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Soil Fungal Dynamics and Genetic Diversity in Western Islands Soil

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Soil ecosystems are consisted with various plants, microorganisms, insects, organic materials, and non-organic materials. The major microorganisms in soil ecosystems are bacteria and fungi which affect the soil nutrient status, plant populations, and organic materials recycling and so on.

The fungal dynamics and genetic diversity in western islands soil of Korea were estimated following to the seasonal changes. Soil samples were collected three times a year in spring, summer and autumn. The contents of ergosterol(fungal cell membrane lipid) and glomalin(fungal extractor) were used to estimating for fungal biomass. Also, Eco-microplate was used for the profiling of carbon substrate utilization, which can be represented as a measure of functional diversity. The genetic diversity was estimated from the clone libraries which were constructed from the total soil extracted DNA. The result of ergosterol analysis showed that all of soil samples were increased in autumn, and it was supported by the chemical properties analysis. The gloamalin concentration was showed diverse value depending on seasonal and sampling sites. Thus, the seasonal changes of fungal biomass such as ergosterol and glomalin closely depend on the types of topographies and plant populations. The pattern of substrate usage was similar to the total organic carbon content pattern. Our data indicated that the habitat condition such as, disturbance and environmental stress, less affected the fungal functional diversity, otherwise carbon compound content may affect more directly.