

Subsoil nitrogen dynamics in Amazonian forest successionsLehmann, Johannes ⁽¹⁾, Trujillo, Lucerina ⁽²⁾ and Zech, Wolfgang ⁽¹⁾⁽¹⁾ University of Bayreuth, and Federal Research Institute of Forestry, Germany, ⁽²⁾ Embrapa, Manaus, Brazil

Under primary forest species of the central amazon, large amounts of mineral N were found in the subsoil up to 2m depth. In contrast, it was shown that mineral N contents in the subsoil were low in a secondary forest which has developed after forest destruction by natural or anthropogenic burning. It is not clear whether subsoil N is lost by leaching after forest destruction or if the secondary forest is able to use this subsoil N more efficiently than primary forest species. Furthermore, it is not known up to now, if and how fast the subsoil N pool may regenerate under secondary forest.

In this study, we were measuring mineral and total soil N to a depth of 8 m in secondary forest and under two primary forest species in three replicates. Additionally, soil microbial N and N mineralization were determined in the whole soil profile. Soil samples were obtained at the end of the rainy season and at the end of the dry season.

The results show low amounts of nitrate underneath the secondary forest to a depth of 2m, whereas the nitrate contents under the two primary forest sites were high at 1-2 m depth. Below 2 m depth, it was reversed and the mineral soil N was higher under the secondary forest than the primary forest. Therefore, even the primary forest is not able to intercept all mineralized nutrients at the topsoil, but recycles mineral N by an uptake from below 2 m depth. The secondary forest vegetation dominated by *Vismia* is not able to take up nutrients below 2 m depth. The N mineralization showed the same trend indicating that a large portion of the N is leached in its organic form. These preliminary results indicate that there is a large danger of N leaching also in primary forest and forest succession.