

**THE ROLE OF *GLOMALIN* THROUGH UTILIZATION OF FUNGI
ARBUSCULAR MYCORRHIZAL (FMA) TOWARD SOME PHYSICAL
PROPERTIES OF ULTISOLS AND NUTRIENT UPTAKES BY CORN
(*Zea mays*)**

ABSTRACT

Glomalin is a protein constituent of more than 80% of FMA hyphae. It can improve soil physical properties and increase the uptake of N, P and K by plants infecting their roots. *Glomalin* is more active on marginal land such as Ultisol. This research was conducted at Ultisol in Research Station of Institute of Agricultural Technology in Sitiung, Dharmasraya Regency, West Sumatra from October 2014 to March 2015. Soil analyses were continued in Soil Physical Laboratory, Faculty of Agriculture, Andalas University, Padang. The study was aimed to determine the role of *glomalin* through the utilization of fungi arbuscular mycorrhizal (FMA) toward the changes in the physical properties of Ultisol and corn (*Zea mays*) growth. The research was conducted by a randomized block design (RBD) with 4 groups of species of mycorrhizal FMA as the treatment and four blocks. The treatment consisted of: F0 = Control (without Inoculant FMA), F1 = Inoculants of *Glumus Luteum*, F2 = Inoculants of *Verruculosum Glumus*, F3 = Inoculants of *Glumus Versiforme*, and F4 = Inoculants of multi spore. The results showed that the highest amount of *glomalin* was produced at treatment of *Glumus Versiforme* FMA in the amount of 10.59 mg/g which was significantly different from the *Glumus luteum*, *Glumus veruculum* and multi FMA. Application of FMA affected the available water pore of the soil and growth of corn as well as increased in the uptake of nutrients such as N by 0.24 %, P by 0.02 %, and K by 0.14 % compared to without mycorrhizae application.

Keywords: FMA, a soil physical properties of Ultisol, Glomalin, Corn.



PERANAN *GLOMALIN* MELALUI PEMANFAATAN FUNGI MIKORIZA ARBUSKULA (FMA) TERHADAP BEBERAPA SIFAT FISIKA ULTISOL DAN SERAPAN HARA TANAMAN JAGUNG (*Zea Mays*)

ABSTRAK

Glomalin merupakan protein penyusun lebih dari 80% hifa FMA. *Glomalin* mampu memperbaiki sifat fisika tanah dan meningkatkan serapan N, P dan K tanaman dengan cara menginfeksi akar. *Glomalin* lebih aktif berperan pada tanah marjinal seperti Ultisol. Penelitian ini telah dilaksanakan sejak Oktober 2014 - Maret 2015 pada Ultisol lokasi Kebun percobaan, Balai Pengkajian Teknologi Pertanian di Sitiung, Kabupaten Dharmasraya, Sumatra Barat dan dilanjutkan di Laboratorium Fisika Tanah Fakultas Pertanian Universitas Andalas, Padang. Penelitian bertujuan untuk mengetahui peranan *glomalin* melalui pemanfaatan Fungi Mikoriza Arbuskula (FMA) terhadap perubahan beberapa sifat fisika Ultisol dan tanaman jagung (*Zea mays*). Penelitian dilaksanakan berdasarkan rancangan acak kelompok (RAK) dengan 4 kelompok spesies mikoriza FMA dan 4 ulangan. Perlakuan terdiri dari : F0 = Kontrol (tanpa Inokulan FMA), F1 = Inokulan spesies *Glomus luteum*, F2 = Inokulan spesies *Glomus verruculosum*, F3 = Inokulan spesies *Glomus versivorme* dan F4 = Inokulan multi spora. Hasil penelitian menunjukkan produksi *Glomalin* tertinggi terdapat pada perlakuan *Glomus versivorme* FMA yaitu sebesar 10,59 mg/g berbeda nyata dengan *Glomus luteum*, *Glomus veruculum* dan Multi FMA. Pemberian FMA mempengaruhi pori air tersedia tanah dan berpengaruh yang baik terhadap pertumbuhan tanaman jagung serta meningkatkan serapan hara N sebesar 0,24 %, P sebesar 0,02 %, dan K sebesar 0,14% terhadap tanaman jagung (*Zea Mays*) dibandingkan dengan tanpa pemberian mikoriza.

Kata kunci: FMA, Sifat Fisika Ultisol, Glomalin, Jagung.

