

ABSTRACT

COMPOSTING STUDY OF SLUDGE DIGESTER BIOGAS WITH COFFEE HUSK MIXTURE AND FINANCIAL ANALYSIS (Case Study of Biogas Square, Kediri Village, Gadingrejo Sub-District, Pringsewu Regency, Lampung Province)

By

DANI FATURROHMAN

There are approximately 20 biogas digesters that have been installed in Kediri Village with capacities ranging from 4 m³ up to 12 m³. In addition to producing biogas, the digester also produces sludge. That can be used as fertilizer through composting with a mixture of coffee husks. This study aimed to determine 1) The yield and quality of the biogas sludge digester compost mixed with coffee husks; 2) The feasibility of making biogas sludge digester compost with coffee husk mixture at Biogas Square, Kediri Village. Sludge 1020 kg was mixed with 120 kg coffee rind and 210 kg cow dung, adjusted for humidity, stacked for 60 days, and turned once every 1 week, observed changes in temperature to ensure the success of the process. After the harvesting process is complete, the yield is calculated and the quality is analyzed. The analytical methods used are analysis of C-organic, N, P, K content and yield analysis for compost quality and analysis of financial feasibility criteria in the form of NPV, IRR, PP, Net B/C, and BEP. The results showed that the compost had an organic C-content of 11,02%, a total N of 1,41%, a total P of 1,60%, a C/N ratio of 7,82%, a total K of 1,18%, and a yield of 54,15%. and the results of the financial feasibility criteria show the NPV value of Rp 68.726.533, the IRR value of 15%, the Net B/C value of 1.484, the Pay Back Period of 6,196 or 6 years 3 months 13 days, and the results show that the business project is feasible to run. Meanwhile, for the BEP in this study, the unit BEP was 5.032 kg of compost and the rupiah BEP was Rp 25.158.694,00.

Keywords: *Biogas digester, Biogas Square, Kediri Village, biogas sludge digester, coffee husk, composting, compost quality, financial analysis*

ABSTRAK

KAJIAN PENGOMPOSAN SLUDGE DIGESTER BIOGAS DENGAN CAMPURAN KULIT KOPI DAN ANALISIS FINANSIAL (Studi Kasus Biogas *Square*, Desa Kediri, Kecamatan Gadingrejo, Kabupaten Pringsewu, Provinsi Lampung)

Oleh

DANI FATURROHMAN

Digester biogas yang sudah terinstal di Desa Kediri berjumlah lebih kurang 20 buah dengan kapasitas mulai dari 4 m³ - 12 m³. Selain menghasilkan biogas, digester juga menghasilkan *sludge*. Salah satu cara yang dapat dilakukan agar sludge digester biogas dapat dimanfaatkan sebagai pupuk melalui pengomposan dengan campuran kulit kopi. Tujuan penelitian ini untuk mengetahui 1) Rendemen dan mutu kompos *sludge* digester biogas yang dicampur kulit kopi; 2) Kelayakan usaha pembuatan kompos *sludge* digester biogas dengan campuran kulit kopi pada Biogas *Square*, Desa Kediri. *Sludge* 1020 kg dicampur dengan kulit kopi 120 kg dan kotoran sapi 210 kg, diatur kelembabannya, ditumpuk selama 60 hari, dan dilakukan pembalikan setiap 1 minggu sekali, diamati perubahan suhu untuk memastikan keberhasilan proses. Setelah proses selesai dilakukan pemanenan kemudian dihitung rendemen dan dianalisis mutunya. Metode analisis yang digunakan yaitu analisis kandungan C-organik, N, P, K dan analisis rendemen untuk mutu kompos dan analisis Kriteria kelayakan finansial berupa NPV, IRR, PP, Net B/C dan BEP. Hasil menunjukkan kompos memiliki kandungan C-organik sebesar 11,02 %, N total 1,41%, P total 1,60%, C/N rasio 7,82%, K total 1,18% dan rendemen sebesar 54,15% dan hasil kriteria kelayakan finansial menunjukkan nilai NPV sebesar Rp 68.726.533, nilai IRR sebesar 15%, nilai Net B/C sebesar 1,484, *Pay Back Period* sebesar 6,196 atau 6 tahun 3 bulan 13 hari. Sementara untuk BEP pada penelitian ini untuk BEP unit yaitu sebesar 5.032 kg kompos dan BEP rupiah sebesar Rp 25.158.694,00.

Kata kunci : Digester biogas, Biogas *Square*, Desa Kediri, *sludge* digester biogas, kulit kopi, pengomposan, mutu kompos, analisis finansial