

Ecological Engineering in Watershed Management

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Abstract

Ecological engineering measures allow using different natural and seminatural ecosystems to control nutrient losses from intensively used watersheds. The most effective means are buffer strips, buffer zones and constructed wetlands.

In southern Estonia a 31 m wide buffer zone of wet meadow and grey alder forest removed 51 % nitrogen and 80 % phosphorus, while in a 51 m buffer zone, also containing a grassland strip in addition to wet meadow and alder forest, 86 % N and 84 % P was retained. The outflow of total-N was 4.9 and outflow of total – P was 4.8 lower in well-buffered watershed in comparison to similar watershed with lower buffering ability.

Three constructed wetlands in southern Estonia were studied. The removal efficiency was 70-75% for BOD₅, 35-68% for total-N, and 73-82% for total-P. All results show that compared to other seasons the winter performance was not reduced.