The global market of organic animal products – chances and risks

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1 Abstract

Organic farming has a solid reputation for a sustainable food production chain. The global market has swelled to more than 40 billion US-Dollars. Main consumption is in Europe and the USA, but organic production is practiced in about 135 countries of the world. The global market for organic livestock products is less developed than for crop products. Sanitary trade restrictions of importing countries, lack of organic infrastructure (processing facilities, traceability, inspection and certification, training and education, public support) and comparative cost disadvantages (mass production versus premium production) and production efficiency. It is difficult to meet the requirements of the international market for organic meat, milk and egg products and these areas will continue to produce small quantities as niche production. Nevertheless, some livestock products, like those from aquaculture, can become relevant for countries like Indonesia.

2 Introduction

In the last decade, organic farming left its niche and is spreading worldwide. Organic farming is a world-wide harmonized concept (IFOAM standards 2005, FAO/WHO *codex alimentarius* 2008) to ensure the environmentally sound and socially fair production and consumption of agricultural products. Organic production is practiced in more than 135 countries (of a total of 197 countries) on 30 million hectares of land (0.7 % of total agricultural land use) by more than 718,000 farms (of a total of 700 million farms) (Table 1).

Table 1. Organic farming in the world (2006)

	No of countries with organic farming (%)	Certified Organic Farmland in ha (% total farm land)	Certified Organic Farms No.	Consumption US-Dollar
Africa	30 (55%)	417,059 (0.05%)	175,266	0.1 billion
Asia	30 (61%)	3,090,924 (0,17%)	97,020	0.8 billion
Australia/Oceania	8 (61%)	12,380,796 (2.70%)	7,594	0.3 billion
Europe	42 (93%)	7,389,085 (1.62%)	203,523	20.0 billion
Latin America	23 (70%)	4,915,643 (0.68%)	223,277	0.1 billion
North America	2 (100%)	2,224,755 (0.57%)	12,064	17.3 billion
Total	135 (69%)	30,418,261 (0.65%)	718,744	38.6 billion

Source: Willer et al. 2008

The products are mainly consumed in developed western countries – the market has a value of about 40 billion US-$ and is growing by more than 15 % annually (Organic Monitor 2008). The global organic market is attractive for developing countries to sell premium products to the developed countries.

The EU and the US are the biggest markets (97 % of the world market) with an annual growth of 10 to 20 %. Tropical fruits, vegetables, coffee, tea, cotton, etc., are important products being exported from tropical countries like Indonesia to these importing countries.

The quantities of organic livestock products on the national and international markets are not known. The monetary share can be estimated be about 25 %. Milk, beef and eggs are the main animal products. Pork, lamb and poultry meat have only a small share on the main organic markets. Honey and fish, prawns, shrimps and molluscs can be considered as livestock products as well. A total of 20 Mio. ha permanent grassland is certified organic and used by ruminants. A share of the arable crops is used as well for livestock (poultry, pigs, milk production). About 4.222 ha ponds are used for aquaculture. Only aquaculture can be seen as important livestock export products from Asia (Taiwan, Thailand etc.). Other livestock products (beef, eggs, poultry meat, livestock non-food products like wool, feather and leather) are exported as well but at a very low level. High international sanitary and product quality requirements, particularly for organic products, are difficult to fulfil in many countries (comparative disadvantages). Low quantities of livestock products face high transaction costs (particularly if permanent cooling is required). Australia (beef), New Zealand (lamb, milk), Argentina (beef, lamb) can be seen as main organic livestock export countries. They have the relevant infrastructure and the standards demanded. USA and Japan – and increasingly Arabian countries – are the main importing countries, while the EU is self-sufficient in livestock products.

