

Nordic Association of Agricultural Scientists —



NJF Seminar 422

**Fostering healthy food systems
through organic agriculture -
Focus on Nordic-Baltic Region
- International Scientific Conference**

Tartu, Estonia, 25-27 August 2009

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PROGRAMME

ABSTRACTS

LIST OF PARTICIPANTS

Organized by
Estonian University of Life Sciences
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Estonian Organic Farming Foundation
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Oral presentations: ORGANIC FARMING AND ENVIRONMENT

Productivity and N-leaching in organic dairy grass-arable crop rotations

J. Eriksen, M. Askegaard and K. Søgaard

Aarhus University, Department of Agroecology and Environment, Tjele, Denmark. Tel.: +45 89991870, fax: +45 89991719; e-mail: Jorgen.Eriksen@agrsci.dk

Increasing size of organic dairy farms makes grazing of all cropped land inexpedient due to long distance to the milking facilities. We investigated nutrient dynamics and feed production in two dairy crop rotations with differences in proportion of grazing and cutting. One six year crop rotation represents close to the farm buildings (barley undersown with grass-clover - 4 years of grass-clover - spring barley/catch crop) and another represents further away (barley undersown with grass-clover, 2 years of grass-clover -barley/catch crop - maize/catch crop - lupin/catch crop). In each of the crop rotations was made five treatments concerning grazing/cutting strategy and manure application. Results show that herbage production was high in year 1–4 of grass-clover. Nitrate leaching in the crop rotations were highest in grazed and manured 2–4 years old grasslands, but also following maize and lupin considerable losses occurred despite the presence of catch crops. Following grassland cultivation, a barley silage crop undersown with Italian ryegrass reduced leaching to a minimum.

Nitrogen leaching in organic and conventional farming in a 8-year field study

R. Lemola, M. Esala and E. Turtola

MTT Agrifood Research Finland, FIN-31600 Jokioinen. Tel.: +358 3 4188 2428, fax: +358 3 4188 2437; e-mail: riitta.lemola@mtt.fi

Nitrogen (N) leaching from farming systems with different N inputs was studied on a fine sand soil in Toholampi, Central Ostrobothnia. The study plots (16) were established in 2001 with 4 replicates of each crop rotation: A) organic cereal + cattle manure (0,5 cows ha⁻¹ a⁻¹), B) organic milk + manure (0,9 cows ha⁻¹ a⁻¹), C) conventional cereal + chemical fertilizers, D) conventional milk + manure (1,1 cows ha⁻¹ a⁻¹) + chemical fertilizers. C and D were fertilized according to the Finnish Agri-Environment Program. The crop rotations were: A) barley, ley, rye, oats, B) barley, ley, ley, oats+fodder vetch C) barley, barley, rye, oats, D) barley, ley, ley, barley silage. In A and B ley was a mixture of timothy and red clover, while in D clover was replaced by meadow fescue. Quantity of surface runoff and drainage flow was measured separately from each plot and N was analysed from the flow-weight water samples. Crop yield, N uptake and mineral N in soil profile were measured as well, and the results evaluated in terms of different N inputs and N balances.