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Spring barley yield and nitrogen recovery after application of
peat manure and pig slurry

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Abstract

The effectiveness of peat manure, manufactured of pig slurry and moderately humified Sphagnum peat (slurry:peat ca. 1:1.5 v/v), as nitrogen (N) source for spring barley was investigated in a four-year field experiment on a clay loam soil in south-western Finland. Pig slurry, NPK fertilizer and plain peat were used as references. Manures were incorporated before sowing or surface-applied after sowing in spring at an ammoniacal N rate of 54.106 kg.ha⁻¹ with or without supplementary NPK fertilizer (40 kg N.ha⁻¹). Soil moisture conditions were varied by different irrigation treatments. Peat manure produced 5.15% higher grain yields than pig slurry, with the largest difference after surface application. Incorporation was more important for slurry than for peat manure in increasing N uptake and yield. Soil moisture deficit in spring and early summer limited the availability of manure N. Part of the manure N that was not available in the early growing period was apparently taken up by the crop later. Consequently, N concentration tended to be higher with lower yields, and differences in the recovery of manure N were smaller than the differences in grain yield. Supplementation of manures with inorganic fertilizer N increased yield by 37%, on average, and improved the N recovery.

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