

ABSTRAK

Ketersediaan media tanam yang ramah lingkungan dan berbasis limbah organik menjadi isu penting dalam mendukung praktik pertanian berkelanjutan di tengah menurunnya kualitas tanah dan meningkatnya penggunaan bahan kimia dalam budidaya pertanian. Salah satu upaya yang dapat dilakukan adalah memanfaatkan limbah pertanian dan perkebunan sebagai media tanam alternatif. Penelitian ini bertujuan untuk menganalisis sifat kimia dan fisik dari dua jenis bahan organik, yaitu tandan kosong kelapa sawit (TKKS) dan cocopet, untuk mengetahui kelayakannya sebagai media tanam alternatif. Metode yang digunakan meliputi analisis laboratorium terhadap parameter kimia seperti kandungan karbon organik (C-organik), nitrogen total (N-total), fosfat (P_2O_5), kalium (K_2O), kalsium oksida (CaO), magnesium oksida (MgO), serta unsur mikro seperti seng (Zn) dan tembaga (Cu). Selain itu, dilakukan pengujian parameter fisik seperti kadar air dan porositas, serta kandungan logam berat timbal (Pb) untuk menilai aspek keamanan lingkungan. Hasil penelitian menunjukkan bahwa TKKS memiliki kandungan unsur hara makro yang tinggi, yaitu C-organik 28,47%, N-total 1,52%, P_2O_5 1,49%, dan K_2O 10,90%, yang sangat potensial dalam mendukung pertumbuhan tanaman. Di sisi lain, cocopet memiliki keunggulan pada karakteristik fisik, seperti kadar air dan porositas yang tinggi, serta kandungan C-organik sebesar 24,55% dan N-total 0,63%. Analisis logam berat menunjukkan bahwa kedua media tidak mengandung Pb sehingga aman digunakan. Berdasarkan hasil tersebut, TKKS dan cocopet dapat direkomendasikan sebagai media tanam alternatif yang tidak hanya bernilai agronomis, tetapi juga berkontribusi dalam pengurangan limbah organik dan pencemaran lingkungan, sekaligus mendukung pembangunan pertanian yang berkelanjutan.

Kata Kunci : Tandan Kosong Kelapa Sawit (TKKS), Cocopet, Media Tanam Alternatif, Limbah Organik, Pertanian Berkelanjutan

ABSTRACT

The availability of environmentally friendly growing media based on organic waste has become a critical issue in supporting sustainable agricultural practices, especially amid declining soil quality and increasing use of chemical inputs in crop cultivation. One potential strategy to address this challenge is the utilization of agricultural and plantation waste as alternative growing media. This study aims to analyze the chemical and physical properties of two types of organic materials—oil palm empty fruit bunches (EFB) and cocopet—to evaluate their suitability as alternative growing media. The method employed includes laboratory analysis of chemical parameters such as organic carbon (C-organic), total nitrogen (N-total), phosphate (P_2O_5), potassium (K_2O), calcium oxide (CaO), magnesium oxide (MgO), and micronutrients such as zinc (Zn) and copper (Cu). In addition, physical parameters such as moisture content and porosity, as well as the presence of heavy metal lead (Pb), were examined to assess environmental safety. The results showed that EFB contains high levels of macronutrients, with 28.47% C-organic, 1.52% N-total, 1.49% P_2O_5 , and 10.90% K_2O , indicating its strong potential to support plant growth. On the other hand, cocopet exhibited superior physical properties, including high moisture content and porosity, along with 24.55% C-organic and 0.63% N-total. Heavy metal analysis revealed that both media were free from Pb contamination, making them safe for use. Based on these findings, EFB and cocopet are recommended as alternative growing media that are not only agronomically beneficial but also contribute to reducing organic waste and environmental pollution, thereby supporting the advancement of sustainable agriculture.

Keywords: Oil Palm Empty Fruit Bunches (EFB), Cocopet, Alternative Growing Media, Organic Waste, Sustainable Agriculture