Table 2. Organic land use (ha in 2006)

Main use	Africa	Asia	Europe	Latin America	North America	Oceania
Arable land total	34,190	93,873	3,061,840	306,454	958,338	n.a.
Permanent crops	163,447	66,126	701,103	494,692	45,321	100
Permanent grassland total	50,305	711,452	3,171,533	3,792,234	991,024	11,925,461

Source: Willer et al. 2008

The chances for countries like Indonesia for export oriented organic livestock production are limited but not zero. Demand is increasing for aquaculture products like shrimps, etc. Nevertheless, the risks of the highly sophisticated organic niche markets have to be considered.

3 Standards of organic livestock production

Organic farming[1] is based on the idea of practices that are environmentally friendly, animal welfare oriented and geared toward improving the living conditions of farmers. To "strive for close-to-nature farming" is a central piece of the farmers' own concept.[2]

The first organic standards were defined in the middle of the last century by farmer associations (mainly in Europe) and were harmonized throughout the organic world in the first IFOAM basic standards in 1980 (Huber et al. 2006).[3] In the middle of the 1980s, Austria and France were the first countries to set legal national organic standards. In 1991, the EU created the first international legal organic standard with the regulation 2092/91. Not just agriculture but even processing, inspection and labelling was considered.

Many countries followed the EU in the 1990s, and the FAO defined organic plant production in 1999 in the *codex alimentarius*. In the last 10 years many developing countries have followed suit to gain from the premium export opportunities. About 70 countries have their own legal organic standards and more than 20 are preparing standards.

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[1] The term „organic farming" is imprecise since it is used for both the production of food as well as off-farm processes (farm inputs, processing, trade, consumption).

[2] Defined by the International Federation of Organic Agriculture Movements (www.ifoam.org).

[3] A comparison of the serveral international organic standards are found under http://organicrules.org/.

The EU, USA and Japan dominate international organic trade (about 90 % of the international trade is done into these countries) and therefore the international organic standards.[4] Most of the organic standards are harmonized between the countries but still there are some important differences. Inspection and certification guarantees the standards of the importing countries. Worldwide, more than 460 organisations are active in organic inspection and certification. Most of them are located in the EU (37 %), Asia (31 %) and North America (18 %) (Rundgren, 2008; www.organic-world.net). Many of them are active all over the world to guarantee organic standards in international organic trade.

The EU has reformed its organic standards and replaced the old regulation 2092/91 with regulation 834/2007 and the implementation regulation 889/2008 in 2009. These regulations integrate goals for organic agriculture (834/2007 Article 3). Organic production shall pursue the general objectives of establishing sustainable management systems for agriculture. These systems shall respect Nature's systems and cycles and enhance the health of soils, water, plants and animals and the balance between them. A high level of agricultural and natural biological diversity is also a target, as is responsible use of energy, water, soil, organic matter and air. Animal welfare is of major importance. The products shall have high process and product qualities.

