

Preliminary Survey on TRY Forest Traits and Growth Index Relations – New Challenges

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Forest ecosystems provide critical ecosystem goods and services, including food, fodder, water, shelter, nutrient cycling, and cultural and recreational value. Forests also store carbon, provide habitat for a wide range of species and help alleviate land degradation and desertification. Thus they have a potentially significant role to play in climate change adaptation planning through maintaining ecosystem services and providing livelihood options. Therefore the study of forest traits is such an important issue not just for individual countries but for the planet as a whole. We need to know what functional relations between forest traits exactly can express TRY data base and how it will be significant for the global modeling and IPBES. The study of the biodiversity characteristics at all levels and functional links between them is extremely important for the selection of key indicators for assessing biodiversity and ecosystem services for sustainable natural capital control. By comparing the available information in tree data bases: TRY, ITR (International Tree Ring) and SP-PAM the 42 tree species are selected for the traits analyses.

The dependence between location characteristics (latitude, longitude, altitude, annual precipitation, annual temperature and soil type) and forest traits (specific leaf area, leaf weight ratio, wood density and growth index) is studied by multiply regression analyses (RDA) using the statistical software package Canoco 4.5. The Pearson correlation coefficient (measure of linear correlation), Kendal rank correlation coefficient (non parametric measure of statistical dependence) and Spearman correlation coefficient (monotonic function relationship between two variables) are calculated for each pair of variables (indexes) and species. After analysis of above mentioned correlation coefficients the dimensional linear regression models, multidimensional linear and nonlinear regression models and multidimensional neural networks models are built. The strongest dependence between It and WD was obtained. The research will support the work on: Strategic Plan for Biodiversity 2011-2020, modelling and implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction.

Key words: Specific leaf area (SLA), Leaf weight ratio (LWR), Wood density (WD), Growth index (It)