Thermodynamic analysis of an ecologically restored plant community at a manganese tailing site:Growth potential and ecological niche

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May 6, 2020

Abstract

The data used in the analysis were obtained from an ecologically restored plant community. The basic idea presented in this study is that the conventionally defined chemical potential μi can be used as a growth potential index for a species for evaluating the biotic effect on its realized niche. An ecological niche defines a suitable environment for a species to live while μi defines the adaptability of a species to a given environment. The deviation from the fundamental niche of a plant species due to changes in its living environment will thus be reflected by the changes in its μi value. The μi factor is a function of μi0 (the standard chemical potential) and N (the species number). Similar to the fundamental niche, μi0 is uniquely determined by abiotic factors. Increasing N will reduce μi and thus, similar to the realized niche, μi takes into account the biotic effect.

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