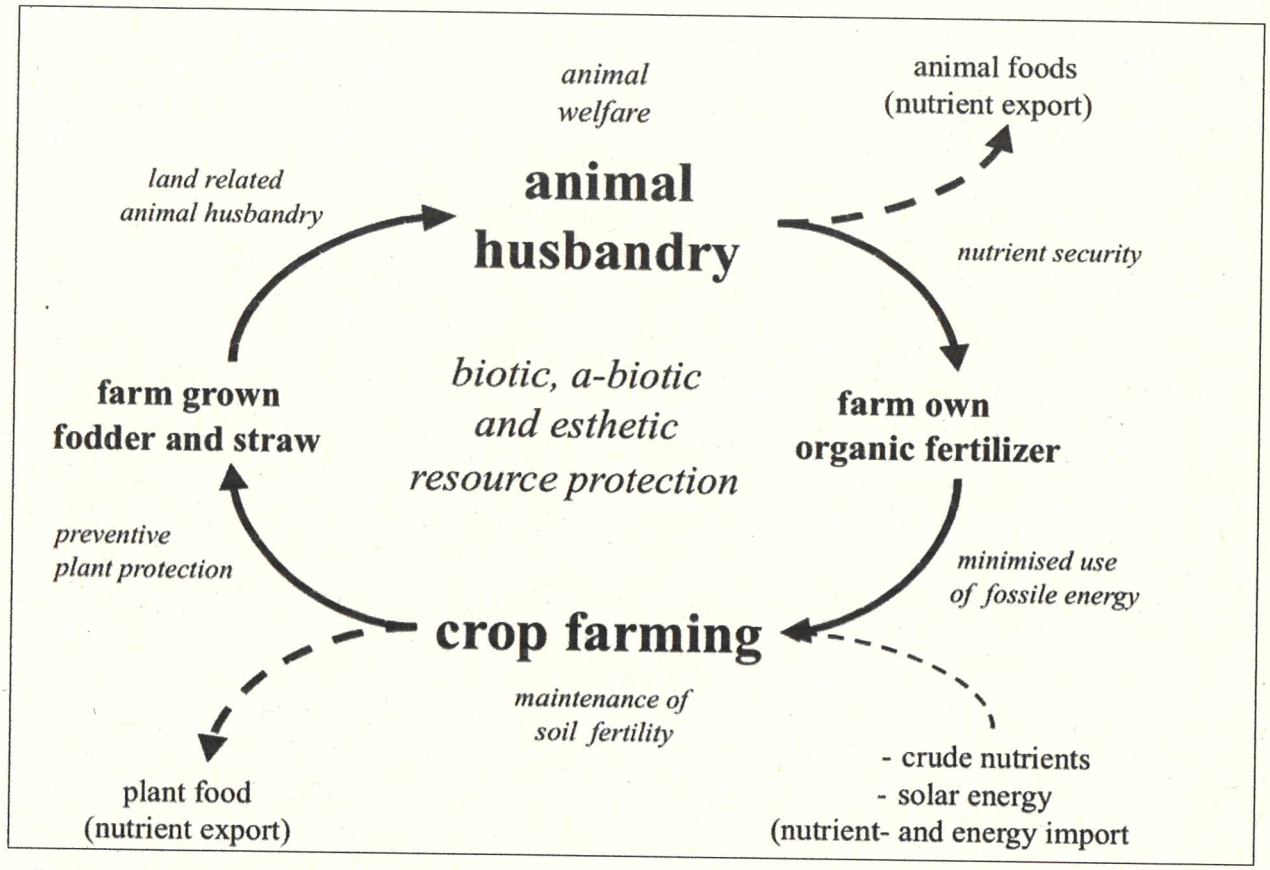

Figure 1: The organic farming model

The overall principles (834/2007, Article 4) of organic production shall follow an appropiate design and management of biological processes and ecological systems using natural resources. Livestock has to be land-related and integrated into a crop system (see Figure 1).

[4] EU: regulation 834/2007 (be found under: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri= OJ:L:2007:189:0001:01:EN:HTML, USA: NOP (www.ams.usda.gov/nop/indexIE.htm) , Japan: JAS (www.maff.go.jp/soshiki/syokuhin/hinshitu/e_label/ specificJAS-organic.htm)

GMOs and products produced by GMOs are not allowed at any stage for any purpose (except veterinary products). Therefore organic principles base on preventive measures and risk assessment. External inputs are limited and shall not harm the environment.

Further on, in 834/2007 in Article 14, the livestock production rules are defined in more detail. Organic livestock must be born and raised in the organic system. Only organic feed is allowed and should come primarily from the farm. All warm blooded livestock shall have access to pasture or roughage. Conversion periods, as well as housing and out-door space, as well as stocking densities, are defined for all livestock species. Organic livestock can not be kept together with conventional livestock. Tethering and isolation of livestock is prohibited, duration of transport is to be minimized. Mutilation and suffering of livestock is not allowed at any point in the life of the animal (including slaughter). Veterinary treatments and drugs, as well as disinfection methods are restricted, and natural measures are favored. Cloning and embryo transfer are not allowed. Special standards are made for beekeeping and aquaculture animals (Article 15).

