

# THE EVALUATION OF METHANE OXIDATION LAYER AS GROWING MEDIA FOR PICEA ABIES AND LARIX DECIDUA

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## Abstract

During the closure project of Kudjape landfill, about 55 000 m<sup>3</sup> of previously disposed waste was excavated and sieved. The main objective was to extract fine fraction and use it for construction of methane degradation cover layer for the whole landfill. The European larch (*Larix decidua*) and Norway spruce (*Picea abies*) were planted onto the cover layer. It was noticed soon that some of the trees were not adapting to the environment and did not survive.

The aim of the research was to study whether methane oxidation layer is suitable as growing media for trees and which landfill characteristics have influence on their growth. The research included field works and data collection from previous studies. Spatial models were created to visualize various tree-growth related parameters and analyse the influence of anthropogenic cover material on tree growth and mortality.

The study revealed that after two years from planting 40 % of larches and 60 % of spruces had survived. The larches had mean annual increment of 6 cm and spruces 3.5 cm. As the result of the study it appeared that main soil characteristics that have an effect on tree growth are possibly landfill gas, moisture content and pH. The study revealed that in addition initial height of planted trees and the optimum planting time, it is important to take notice of the soil characteristics. According to the results, the methane degradation layer which is made from excavated fine fraction serves an acceptable growing media. Tree species, however, should be selected on different bases compared to regular forestation. A long-term research should be carried out, to study the methane oxidation layer as growing media for trees. Also, other tree species should be considered for research.

## Keywords

Landfill; Methane degradation layer; Vegetation; Tree mortality; Spatial model