

## **Sustaining Animal Health and Food Safety in Organic Farming (SAFO) EU Concerted Action QRLT – 2001 – 02541**

### **QUALITY & SAFETY OF ORGANIC LIVESTOCK PRODUCTS**

#### **SUMMARY OF PROCEEDINGS OF FOURTH SAFO WORKSHOP 17-19 March 2005, at FiBL, Frick, Switzerland**

##### **Overall aim and specific objectives of SAFO**

The objective of the EU-funded SAFO network project is to improve food safety and animal health in organic livestock production systems in existing and pre-accession countries of the European Union. This happens through exchange and active communication of research results and conclusions between researchers, policy makers, farmers and the wider organic stakeholder community, including consumers.

##### **Overview of fourth SAFO Workshop**

Ninety-eight delegates from 19 countries attended the 4<sup>th</sup> SAFO Workshop. Previous Workshops had focused on the production system but the plenary papers at this meeting focused specifically on food quality and safety of organic livestock products.

The Workshop programme contained five formal plenary sessions including poster presentations, working group discussions and a field visits to a range of organic livestock farms. The plenary sessions had a total of 21 presentations (which can be viewed on the SAFO website) and focused on the following aspects of quality and safety of organic livestock products:

- Plenary 1. Perspectives of different stakeholders
- Plenary 2. Research on quality aspects of organic livestock products
- Plenary 3. Impact of veterinary medicinal inputs on product quality and safety
- Plenary 4. Research on food safety aspects of organic livestock products
- Plenary 5. Future development of food safety and quality in organic livestock products

##### **Perspectives of different stakeholders**

Representatives from consumer, retailer and producer organisations presented papers in this session. Michael Walkenhorst of FiBL opened the session with a paper on what we mean by food quality, highlighting the difference between 'intrinsic' or 'product' quality, and 'extrinsic' or 'process' quality. This concept has been one of the key areas of discussion at SAFO Workshops. Michael recommended that the organic movement must a) educate consumers about process quality in relation to organic livestock products, and b) try to define and ensure levels of organic product quality which are measurably better than conventional products (e.g. somatic cell counts in milk).

Jacqueline Bachmann of the Swiss Foundation for Consumer Protection reminded delegates that the organic consumer has very high demands in terms of safety, naturalness and welfare friendliness, but also fair and competitive prices. She expected prices for organic produce to continue to fall, although premium prices for organic produce are justified provided the high expectations on quality are fulfilled and information on the added value of organic food is clearly communicated to consumers.

The need for organic food prices to fall was also emphasised by Felix Wehrle of the Swiss Coop, who presented the retailers view. However, there was also scope to increase sales by increasing the product range of organic foods and by extending the range of regional products. He reported survey results showing that 46% of Swiss consumers purchased organic food for health reasons, 45% for animal welfare reasons and 43% because of lower pesticide residues.

Regina Fuhrer presented the producers' expectations of quality. She is chairwoman of Bio Suisse, the umbrella federation of 35 organic farming organisations in Switzerland, which has 6500 farmer members (11% of all Swiss farmers). In this, Switzerland has a major advantage: there is one

set of standards and one organic label or logo – the Bud label, which is widely recognised by consumers. Regina Fuhrer emphasised the efforts which BioSuisse had made to improve quality and maintain credibility, in terms of continuous development of the livestock and food processing standards (particularly on animal welfare and product ingredients), quality assurance procedures, design of the Bud label, and on the education of consumers through advertising.

There were also three poster papers associated with this session; two posters on organic goat and sheep farming in Hungary, and a poster on the limitations on organic livestock production in Turkey.

### **Research on quality aspects of organic livestock products**

Kathryn Ellis presented results from a comparison of milk composition from organic (O) and conventional (C) dairy farms in the UK. There were no significant differences between O and C in pollutant residues (e.g. PCB, Dioxin, etc). The mycotoxin ochratoxin A was not found in any of these milk samples. The content of mono-unsaturated fatty acids was higher in conventional milk, whilst poly-unsaturated fatty acids (PUFA) were higher in organic milk. There was a strong seasonal influence, with both of these types of fatty acids increasing during the summer grazing period. There was no difference in CLA content between O and C, but O had a much higher content of the omega-3 linoleic acid. The seasonal increase in PUFA in the summer grazing season compared to the winter silage- or hay-feeding period was also confirmed by Sloniewski *et al* from Poland. They found that in the grazing period the CLA content was twice as high and the linoleic acid content three times as high, compared to the winter period. These authors conclude, therefore, that the milk produced during the grazing season is biologically more valuable than milk produced during the winter feeding season.

