

## Increasing the fertility of arenosols in Nyírség in reforestations

Istvan Attila Kocsis, Zoltan Laszlo, Zsolt Sandor

The effects of climate change are increasing in Hungary, especially in areas with poor production conditions, such as the arenosols of Nyírség (NE Hungary). Carrying out reforestation here is a difficult task for professionals. The area is characterized by sand with poor humus content with an unfavorable water and nutrient supply. In the forest parts affected by reforestation, stump removal is done after the end-use logging. This is followed by depositing the stumps in tidy rows, which is most often done by unloading. In this phase of the work, the richest in organic matter layer (upper 5-10 cm) is also removed by moving the stumps and roots. This loss of organic matter is extremely unfavorable for the subsequent development of reforestation. Reducing weed competition in the initial period is key task for seedling growth and afforestation. To this end, deep plowing (70 cm) is carried out, loosening the compacted upper soil layers, and bringing the colloidal particles accumulated at deeper levels close to the surface while rotating the roots of the herbaceous vegetation. As a result, the amount of organic matter close to the soil surface is significantly reduced based on our research. Due to the loss of organic matter content of around 30%, the water and nutrient supply capacity of the soil deteriorates. According to the study, part of the organic matter content favorable for the development of the seedlings entered the stump rows, while the remainder appeared at a depth of 50 cm because of the deep rotation.

M. W. Rode (1995): Aboveground nutrient cycling and forest development on poor sandy soil. *Plant and Soil* volume 168, pp. 337–343

A.J. Dolman, E.J. Moors, J.A. (2002): The carbon uptake of a mid latitude pine forest growing on sandy soil. *Agricultural and Forest Meteorology* 111, pp. 157-170