

RINGKASAN

APLIKASI ASAM HUMAT DALAM MENGOPTIMALKAN EFEKTIVITAS PUPUK NPK PADA PEMBIBITAN UTAMA KELAPA SAWIT (*Elaeis guineensis* Jacq.) (Arief Syahputra dibawah bimbingan Ir. Gindo Tampubolon, M.S dan Ir. Itang Ahmad Mahbub, M.P)

Pembibitan kelapa sawit merupakan titik awal yang paling menentukan masa depan pertumbuhan kelapa sawit di lapangan, sehingga kegiatan pembibitan wajib dikelola dengan baik. Beberapa kendala yang umum pada *top soil* Ultisol adalah kemasaman tanah tinggi dengan pH rata-rata $< 4,5$, kejenuhan Al tinggi, miskin kandungan hara makro terutama P, K, Ca dan Mg serta kandungan bahan organik rendah selain itu Mempertimbangkan penggunaan pupuk anorganik pada media tanam yang tidak semuanya terserap secara optimal oleh tanaman sehingga menyebabkan rendahnya efisiensi pemupukan serta mempertimbangkan harga pupuk NPK yang semakin meningkat dan sulit untuk diperoleh maka perlu adanya upaya dalam meningkatkan efektivitas pupuk NPK dengan penambahan asam humat. Penelitian ini bertujuan untuk mempelajari efektivitas aplikasi asam humat terhadap beberapa sifat kimia media tanam dalam mengoptimalkan pertumbuhan bibit kelapa sawit di *main nursery*.

Penelitian ini dilaksanakan di areal pembibitan kelapa sawit PT. Nan Riang yang terletak di Desa Ampelu Mudo, Kecamatan Muaro Tembesi, Kabupaten Batanghari, Provinsi Jambi. Penelitian dilaksanakan mulai dari bulan November 2022 sampai bulan Maret 2023. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) yang berdasarkan umur, tinggi, jumlah jumlah pelepah dan kondisi lingkungan yang seragam. Percobaan yang dilakukan berdasarkan dosis perlakuan yaitu ; A0 : Kontrol, A1 : 5 g/polybag, A2 : 10 g/polybag, A3 : 15 g/polybag, A4 : 20 g/polybag dan A5 : 25 g/polybag. Setiap perlakuan diulang sebanyak 4 kali sehingga didapatkan 24 unit percobaan kemudian masing-masing unit percobaan terdiri atas 8 bibit kelapa sawit dengan 4 tanaman sampel. Variabel yang diamati yaitu sampel tanah awal dan akhir penelitian dengan parameter pH, C-organik, N-Total, P-Tersedia dan K-dd tanah, selanjutnya pada tanaman meliputi pertambahan tinggi, pertambahan diameter dan pertambahan jumlah pelepah/daun. Data dianalisis menggunakan sidik ragam dan uji lanjut menggunakan DMRT pada taraf 5 %.

Pemberian asam humat efektif meningkatkan nilai pH, C-Organik dan N-Total, tetapi kurang efektif terhadap peningkatan P-Tersedia dan K-dd. Pemberian asam humat 15 g/polybag efektif meningkatkan pertambahan tinggi berkisar, diameter batang dan jumlah pelepah/daun bibit kelapa sawit dengan peningkatan tertinggi sebesar 19,66%, 15,40% dan 25,77% dibandingkan tanpa pemberian asam humat.

Kata Kunci : Ultisol, pupuk NPK, asam humat, efektivitas, pembibitan kelapa sawit

SUMMARY

APPLICATION OF HUMIC ACID IN OPTIMIZING THE EFFECTIVENESS OF NPK FERTILIZER IN THE MAIN NURSERY OF PALM OIL (*Elaeis guineensis* Jacq.) (Arief Syahputra under the guidance of Ir. Gindo Tampubolon, M.S and Ir. Itang Ahmad Mahbub, M.P).

Oil palm seedling is the most critical starting point that determines the future growth of oil palm in the field, therefore proper management of seedling activities is essential. Some common constraints in Ultisol topsoil include high soil acidity with an average pH < 4.5, high aluminum saturation, poor macro-nutrient content, especially P, K, Ca, and Mg, as well as low organic matter content. In addition, considering the use of inorganic fertilizers in the growing media that are not fully absorbed by the plants, resulting in low fertilization efficiency, and considering the increasing prices and difficulty in obtaining NPK fertilizers, efforts are needed to improve the effectiveness of NPK fertilizers by adding humic acid. This study aims to investigate the effectiveness of humic acid application on several chemical properties of the growing media in optimizing the growth of oil palm seedlings in the main nursery.

This research was conducted in the oil palm nursery area of PT. Nan Riang, located in Ampelu Mudo Village, Muaro Tembesi District, Batanghari Regency, Jambi Province. The study was carried out from November 2022 to March 2023. A Completely Randomized Design (CRD) was used, based on uniform age, height, number of fronds, and environmental conditions. The experiment consisted of different treatment doses: A0: Control, A1: 5 g/polybag, A2: 10 g/polybag, A3: 15 g/polybag, A4: 20 g/polybag and A5: 25 g/polybag. Each treatment was replicated 4 times, resulting in 24 experimental units. Each experimental unit consisted of 8 oil palm seedlings with 4 plants sampled. The variables observed were initial and final soil samples, including pH, organic C, total N, available P, and exchangeable K. Additionally, plant variables included height growth, diameter growth, and frond/leaf count. The data were analyzed using analysis of variance (ANOVA), and further tested using Duncan's Multiple Range Test (DMRT) at a significance level of 5%.

The application of humic acid effectively increased the pH value, organic C, and total N, but was less effective in increasing available P and exchangeable K. The application of 15 g/polybag of humic acid effectively increased the growth in terms of height, stem diameter, and frond/leaf count of oil palm seedlings with the highest increase being 19.66%, 15.40%, and 25.77% respectively, compared to the control without humic acid application.

Keywords : Ultisol, NPK fertilizer, humic acid, effectiveness, oil palm seedling.