Table 3: Differences between conventional and organic animal husbandry

	Conventional	Organic (834/2007)
Breeds, origin	Highly performing special breeds and cross-breeds according to product aimed for	Only animals reared on organic farms, diversity of breeds, sometimes rare breeds of working animals
Keeping (buildings and free runs)	Animal protection laws (requirements for keeping of animals according to species)	Special requirements for keeping of animals orientated towards animal welfare (occupation-density, size of buildings, keeping tied inside the stable forbidden, etc.)
Feeding	According to current food stuffs legislation (permitted food additives such as enzymes, synthetic amino acids, etc.)	Food stuffs produced as much as possible on site, feeding rations according to animal welfare (e.g., minimum use/parts of roughage) only specifically permitted additives, no synthetic amino acids, no genetically modified organisms
Management and treatment	Managed breeding, if necessary stable-wide prophylaxis, legally required waiting periods according to drug prescription law	No prophylaxis (exception: legally required inoculations), only two allopathical treatments per year, double the waiting period after use of drugs, minimum 48 h. Restricted interference with the animals' integrity (removal of horns, shortening of beaks, shortening of teeth, docking of tails etc.)
Transportation	Animal-transport regulation	Animal-transport regulation, short transport ways aimed for

4 Organic trade

For a long time, organic products were only sold locally or in closed communities. This changed in the 1990s, as organic products became protected labels and started to be offered in supermarkets and other ordinary market places. The national and international trade of organic products started and increased significantly in the last 20 years. Some countries are mainly exporters (developing countries, Australia, etc.), others are the countries of consumption (USA, EU). In the EU many farmers produce organically and can provide a large share of the organic demand. This is different in the USA and Japan, where domestic products have a smaller share of the national organic market. Approximately 75 % of the international organic trade goes into the USA and Japan, 20 % into the EU and 5 % somewhere else (e.g., Arabic countries) (own estimations).

Clear statistics on organic sales are available from the EU and USA markets, but not on the origin of the products.[5] There are no clear statistics about organic world trade and animal products trade. The International Trade Centre (ITC) tries to get better overview.[6] Annually ITC presents the latest figures at the Biofach.[7] Nevertheless, the chances and risks of the international trade of organic animal products can be qualified.

Table 4: Estimation of chances and risks of international organic trade

product	Important export countries	Important import countries	International trade chances	International trade risks
Cash crops	Developed countries	USA, EU, Japan	+++	--
• herbs, fruits, vegetables, coffee, tea, cocoa	Developing countries (Africa, Asia)	EU, USA, Japan	++++	-
• grain, potatos, oil fruits, pulses	Developed countries, Latin America	USA, Japan	++	---
• Non-food products (e.g., fibre, wool, wood)	Developing countries	EU, USA	+	--
• Processed crops (e.g., wine, cosmetics, spices, dried fruits)	Developed countries, Africa	USA; EU	++++	-
Livestock food products	Developed countries	USA, EU, Japan, Arabic countries	++	----
• Dairy	New Zealand, EU	USA, Japan	+	----
• Meat	Australia, Argentina, Brazil, Mexico	USA, Japan	+	--
• Eggs	EU	USA	+	----
• Honey	Latin America, Africa, Asia	EU, USA	+++	-
• Aquaculture	Asia, Latin America	EU, Japan, USA	++++	-
• Non-food (e.g. wool)	Oceania, Argentina	EU	++	-

+/- = low, ++/-- = fair, +++/--- = high, ++++/---- = very high

4.1 Meat products

Beef and lamb are most important in organic meat production. Grassland areas like Australia, New Zealand and Argentina have cheap natural resources to feed beef cattle and sheep and can fulfil organic standards without big changes and differences compared to conventional production. The added value on the market is about 20%. As long as stables are not necessary (semi-arid, arid environments) and water not limited, production costs are low. In areas with organic milk production, beef is a co-product and mainly done in Europe. If stables are necessary, the production costs are much higher than beef production in outdoor grazing areas. Organic feed and more in-door space for livestock are the main costs. This is the reason for the expensive production of pork and poultry meat, the market share is very low. The

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[5] For an worldwide organic overview see http://www.fao.org/organicag/en/ and under http://www.organic-world.net. For the EU you can find information under http://ec.europa.eu/agriculture/organic/home_en. An overview of the US market is found under http://www.ota.com/organic/mt.html. A wide selection of more than 10.000 organic publications can be found under http://orgprints.org/.

