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Soil nitrate N as influenced by annually undersown cover crops in spring cereals

Keywords cereals, clovers, cover crops, grasses, intercropping, nitrate nitrogen,

Abstract

Cover crops can reduce leaching and erosion, introduce variability into crop rotations and fix nitrogen (N) for use by the mai
Finland, undersowing is a suitable method for establishing cover crops in cereals. The effect of annual undersowing on soil ni
studied at two sites. Red clover (Trifolium pratense L.), white clover (Trifolium repens L.), a mixture of red clover and meado
(Festuca pratensis Huds.), and westerwold ryegrass (Lolium multiflorum Lam. var. westerwoldicum) were undersown in spring cerea
successive seasons, and a pure stand of cereal was grown in two years after that. In all years, the soil nitrate N was measure
autumn, and in addition in different times of the season in last four years. The effect of undersowing on soil NO3-N content wa
low, but in one season when conditions favoured high N leaching, westerwold ryegrass decreased soil NO3-N. The negligible incre
leaching risk in connection with undersowing clovers, associated with late autumn ploughing, supports the use of clovers to in
cereal grain yield. The highest levels of soil NO3-N were recorded at sowing in spring irrespective of whether a crop was unde
NO3-N contents were higher in sandy soil than in silt. Undersowing can be done annually in cereal cultivation either to fix or
cumulative effects on soil nitrate N were associated with undersowing after six years.

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[Full text] (PDF 122 kt)

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