

SOILS CHARACTERISTICS AFFECTING BIOLOGICAL N FIXATION OF ORGANICALLY GROWN RED CLOVER IN FINLAND

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Red clover (*Trifolium pratense*) is the most common forage legume in Finnish grasslands. It is cultivated as a mixture with grasses and cut twice during growing season. Amount of biologically fixed nitrogen is a key factor for N-balances in organic farming. Only a little research has been done on biological nitrogen fixation level in Finland

In this study we will study the variation of sward yield, its clover content and biological nitrogen fixation (BNF) of red clover. The red clover (*Trifolium pratense*) / timothy (*Phleum pratense*) / tall fescue (*Festuca arundinaceae*.) sward was established in 2003 with barley as nurse crop. A two hectares field under organic farming is situated in East-Finland (60°53'N 27°53'E). The variation of chemical (C, N, P, K, Mg, Ca, S, B, Co, Mo, Ni, Cu, Fe, Mn, Zn, pH), physical (earth worm burrows, root channels, macro pores, bulk density, total porosity) and microbiological characteristics (organic matter quality (POM), microbial biomass (C and N), soil respiration, netmineralization of N) of soil is examined as well as their influence on BNF and growth of sward. BNF will be measured with ¹⁵N dilution technique and N difference technique.

Nutrient contents varied a lot inside the field, which soil type is considered as moraine containing silt, sand and clay. According to the Finnish soil classification, the status of these nutrients varied from 'poor' to 'good'. The dry matter yield of first cut varied from 2 530 to 10 870 kg ha⁻¹ and second cut from 870 to 5 530 kg ha⁻¹ in dry matter in 2004. The clover content varied 4-75 % and 1-73 % in dry matter respectively.

Very preliminary results show slight correlation between sward yield and some soil characteristics, as pH, potassium, manganese, cobalt, copper, molybdenum and iron, show. Further studies will be carried out in becoming two years.