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# *IX Finnish Symposium on Plant Science, May 17–19, 2010, Joensuu, Finland*

*Abstracts*

Publications of the University of Eastern Finland
*Reports and Studies in Forestry and Natural Sciences*

UNIVERSITY OF
EASTERN FINLAND

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# Effect of all organic or field organic feeding on milk omega-3 and omega-6 milk fatty acid concentration

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Organic farming systems promote to forage rich legume containing diets, which are known to affect milk fatty acid (FA) composition. At Finnish organic farms bovine winter feeding is based on grass-clover silage and supplemented with some concentrates. Red clover*(Trifolium pratense)* is used as a primary legume owing to its high yield potential and winter hardiness. The aim of this farm survey was to study the impact of current Finnish winter feeding practices of all organic and only field organic farms on milk FA composition. In this paper omega-3 and omega-6 FA results are given. The study is a part of Nordic Core Organic PhytoMilk project, in Finland founded by the MMM.

The survey was conducted in Eastern Finland with 45 organic farms in the end of January 2008. Of all farms 23 practiced organic field farming and 22 were certified organic milk farms. During the farm visit diets were documented, basic feed samples taken and bulk-tank milk samples collected and frozen prior to FA analysis at Aarhus University (PhytoMilk-project partner). Effect of farm type on concentrate proportion, estimated silage clover proportion and on milk FA composition was studied using the independent sample t-test.

All organic farms had lower proportion of concentrates in their diets than field organic farms (0.29 vs 0.43, $P<0.001$), but the estimated clover proportion of silage was similar (0.35). The average FA concentration of milk was also similar in both farm groups (mean 3.4 g/100 g DM). Predominating omega-3 FA and omega-6 FA were C18:3 n-3 (ALA) and C18:2 n-6 (LA), respectively. All organic farms resulted to similar proportion of total omega-3 FA, except higher proportion of C20:5 n-3 (EPA) ($P<0.05$), than field organic farms, but to lower proportion of total omega-6 FA ($P<0.05$). Consequently all organic farms resulted to lower relation of omega-6/ omega-3 compared to field organic farms (2.7 vs 3.3, $P<0.05$).

In conclusions, certified organic milk from all organic farms had favorable omega FA composition than milk from farms practicing only organic field farming and giving more concentrates. Relatively high milk ALA proportions suggested positive effect of red clover in both farm groups.