Albert Sundrum highlighted the problem of achieving good carcass grades with organic pigs because restrictions in organic dietary standards make it difficult to supply enough methionine and lysine. He suggested that organic producers therefore need to focus on high sensorial quality. This was closely related to high levels of intra-muscular fat (IMF) in the meat. He presented results from feeding trials which showed that diets based on organic cereals and grain legumes (beans, peas, lupins) could produce meat with a high intra-muscular fat (IMF) content and good sensorial quality, although the optimum dietary strategy should also take into account the breed of pig.

Gyorgyi Takacs discussed the important role of EU Regulation 2092/91 and EU Regulation 2082/92 (on specific traditional products), in relation to maintaining the production and availability of traditional high quality livestock products, based on traditional breeds. She illustrated this using examples from Hungary of Hungarian Grey Cattle (dried beef, salami), Hungarian Mangalica Pig (smoked pork, paprika sausages), traditional Hungarian poultry species and breeds, and the Ratzka, Tzigai and merino breeds of sheep (meat and cheese). This paper was also supported by a poster on the use of native breeds for organic production in Hungary

Gabriela Wyss from FiBL described the Organic HACCP project, in which a systematic analysis was carried out in selected organic food chains (eggs, milk/yoghurt, wheat bread, cabbage, tomatoes, apples and wine). Relevant critical control points were assessed in relation to seven quality and safety criteria (microbial toxins and abiotic contaminants, pathogens, natural plant toxicants, freshness and taste, nutrient content and food additives, fraud, social and ethical aspects). Data were collected by questionnaire in regions of Europe which are typical for the selected commodity. The database for each commodity provides information such as the quantitative risk of problems occurring and how each step in the process is controlled. A poster in this session also described a HACCP approach for biological protection in dairy farms in Slovakia.

There were two other posters associated with this session, on organic production of East Balkan pigs (Bulgaria) and breeding strategies for organic dairy cattle (Netherlands).

### **Impact of veterinary medicinal inputs on product quality and safety**

Alistair Boxall from the UK introduced the issue of the environmental impact of veterinary medicines. He described studies which had examined the fate of antibiotics and avermectin parasiticides, from conventional pig and cattle enterprises, in soil, water, dung and sediment. Generally speaking the observed concentrations of medicines in soils and water were much lower than the effect concentrations (lethal doses). The main issue was the high concentration of parasiticides in dung and sediment. The observed concentrations of avermectins in dung were much higher than the effect concentrations for dung organisms. These findings provide support for the view that avermectin use should be discouraged in organic farming systems.

Eve Pleydell (UK) reviewed the occurrence of antibiotic (AB) resistant bacteria on organic and conventional farms. She showed evidence from USA, UK and Denmark that despite the fact that routine AB use is not permitted in organic farming, AB resistant bacteria, including bacteria with multiple resistances, were present on organic dairy, pig and broiler farms. However the data suggests that lower proportions of the bacterial populations on organic farms may be AB resistant.

EU Regulation 2092/91 requires a doubling of the withdrawal period for allopathic veterinary medicines. Giovanni Calaresu *et al* from Italy reported on a study with milking ewes treated with oxytetracycline AB. They found huge variability between ewes in the elimination rate of the AB from the milk. Fifteen per cent of the milk samples had AB residues above the MRL and so clearly a doubling of the withdrawal period was not sufficient to ensure zero residue in milk.

Results from a survey of the medical treatments used on organic dairy farms in the Netherlands were presented by Aize Kijlstra *et al*. Sixty per cent of medicines used by these farmers were conventional medicines, including antibiotics for treatment of clinical mastitis and foot disease (the two most common problems) and antiparasiticides for gastrointestinal and lung disease. Two poster presentations also dealt with medicinal treatments for dairy cows; the effects of alternative treatments in high somatic cell count quarters on cell counts and pathogens (Netherlands) and the use of Orbeseal teat sealant as a preventative treatment (Switzerland).

The use of Orbeseal was also the subject of a plenary paper by Christophe Notz. Orbeseal is an internal teat sealant which is milked out after calving. Whilst it has been shown to reduce new intramammary infection after calving, the product is based on a soft heavy metal, bismuth sulphate. This could, therefore, have potential side effects in the calf if it ingests the Orbeseal after calving, in the milking system surfaces if it enters the system accidentally, and in the environment if the milked teat seal ends up in the manure. Further studies on these effects are necessary.

Further posters presented in association with this session included posters on the control of gastrointestinal parasites in sheep; biological control and WORMCOPS project results (Denmark) and the use of clinoptilolite (Greece).

