Intisari

ISOLASI DAN IDENTIFIKASI *ARBUSCULAR MYCORRHIZAE FUNGI* (AMF) PADA RIZOSFER TANAMAN KAKAO (*Theobroma cacao* L.)

Umur tanaman kakao (*Theobroma cacao* L.) dapat mempengaruhi jumlah dan jenis *Arbuscular Mycorrhizae Fungi* (AMF) pada rizosfer tanaman kakao. Penelitian ini bertujuan untuk mengisolasi dan mengidentifikasi AMF pada rizosfer tanaman kakao berumur 6 bulan, 4 tahun dan 30 tahun. Cuplikan tanah diperoleh dari rizosfer tanaman kakao dengan metode acak. Isolasi spora dilakukan dengan teknik penyaringan basah dan sentrifugasi sukrosa. Suspensi spora hasil isolasi kemudian diamati dibawah mikroskop, dihitung jumlahnya, dan diidentifikasi secara morfologi. Keragaman spora AMF dihitung berdasarkan Indeks Shannon-Wiener. Identifikasi molekuler AMF digunakan sebagai identifikasi lanjutan dari identifikasi morfologi yang dilakukan dengan amplifikasi sebagian gen 18S rRNA menggunakan primer spesifik Glomeromycota AML1-AML2. Sekuens gen 18S rRNA kemudian dibandingkan dengan urutan DNA spesies lain dari database *genbank* NCBI (http://blast.ncbi.nlm.nih.gov/). Spora AMF juga di perbanyak menggunakan metode Kultur Pot. Hasil penelitian menunjukkan jumlah spora AMF tertinggi terdapat pada cuplikan tanah berumur 4 tahun diikuti cuplikan umur 30 tahun dan 6 bulan dengan jumlah spora 390, 315 dan 249 spora/100 gram tanah. Angka keragaman spora AMF dalam katagori “sedang”. Hasil identifikasi morfologi dan molekuler diperoleh spora *Acaulospora* sp. putih subglobus (OL1), *Glomus* sp. jingga (B2), *Glomus* sp. kuning (KB2) dan *Acaulospora* sp. kuning (KL2). Berdasarkan hasil tersebut dapat disimpulkan bahwa umur tanaman kakao berpengaruh terhadap jumlah dan keragaman spora AMF. Analisis morfologi dan molekuler menunjukkan dominasi kelompok *Acaulospora* dan *Glomus* pada rizosfer tanaman kakao.

Kata kunci: *Arbuscular Mycorrhizae Fungi*, Identifikasi, Isolasi, *Theobroma cacao* L.

Abstract

ISOLATION AND IDENTIFICATION OF *ARBUSCULAR MYCORRHIZAE FUNGI* (AMF) FROM THE RHIZOSPHERE OF CACAO PLANT (*Theobroma cacao* L.)

The number and type of *Arbuscular Mycorrhizae Fungi* (AMF) infected of cacao plant might be affected by the life period of the plants. The aims of this study were to isolate and identify the type of AMF from different life period of cacao plant. This works were conducted by randomly collecting soil samples surrounding of cacao plant roots with the life period of 6 months, 4 years and 30 years. In order to isolate the type of AMF, the spores of the AMF were collected by using wet sieving method and followed by sucrose gradient centrifugation. The collected spores were enumerated and examined morphologically under microscopic observation. Morphological identification was further confirmed by the molecular identification based on the analysis of 18S rRNA gene sequences. The AMF diversity was measured by calculating Shannon-Wiener Index. In this work, spores propagation was also examined for testing the AMF spores production. Spores propagation was done by the pot culture method. The result of this work showed that the number of spores isolated from soil of plant with life period of 4 years was the highest and followed by the 30 years, and 6 months. The Shannon-Wiener Index indicated that there was no different on AMF diversity among the plant life periods. From the morphological and molecular analysis showed that soil surrounding the cacao plant was mainly dominated by the group of *Acaulospora* and *Glomus*.

Keyword: *Arbuscular Mycorrhizae Fungi*, Identification, Isolation, *Theobroma cacao* L.