



Milk Production

Control of Quality and Safety in Organic Production Chains

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This leaflet provides a practical overview for producers and others involved in milk production and dairy, of what can be done at these steps to improve quality and safety of organically produced milk, in addition to certification and general food safety requirements. Other leaflets cover production of other commodities and separate leaflets aim at consumers and retailers.

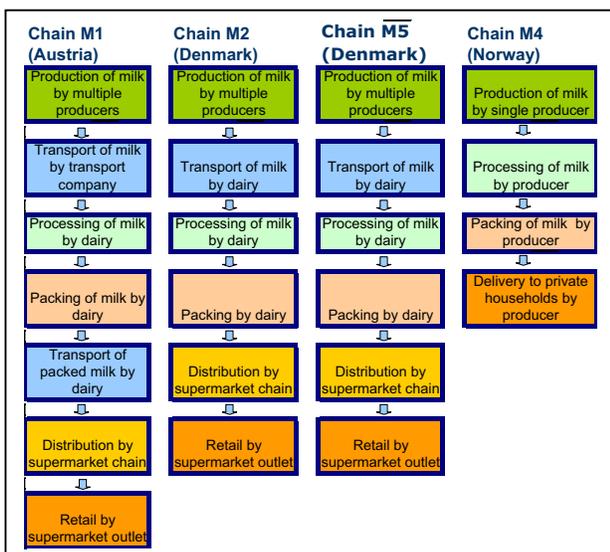


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The Organic HACCP Project leaflets

This is no. 7 of a series of 14 leaflets comprising information on how control of quality and safety can be further improved in organic supply chains across Europe. The Organic HACCP project has reviewed studies of consumer concerns and preferences in relation to organic production systems and collected information about typical production chains for 7 commodities in regions across Europe. For each of the criteria listed below, the information was analysed to identify Critical Control Points (CCPs), defined as the steps in supply chains where the qualities of the final product can be controlled most efficiently. CCPs were identified using methods developed for Hazard Analysis by Critical Control Points (HACCP), a standard procedure to prevent food safety risks. The new aspect is thus to improve how consumer concerns are addressed, through the use of the CCP concept for a wide range of criteria, not only safety: 1. Microbial toxins and abiotic contaminants; 2. Potential pathogens; 3. Natural plant toxicants; 4. Freshness and taste; 5. Nutrient content and food additives; 6. Fraud; 7. Social and ethical aspects.

Overview of the chains examined for milk



The diagram shows the analysed organic supply chains for milk throughout Europe. On the project's homepage (www.organichaccp.org) they are shown in more detail and each of the CCPs are shown and described.

Feed quality and composition

Important issues to control at this step

Some fungal diseases, such as *Fusarium* and *Penicillium* can produce mycotoxins, which can damage animal or human health, if they occur in grain, hay or other feed.

Feedstuffs can contain the toxic industrial pollutants dioxins. Feed composition, in particular content of grass and herbs as roughage, affects taste and nutrient content of the milk. Rodent infestation can be a source of pathogens.

Recommendations

- Ensure that the feed storage facilities are kept clean, tidy and rodent free, ensure good control of humidity and temperature, even during adverse weather conditions.
- Check feed at harvest and each subsequent week for appearance (smell and colour). For dry materials (grain, hay), measure humidity and temperature and plot the values on a chart. Act immediately if the values become too high, before any sign of mould appear. Discard feed that smells or looks mouldy.
- Check with your feed supplier for results of analysis on dioxins and mycotoxins, and consider testing for dioxins in own produced feed if produced near an industrial site.
- Use as much grass as possible, fresh or as silage, preferably with a high content of aromatic herbs.

Management of cows

Important issues to control at this step

Dioxins can come from contaminated soil and grass in pastures. Dioxins accumulate in the animal's body over time.

Specific problems for organic production

Some consumers find it unethical that male calves are killed at birth or calves fed conventional milk, e.g. from cows subjected to extended withholding periods after medication.

The substantial income loss after antibiotic treatment makes the decision to intervene difficult in case of early, ambiguous symptoms, this can be a risk to animal welfare.

Recommendations

- Consider if a pasture is on or near former industrial sites or incinerators and if so, test for dioxin and other persistent chemicals in the soil, or in milk fat from old cows.
- Support efforts to provide information to consumers, e.g. a website or a farm visit scheme, where the agronomic and economic factors are explained (e.g. the low quality and price of beef from milking breeds) rather than hidden.
- Use a defined strategy of best practice for disease prevention, adapted to the climatic conditions and breed.
- Give higher priority to udder health, longevity and lifetime production than to annual yield, when devising production plans and selecting mothers for replacement stock.

