

Organic milk as a sustainability strategy for Finnish milk system

Dairy farming in Finland is historically a mode of family farming, although modes like dairy farm companies and collaborative farms are increasing. Organic farmers are relatively young, well educated and their farms are modern and in the average, rather large. The use of automated milking systems (AMS) allows larger cattle sizes and makes work easier compared with previous methods. The organic cows' feed is mainly grown on the farm, which makes organic milk production truly local business. The feeding is based on clover-grass silage, barley, oats, pea and rape-seed, the latter being often commercial. The organic cows produce about 8 000 kg milk yearly featuring a fairly reasonable level of intensity. The relatively small cattle sizes support disease control, and salmonella prevalence is extremely low.

Quality of Finnish milk

According to food chemical analyses, the Finnish raw milk is practically as clean as milk can be. The concentration of foreign substances to milk like antibiotics, hormones, veterinary drug residues, industrial chemicals, pesticides or heavy metals ranges from extremely low to non-analyzable, and quality is continuously controlled by dairy laboratories. Dairy processes like pasteurization make milk safe in terms of pathogens, and homogenization disperses milk fat into the liquid. Organic milk is pasteurized but not homogenized.

Milk in public nutrition

Fresh milk and milk products are a central part of Finnish nutrition in that they provide in the average 17 % of the energy, 28 % of protein, 34 % of fat and 25 % of vitamin D and 63 % of calcium intake. The milk protein is in easily digestible form and milk also provides water for metabolism. Milk fat has been avoided due to the relation to cardiovascular diseases and low-fat products have increased in number. As healthy, relatively economical and ubiquitous products on the market milk commodities have a prominent position in Finnish food culture.



Economy and market development

In Finland, approximately 2 300 million litres of raw milk is produced yearly and the value on the market equals roughly 1 700 million euros. Of this milk flow, circa 30 million litres or 1,3 % is organic. Organic milk is processed in dairies currently into different products, like fresh non-fat milk, fresh low-fat milk, buttermilk, yoghurt, cream, edam cheese and a typical Finnish sour cream product. Organic milk is more expensive than conventional milk due to the scale of economy for dairies, which is so far limited, and the premium price (9 c per litre of raw milk) paid to the contract dairy farmers. However, it is in the interest of the dairy company to secure the availability of organic milk, which also could be used for additional product lines in case of increased demand. Additionally, the price of up market high-tech products like non-lactose milk or functional milk products is comparable or higher than that of fresh organic milk.

Environment

Organic farms do not use synthetic fertilizers nor pesticides, but rely on biological nitrogen fixation, nutrient cycling, crop rotation and other applied crop protection methods. However, nutrient leakage takes place on organic farms as well to watercourses, and because of the more extensive land use the Green House Gas (GHG) emissions may be roughly equal or somewhat higher in organic farming than in conventional farming (1). However, organic farming supports high level biodiversity and the conditions of cows allow for rather relaxed and species specific behaviour.



R&D of organic milk

The domestic feed for cows can be developed by new plants, which are being tested to be used in milk production. Due relative poverty of selenium in Finnish soils, the feed for organic cows contains rather scarcely selenium, leading to low selenium content in organic milk. The quality of organic milk is researched at the University of Joensuu (2), where addition of selenium rich yeast to feed has been found to increase selenium level to that of conventional milk. Additionally, the fatty acid composition of organic milk is under lively investigation. The new results, not yet published, evidence about nutritionally advantageous composition of organic milk in terms of fatty acids due to the clover rich feed.

Organic milk in catering

Finnish organic milk pasteurized in dairies does not contain vitamin D like in Sweden and the USA. If the demand for organic milk would increase considerably in catering, it would enable the development of catering size packaging (so called Novo-boxes) and along this process vitamin D could be added as well. The organic milk sold in retail in milk cartoons could still represent original organic milk without this fortification(3,4).

Sustainability status

Public nutrition, Finnish food culture, bioregional and ecological features as well as market value, research and development, organized and fair production modes support the characterization of organic milk as sustainable choice. Organic milk of today can be understood as an "intermediate mediating strategy" (5) towards sustainability realized through the market and along the milk supply chain.

