



The influence of woody plants on the seepage of flood protection levees: Experiences from a test site

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The past flood events have once more drawn the attention to the stability and maintenance of flood protection levees. The attention has also been focused on the relationship between vegetation and the structural integrity of dikes. Current standards regard dense turf to be safest vegetation cover for dikes. Many guidelines ban woody vegetation from dikes and levees to provide structural integrity, visual inspection and unhindered flood-fight access. The refusal of woody plants is mainly based on the argument that root penetration of woody plants facilitates water movement along their path.

Within the frame of a research project carried out by the Institute of Soil Bioengineering and Landscape Construction (University of Natural Resources and Applied Life Sciences, Vienna), focusing on woody plants on levees, the effects of small to medium growing woody (shrubby) plants on the seepage are tested. Data are drawn from two natural-scaled research levees. The homogenous levees consist of a mineral silt-sand-gravel and have a fill height of 2.7 m and a slope inclination of 2:3. The tests investigate the impact of woody plants (living brush mattress - transversal) in comparison to compact turf (jute netting mulch seeding). Measured plant parameters, characterising the vegetation structures were shoot lengths, shoot diameters, and above ground biomass. Root growth is investigated in an extra plot area allowing excavation of the plants. Percolation is monitored using seepage monitoring pipes, soil moisture sensors and soil temperature probes, which were build into the embankment during construction.

The proposed contribution discusses the effects of woody plants (shrubs) on seepage of flood protection levees. Methodology of research and results after three initial seepage tests are presented.