

Assessing nutrient flux control in agroforestry

Lehmann, Johannes ⁽¹⁾; Teixeira, Wenceslau ⁽¹⁾ and Schroth, Götz ⁽²⁾

⁽¹⁾ Universität Bayreuth, Bayreuth, Deutschland, ⁽²⁾ Universität Hamburg, Hamburg, Deutschland

Reducing nutrient losses for maximum productivity of a landuse system but also for minimum pollution hazard are a prime goal for landuse management. Relations between nutrient input and output may be controlled by internal nutrient cycling. Landuse systems with trees may be advantageous by storing more nutrients within the biomass and by a more efficient nutrient cycling than annual cropping systems. The complementarity of resource use by associated tree and crop species is a major determinant of the potential efficiency of agroforestry systems in controlling nutrient fluxes. The resulting spatial variability, however, poses difficulties in assessing those nutrient fluxes. Nutrient output determinations have to consider the spatial distribution of water and nutrient input, the small-scale patterns of soil chemical and physical changes and the root distribution. Strategies for the assessment of relevant factors for the determination of the nutrient output are discussed in order to control unproductive nutrient losses and off-site effects of landuse by agroforestry.