

Analisis Pemanfaatan Limbah Cair Pabrik Kelapa Sawit (LCPKS) Sebagai Pupuk Organik Pada Tanaman Kelapa Sawit (*Elais Guinensis.Jacq*) Sungai Perak Estate PT. Kruing Lestari Jaya, Desa Besiq, Kecamatan Damai, Kabupaten Kutai Barat, Kalimantan Timur

Oleh:
Elia Maykel Magang
114190043

INTISARI

PT. Kruing Lestari Jaya merupakan perusahaan kelapa sawit yang berada di desa Besiq, Kecamatan Damai, Kabupaten Kutai Barat, Kalimantan Timur. Perusahaan ini melakukan pengelolaan limbah hasil produksi dengan memanfaatkan kembali Limbah Cair Pabrik Kelapa Sawit (LCPKS) sebagai pupuk organik, yang diaplikasikan dalam bentuk *Land Application* (LA). Pemanfaatan LCPKS sebagai pupuk organik ini sudah diterapkan kurang lebih 4 tahun, namun belum pernah dilakukan analisis mengenai efektivitas LCPKS sebagai alternatif Pemupukan di kebun. Penelitian ini bertujuan untuk mengetahui kesuburan tanah dan air drainase di area kebun kelapa sawit, kadar unsur hara yang terdapat di LCPKS, dan perbandingan produksi antara kebun yang dialiri LCPKS dengan kebun yang menggunakan pupuk kimia.

Metode penelitian menggunakan metode survei, observasi pemetaan dan uji laboratorium. Teknik sampling menggunakan *Purposive sampling* untuk mengambil sampel tanah, air drainase, dan air LCPKS. Parameter zat hara tanah dan air limbah yang diuji adalah kadar N,P,K, dan Mg. Parameter air drainase yang diuji adalah pH,BOD, dan COD. Metode analisis data yang digunakan adalah analisis deskriptif *developmental*.

Hasil Penelitian menunjukkan kadar zat hara tanah seperti rata-rata pH 4,67 (rendah), N 0,04 ppm (sangat rendah), P 3,14 ppm(sangat rendah), K 0,45 ppm(Sedang), dan Mg 0,68 Cmol (+)/kg(rendah).Kualitas air drainase adalah BOD 21,8 mg/l, COD 54,7 mg/l, pH 6,82. Hasil kualitas air drainase di hilir adalah BOD 6,58 mg/l, COD 20,8 mg/l, pH 6,58. Kadar zat hara air limbah mengandung rata-rata pH 7,3 (standar), BOD 3275 ppm (standar), COD 17.438 ppm (standar), N 936 ppm (rendah), P 215 ppm (rendah), K 1764 ppm (rendah), dan Mg 420 ppm (rendah). Hasil produksi antara area kebun yang dialiri pupuk organik dengan area kebun yang masih menggunakan pupuk kimia dalam 1 tahun adalah 1.537,96 ton (pupuk organik) dan 1.237,75 ton (pupuk kimia). Arahan pengelolaan yang dilakukan untuk meningkatkan kadar zat kimia pada pupuk organik dengan cara menambahkan tandan kosong dengan dosis 35 kg per pohon.

Kata Kunci: Limbah Cair Pabrik Kelapa Sawit (LCPKS), Pupuk Organik, Unsur Hara Tanah

Analysis of the Utilization of Palm Oil Mill Effluent (POME) as Organic Fertilizer on Oil Palm Plants (*Elais Guinensis*.Jacq) in Sungai Perak Estate, PT. Kruing Lestari Jaya, Besiq Village, Damai District, West Kutai Regency, East Kalimantan

By:
Elia Maykel Magang
114190043

ABSTRACT

PT. Kruing Lestari Jaya is a palm oil company located in Besiq Village, Damai District, West Kutai Regency, East Kalimantan. This company manages its production waste by utilizing Palm Oil Mill Effluent (POME) as organic fertilizer, which is applied in the form of Land Application (LA). The utilization of POME as organic fertilizer has been implemented for approximately 4 years, but no analysis has been conducted regarding the effectiveness of POME as an alternative fertilization method in the plantation. This research aims to determine the soil and drainage water conditions in the oil palm plantation area, nutrient content in the waste, and the production comparison between the plantation supplied with POME and the one using chemical fertilizers.

The research method used in this study includes survey, observation, mapping, and laboratory testing. The sampling technique used is *Purposive sampling* to collect soil samples, drainage water samples, and POME samples. The tested parameters for soil and waste water nutrients include N, P, K, and Mg. The tested parameters for drainage water include pH, BOD, and COD. The data analysis method used is descriptive developmental analysis.

The research results show that the soil nutrient levels are as follows: average pH of 4.67 (low), N of 0.04 ppm (very low), P of 3.14 ppm (very low), K of 0.45 ppm (moderate), and Mg of 0.68 Cmol (+)/kg (low). The quality of drainage water is indicated by BOD of 21.8 mg/l, COD of 54.7 mg/l, and pH of 6.82. The downstream drainage water quality shows BOD of 6.58 mg/l, COD of 20.8 mg/l, and pH of 6.58. The nutrient content in the wastewater shows an average pH of 7.3 (standard), BOD of 3275 ppm (standard), COD of 17,438 ppm (standard), N of 936 ppm (low), P of 215 ppm (low), K of 1764 ppm (low), and Mg of 420 ppm (low). The production results between the area supplied with organic fertilizer and the area still using chemical fertilizers within 1 year are 1,537.96 tons (organic fertilizer) and 1,237.75 tons (chemical fertilizer). The management recommendation to increase the chemical content in organic fertilizer is by adding empty fruit bunches at a dosage of 35 kg per tree.

Keywords: Palm Oil Mill Effluent (POME), Organic Fertilizer, Nutrients