### **Research on food safety aspects of organic livestock products**

In order to ensure hygienically safe dairy products, raw milk is normally heat treated by either pasteurisation (72°C for 15 seconds), ultra-heat treatment (UHT) (135 to 150°C for a few seconds) or by extended shelf life treatment (ESL) (direct high heating to 125 to 130°C or microfiltration). Brita Rehberger of the Swiss Federal Research Station for Animal Production and Dairy Products discussed the heat load indicators associated with these processes (e.g. enzyme content, denaturation of whey proteins, formation of reaction products). Bio Suisse has a requirement for minimal processing of dairy products carrying the Bud label. The UHT process is prohibited by Bio Suisse but direct steam injection UHT is permitted since it produces a heat load indicator profile similar to pasteurisation. Bio Suisse also prohibits the use of adjuvants and additives in cheese making but despite this, hygienic safety is assured.

Conventional outdoor pigs in Denmark are known to carry higher *Salmonella* infections than indoor pigs. Annette Nyegard Jensen reported on work to determine potential sources of *Salmonella* infection in organic pigs. No *Salmonella* was found in associated wildlife but it was found that *Salmonella* could persist in the environment for up to 7 weeks after removal of pigs, thus providing a reservoir for infection of new pigs introduced to the site .

Josie O'Brien *et al* (UK) are investigating the factors affecting infection of organic broilers by *Campylobacter*, including potential transfer from associated wildlife. Preliminary results suggest that the source of infection was more likely to be equipment such as carrier crates, boots, other livestock, etc than from wildlife.

Anna-Maija Virtala *et al* reported a study of 20 organic layer flocks in Finland in which health parameters (occurrence of *Campylobacter*, *Salmonella*, parasite infection, cannibalism) were recorded, along with descriptive farm management characteristics. Results indicate that *Salmonella* is rare and that *Campylobacter* in organic eggs poses no public health risk, but that parasites are common. However, the results do need to be interpreted in the context of the situation in Finland where outdoor ranging of birds is severely restricted during the winter, and biosecurity has a very high priority nationally.

The Organic HACCP project (see above) assessed the risk from mycotoxins in organic food. Gabriela Wyss (FiBL) reported on project findings in milk, eggs and wheat bread. A major finding was the lack of awareness and monitoring by farmers of possible mycotoxin contamination of home-produced and purchased feeds and forage. In order to address this lack of awareness, advisory leaflets have been produced as part of the Organic HACCP project. These risks were illustrated in a poster from Italy describing an incident in which both conventional and organic milk were found to contain high levels of mycotoxin, as a result of feed contamination. Gabriela Wyss also reported a number of comparative studies which suggested that there were no differences in mycotoxin contamination between organic and conventional products.

### **Future development of food safety and quality in organic livestock products**

Farmers and food processors need to be aware that emphasis on ensuring food safety is increasing. Gabrielle Lancely (UK) discussed the practical implications of new EU Regulations. Regulation 178/2002 was implemented in January 2005. It places the emphasis for food safety on process monitoring rather than checking the end product. It will be the responsibility of operators, including farmers, to record the movement of food and to ensure that unsafe food is withdrawn from public consumption. Two new Regulations (852/2002 and 853/2004) will expand hygiene requirements and the need for HACCP. In the UK much of these procedures are already enforced by supermarket auditing procedures. However these new Regulations may have negative impacts on the organic sector. Many organic processors are smaller and less knowledgeable than conventional counterparts, perhaps with less adequate equipment. Food safety problems for organic food may increase e.g. because no preservatives are permitted in organic sausages or because a reduction will be required in nitrite use for preservation of bacon.

Hugo Alroe (Denmark) addressed the challenge of maintaining animal health, welfare and food safety in relation to the organic principles and standards. He informed delegates about two current initiatives: a) the EU Organic Revision project, the aim of which was to provide recommendations for development of Regulation 2092/91, and b) the consultation on re-defining the IFOAM principles of organic farming. The objectives of the Organic Revision project are to identify the basic ethical values and value differences of organic farming, establishing a database of organic standards in different European countries, and then make specific recommendations e.g. on feed and seed derogations. The current draft of the new IFOAM principles contains four principles: the Principle of Health, the Ecological Principle, the Principle of Fairness, and the Principle of Care. Workshop delegates questioned whether animal health and welfare were sufficiently covered by these four principles.

### **Working Group sessions on Organic Standards Development and Key SAFO Messages**

A further two discussions sessions were held. The first focused on standards development, distilling further the SAFO participants' views regarding the implementation in each country of Regulation 2092/91, specifically in relation to its requirements on animal health and welfare. The second Working Group discussion also refined participants' views about what are the key messages

coming from the SAFO network. These discussions will be reported in separate papers in the proceedings.

The full proceedings of the 4<sup>th</sup> SAFO Workshop will be made available on the SAFO website: [www.safonetwork.org](http://www.safonetwork.org).

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