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Evaluation of grassed buffer strips to minimize nutrient leaching from arable land

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A Field experiment to investigate nutrient leaching was established in 2011 on a clay loam. The field site is located about 15 km south of Uppsala in eastern Sweden (59°43'0" N; 17°41'21" E). The experimental field is about 0.42 ha (72 × 50 m), with a slope in the north-south direction of about 1%. At the lower part of the field, grassed buffer strips were established as follows: A) Control, which is managed in the same way as the main field; B) Grass buffer strips; C) As B, but the grass harvested once a year. Each treatment was 6 m by 6 m, and is replicated in four blocks. Each plot is drained with a central 6-m long drain pipe at 1 m depth. The rest of the field is not drained. Surface runoff and drainage water are led to an automated measuring and sampling station. The samples were analyzed for phosphorus, nitrogen and organic carbon. On average, the leaching of particulate phosphorus via drainage tiles was reduced by 17 % in the grass buffer strips but the effect of harvesting the grass on reducing leaching was very little. Nitrate leaching was reduced by 28 %. Surface runoff was scarce during the experimental years and its data was insufficient to draw conclusions.