[6] ITC is a joint technical cooperation agency of the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization (WTO). All statistics and publications of ITC are ~~free~~ available for free and can be downloaded from www.intracen.org/dbms/organics/index.asp.

[7] Biofach ist the world biggest organic trade fair with more than 2,700 exhibitors from all over the world, held every February in Nuernberg, Germany. Satellite fairs are held irregularly in China, Japan, India, Brazil and USA (www.biofach.de/en/).

production costs are much higher compared with conventional pig and poultry systems, and the added value must be 100% - this is difficult to get on the market. Organic meat production demands certified processing facilities (e.g., abbatoirs). International sanitary standards are difficult and have to be certified for organic production as well. Newcomers on the global markets need large quantities and high quality. This is difficult for small scale farming systems.

4.2 Milk products

Milk is a highly valuable product. In Europe, the farmers get about 0.14 Euro more than conventional farmers. With the low conventional milk prices (0.20 Euro/kg) this is significant. The production impact of going organic is about 20% less milk than in comparable conventional farms. Milk production is profitable as long as organic feed is available. Therefore dairy production is found in adjacent areas of organic crop production and close to the consumers (northern Europe, southwestern USA). Milk products are used for fresh milk, cheese and other processed products. Certified organic dairy plants are mainly found in countries of consumption. Even New Zealand has little organic milk because of the market distance (milk powder is most relevant for New Zealand's dairy exports, and this requires mass production). Milk has very high hygenic standards and these are difficult to fulfil in areas with mainly small scaled farming systems and less developed infrastructures.

4.3 Eggs products

In Europe the ban of cage keeping of chicken has an impact on egg production. The big producers see an option in organic fresh egg production and the production has increased significantly in the last years. Organic eggs get about 50 % (0.18 Euro) more than conventional eggs, but the production costs are 50 % higher as well. The variable production costs are high (organic feed). Large units (10,000 – 100,000 layers, split into 3,000 layer units) have become more popular to reduce the fix costs (stable, labor, logistic). High sanitary restrictions (SARS, Salmonella, etc.) and difficult organic standards, as well as availability of organic feed, hinder international trade. As long as industrially intensive conventional egg production is not restricted, the comparative production advantage is much higher than organic production.

4.4 Honey products

Honey is an excellent product for global trade. The production costs are relatively low, the problem of environmental pollution (Europe, China) and GMO-crop areas (Northern and Latin America) limit the honey production in Europe. Non-polluted – mainly remote areas in Africa, Southern America, Asia) have production advantages. If special qualities (tastes, fair trade, environment protection, pollination) can be labeled, the market potential is high.

4.5 Aquaculture animals products

Aquaculture will be a big chance for countries like Indonesia and other countries in Asia, which have high skills in fresh water aquaculture. Recently, the global market for organic shrimps, molluscs, crustacae, and fresh water fish is relatively small but growing fast. The environmental conditions of fresh water ponds are important for production. Research and development is necessary to develop efficient aquaculture with high organic standards.

4.6 Non-food products

International trade in non-food livestock products is very low. Nevetheless, organic fibre (wool, cashmere, mohair), fir, leather, organic fertilizer (manure, horn, feather), silk, earth worms (improvement of compost and vegetable production), insects (protein feed), cosmetic ingredients (linolenic, fat etc.) are gaining in importance. These markets can be developed by countries with special production advantages.

5 Literature

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