

**RESPON PERTUMBUHAN BIBIT KAYU MANIS (*Cinnamomum
burmannii*. Blume) TERHADAP PEMBERIAN FUNGI
MIKORIZA ARBUSKULA (FMA) DAN PUPUK
NPK PADA MEDIA TANAM ULTISOL**

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ABSTRACT

Ultisol soil is one type of nutrient-poor soil that is spread across Indonesia reaching 45,794 million hectares or about 25% of Indonesia's land area. Ultisol soils have a low pH, low total N, available P and available K content. The results of ultisol soil analysis obtained at the beginning of the Educational forest laboratory and nursery obtained a PH value of 4.91, total N 0.05, available P as much as 4.24% and available K 17.13%. In addition, ultisol soil has physical characteristics of pore aeration and low soil stability so that compaction easily occurs. Efforts that can be made to improve the soil and increase the growth of cinnamon plants in ultisol soil need additional treatment, such as the application of Arbuscular Mycorrhizal Fungi (FMA) and NPK fertilizer (15-15-15). Therefore, this study aims to determine the effect of FMA and NPK fertilizer on the growth of cinnamon seedlings and to get the best dosage

This study used a completely randomized design (CRD) with several treatments consisting of a combination of FMA treatments (0g, 5g, 10g, 15g) and NPK fertilizer doses (0g, 1g, 2g, 3g). From these two factors there were 16 experimental combinations that were repeated 3 times so that 48 experimental units were obtained. Each treatment consists of 4 cinnamon plant seedlings so that a total of 192 cinnamon seedlings are needed. The observation variables observed every 2 weeks for 12 weeks are seedling height, seedling diameter, number of leaves and destructive sample observations in week 13 such as observing the percentage of mycorrhizal root infection, root dry weight, crown dry weight and root crown ratio.

Based on the results showed that cinnamon plants experienced death starting from the observation of week 8 (T4) and plants that could survive until the end of the observation were the control treatment (m0p0) and single FMA treatments such as (m1p0, m2p0 and m3p0). Plants that can survive until the end of the study are still measured root dry weight (grams), crown dry weight (grams), root crown ratio and root staining to see the percentage of mycorrhizal roots (%) infected with Fungi Mikoriza Arbuskula (FMA). The death of cinnamon plants is thought to have originated from the ultisol soil media during the study experiencing soil structure compaction, causing plants to experience hypoxia (lack of oxygen). In addition, the discovery of moss on the upper surface of cinnamon plants can be used as an alleged indicator that the ultisol soil at the time of the study experienced soil compaction caused by poor drainage due to soil compaction and low aeration (poor air circulation). Then at the time of destructive sample disassembly it was seen that NPK fertilizer was not absorbed by plant roots, resulting in a buildup of

nutrients around the roots reinforcing the suspected cause of death of cinnamon plants.

***Keywords: Cinnamomun burmannii, Arbuscular Mycorrhizal Fungi (AMF),
NPK Fertilizer, Ultisol Soil.***

ABSTRAK

Tanah ultisol memiliki pH rendah, kandungan N total, P tersedia dan K tersedia rendah. Hasil analisis tanah ultisol yang di peroleh di awal laboratorium hutan Pendidikan dan pembibitan mendapatkan nilai PH 4.91, N total 0.05, P tersedia sebanyak 4.24% dan K tersedia 17.13%. Selain itu tanah ultisol memiliki karekteristik fisik pori aerasi dan stabilitas tanah yang rendah sehingga mudah terjadi pemadatan. Upaya yang dapat dilakukan untuk memperbaiki tanah dan meningkatkan pertumbuhan tanaman kayu manis di tanah ultisol perlu adanya perlakuan tambahan, seperti pengaplikasian Fungi Mikoriza Arbuskula (FMA) dan pupuk NPK (15-15-15). Oleh karena itu, penelitian ini bertujuan untuk mengetahui pengaruh pemberian FMA dan pupuk NPK terhadap pertumbuhan bibit kayu manis dan untuk mendapatkan takaran dosis yang terbaik.

Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan beberapa perlakuan yang terdiri dari kombinasi perlakuan FMA (0g, 5g, 10g, 15g) dan dosis pupuk NPK (0g, 1g, 2g, 3g). Dari kedua faktor tersebut terdapat 16 kombinasi percobaan yang di lakukan pengulangan sebanyak 3 kali sehingga di peroleh 48 satuan percobaan. Setiap perlakuan terdiri dari 4 bibit tanaman kayu manis sehingga dibutuhkan jumlah bibit 192 bibit kayu manis. Variabel pengamatan yang di amati setiap 2 minggu sekali selama 12 minggu yaitu tinggi bibit, diameter bibit, jumlah daun dan pengamatan sampel destruktif minggu ke-13 seperti mengamati Persentase infeksi akar bermikoriza, bobot kering akar, bobot kering tajuk dan rasio tajuk akar.

Berdasarkan hasil penelitian menunjukkan bahwa tanaman kayu manis mengalami kematian mulai dari pengamatan minggu ke- 8 (T4) dan tanaman yang dapat bertahan sampai akhir pengamatan yaitu perlakuan kontrol (m0p0) serta perlakuan FMA tunggal seperti (m1p0, m2p0 dan m3p0). Tanaman yang dapat bertahan sampai akhir penelitian tetap di lakukan pengukuran berat kering akar (gram), berat kering tajuk (gram), rasio tajuk akar dan melakukan pewarnaan akar untuk melihat persentase akar bermikoriza (%) yang terinfeksi Fungi Mikoriza Arbuskula (FMA). Kematian pada tanaman kayu manis diduga berawal dari media tanah ultisol selama penelitian mengalami pemadatan struktur tanah sehingga menyebabkan tanaman mengalami hipoksia (kekurangan oksigen). Selain itu di temukan lumut pada permukaan atas tanaman kayu manis dapat dijadikan dugaan indikator bahwa tanah ultisol pada saat penelitian mengalami pemadatan tanah yang disebabkan oleh drainase buruk akibat dari pemadatan tanah dan aerasi rendah (sirkulasi udara buruk). Kemudian pada saat pembongkaran sampel destruktif terlihat bahwa pupuk NPK tidak terserap oleh akar tanaman, sehingga terjadi penumpukan unsur hara di sekitar akar memperkuat dugaan penyebab kematian tanaman kayu manis.

Kata kunci: *Cinnamomun burmannii*, *Fungi Mikoriza Arbuskula (FMA)*,
Pupuk NPK, Tanah Ultisol.