingga dapat menjadi bahan baku pembuatan pupuk organik cair yang kaya nitrogen. Penelitian ini bertujuan untuk mengetahui pengaruh perlakuan waktu fermentasi, volume limbah cair tahu dan konsentrasi limbah padat organik terhadap kadar nitrogen dan pH limbah. Penelitian ini dilaksanakan di Yogyakarta pada bulan Maret – Mei 2021. Rancangan penelitian yang digunakan adalah RAL (Rancangan Acak Lengkap) dengan 54 sampel limbah cair industri tahu, kulit pisang dan nasi sisa yang terdiri dari 18 perlakuan (hasil dari total kombinasi taraf faktor perlakuan) dengan 3 ulangan. Variabel yang diamati adalah kadar nitrogen dan pH yang diuji dengan ANOVA parametrik dan non parametrik dengan taraf signifikansi 5%. Hasil penelitian menunjukkan bahwa terdapat pengaruh faktor perlakuan waktu fermentasi, volume limbah cair tahu, dan limbah padat organik terhadap parameter kadar nitrogen, tetapi tidak berpengaruh signifikan terhadap nilai pH. Kadar nitrogen tertinggi, yaitu 1,49% diperoleh pada perlakuan waktu fermentasi 6 hari, volume limbah cair industri 2 liter, dan konsentrasi limbah padat organik 50%, yaitu 1,49%. Tingkat keasaman (pH) pupuk organik cair yang diperoleh dari setiap kombinasi perlakuan berada pada interval kualitas yang sesuai dengan baku mutu yang ditetapkan pemerintah, yaitu 4,2-4,8.

Kata kunci: fermentasi basah, kadar nitrogen, limbah cair industri tahu, limbah organik, pH, pupuk organik cair

ABSTRACT

The liquid waste of the tofu industry contained organic material so that it could be used as raw material for making nitrogen-rich liquid organic fertilizer. This study aimed to determine the effect of fermentation time treatment, tofu liquid waste volume and organic solid waste concentration on nitrogen levels and waste pH. This research was carried out in Yogyakarta in March – May 2021. The research design used was CRD (Completely Randomized Design) with 54 samples. industrial wastewater tofu, banana peel and rice consisting of 18 treatments (the result of the total combination of treatment factor levels) with 3 replications. The variables observed were nitrogen and pH levels which were tested with parametric and non-parametric ANOVA with a significance level of 5%. The results showed that there was an effect of the treatment factor of fermentation time, volume of tofu liquid waste, and organic solid waste on the nitrogen content parameter, but did not significantly affect the pH value. The highest nitrogen content, ie 1.49%, was obtained at the treatment time of 6 days of fermentation, 2 liters of industrial wastewater volume, and 50% concentration of organic solid waste, which was 1.49%. The acidity level (pH) of liquid organic fertilizer obtained from each treatment combination was in the quality interval in accordance with the quality standard set by the government, namely 4.2-4.8.

Keywords: concentration of organic solid waste, liquid organic fertilizer, nitrogen, pH, time of fermentation