Milk collection, transport and processing at dairy

Important issues to control at this step

Consumers find it important to know the freshness of the milk they buy.

Specific problems for organic production

Often a good organically certified dairy is not available in the local area. Some larger dairies are parallel operations, certified to handle both organic and conventional products. This gives more options for the farmers, but introduces a risk of mixing with conventional milk or accidental use of non-allowed agents or methods.

Recommendations

- Collect milk daily, or keep the newest milk separate from that from the previous day, at the farm and in the truck.
- Use only the freshest milk for fresh consumption, older milk for yoghurt, cheese etc.
- If technically possible, keep milk from different farmers separate.
- In parallel operations, as far as possible use dedicated trucks and other equipment for organic material, and mark them clearly, e.g. by painting in different colours.

Packaging and transport to retail

Important issues to control at this step

For the consumer, the packaging is often the primary source of information about the entire production chain. Indications of willingness to take responsibility for the product are important determinants for trust. A well-known brand is trusted more than a completely anonymous product, while disclosure of the identity of the producer is often seen as even stronger proof of commitment.

Specific problems for organic production

Homogenisation is to pass milk through a filter at high pressure to break its fat globules into small pieces, which remain suspended in the milk rather than collecting as cream on the surface. It changes the appearance and taste of milk, although opinions differ on if it is an improvement. The EU food labelling rules do not specify information about homogenisation, so in some countries this is not compulsory. Consumers of organic products are particularly concerned with issues such as transparency and honesty in food production, and they often support local production.

Recommendations

- Include date of milking or specify that the milk was processed and packaged on the day of milking, or that it took no more than x days from milking to packaging.
- Identify the producer on each package by name (of enterprise or person), not only by an anonymous number. Include an address or phone number (defining area of origin, and perhaps a picture or a webpage with additional information). If milk from several farms is mixed, then the dairy should be the transparently identified unit.
- Pictures and other descriptions on the package or other promotion material (e.g. advertisements) should illustrate how the actual production facilities look, not a fairy tale

landscape. A webpage can include illustrations from both the dairy and examples of typical farms.

- Define clearly which processes have been applied to the milk, including homogenisation, centrifugation, reconstitution, pasteurisation etc., even if this information is not formally required. Explain complex terms.

General Recommendations

Exchange information about your quality control and their quality measurements with the companies and persons in charge of the other parts of the chain. Formal or informal collaboration agreements can ensure that quality and safety is controlled at every step of the supply chain, and that the costs of this are shared fairly among the participants.

Continuation in the QLIF project

The work of Organic HACCP identified several areas where more research is needed to improve the control of quality and safety of organic products. In 2004 the project QualityLowInputFood (QLIF, [www.qlif.org](http://www qlif.org)) was started to broaden the understanding of quality of organic food. QLIF is an Integrated Project in the European Commission's 6th Framework Programme with 31 participants in 15 countries. QLIF is a 5-year project aiming to provide research and development on quality, safety and efficiency of organic and other low-input farming methods in Europe. The following topics relevant for quality and safety of milk production will be investigated in QLIF:

- Studies of relations between different aspects of food quality, consumer perceptions and buying behaviour (Consumer expectations and attitudes, 2004-2007).
- Effect of dairy management practices on production efficiency, milk quality and herd health status and reproductive efficiency (Effects of production methods, 2004-2008).
- Development of improved preventive management strategies for mastitis, and study of effects of feeding regimes on enteric pathogen transfer risk, sensory and nutritional quality of milk (Livestock production systems, 2004-2008).
- Assessment of processing technologies that may improve the nutritional composition of dairy products (Processing strategies, 2004-2008).
- Development of HACCP procedures for control of quality and safety in organic supply chains and training courses for advisors (Transport, trading and retailing, 2006-2008).

Editorial Notes

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Bibliographical Information

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A PDF version can be downloaded free of charge from the project internet site at www.organichaccp.org or from www.orgprints.org/view/projects/eu-organic-haccp.html. Printed versions can be ordered from the FiBL Shop at www.shop.fibl.org.

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About Organic HACCP

The main objectives of this Concerted Action are to assess current procedures for production management and control in organic production chains, with particular reference to the characteristics valued by consumers, and from this to formulate and disseminate recommendations for improvements.

The 2-year project started in February 2003. The results of the project, including a database of Critical Control Points in the analysed chains, are available on the project website www.organichaccp.org.

The Project Partners

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