Studi keanekaragaman dan potensi inokulum fungi glomalean pada beberapa tipe pemanfaatan lahan di Jambi

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Abstrak

ABSTRACT
Glomalean fungi are natural resources commonly found in different natural ecosystems and associated with different potential forest, agriculture, horticulture and pasture plant. Natural resource exploitation may lead to ecosystem destruction and may affect population status of these fungi.

The objective of this study is to determine the diversity of glomalean fungi and their inoculum potential in five land-use types, i.e.: forest, agroforest, "sengon" (Paraserianthes) plantation, cassava plantation and "alang-alang" (lmperata) at Kecamatan Tebo Ulu, Kecamatan Rantau Pandan, Kecamatan Muara Bungo, and Kecamatan Tebo Tengah, Bungo Tebo District, Jambi Province.

Fifteen soil samples were collected from the five land-use types at a depth of 0 - 5 cm (K1) and 5 - 15 cm (K2). The glomalean fungi spores were extracted and isolated using wet sieving-decanting technique (Gerdemann, 1971) followed by sucrose centrifugation technique (Setiadi et al., 1992)_ isolated spores were identified by using the Manual for identification of VA mycorrhizal fungi (Schenck & Perez, 1990), and diversity glomalean fungi in each land-use type was analyzed using Shannon-Wiener Index, while their inoculum potential was assessed using most probable number (MPN) following procedure of Felmann & ldczak (1994). Degree of inoculum potential of the five land-use types was analyzed using varian one-way classification (Sakai & Rohlf, 1992).

The results show that glomalean fungi population at the five land-use types varied. Among the six genera in the world, four genera of glomalean fungi i.e. (Glomus, Sclerocystls, Acaulospora, and Gigaspora) were found at all land-use types. Glomus spp. were dominant at the five land-use types. Genus of Gigaspora was only found at cassava plantation. Compared with the other land use types, number of species and spores found in cassava (9 species of glomalean fungi with 323 spores/100 g of sample) and in "alang-alang° (11 species with 318 spores/100 g of sample) were the highest at the value of diversity index (1,44) and (1,23) respectively. Spores of glomalean fungi increase gradually from undisturbed forest to degraded "alang-alang".

Results also indicate that the inoculum potential of the five land-use types are different. Compared to the other land-use types, inoculum potential of "sengon" (39,5 active propagule/cm3 soil) and cassava plantation (37,75 active propagulelcm3 soil) were the highest. The results also show that the value of inoculum potential is not always positively correlated with the abundance of spores.

Further research to determine the relationship between glomalean fungi diversity with their inoculum

potential and the soil productivity is recommended. This approach can be used as an alternative strategy to improve sustainable agriculture development using microbial processes.