

Organic meat and milk production: 1. Philosophy and certification

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INTRODUCTION

A joint international conference on organic meat and milk from ruminants, organised by the Hellenic Society of Animal Production and the British Society of Animal Science, was held in October 2001 in Athens, Greece (Kyriazakis & Zervas, 2002). A wide range of topics was covered, such as the philosophy of organic farming, legislation in Europe, the scientific evaluation of achievements and claims and to what extent objectives have been achieved. These two articles are a review of the published proceedings with some reference to the situation in South Africa.

THE PHILOSOPHY

“Organic” is a term defined in many countries by law where all organic food production and processing are governed by strict sets of regulations. The standards are stringent and cover every aspect such as registration and certification, food production, permitted and non-permitted ingredients in the whole process, the conservation of the environment and processing, packaging and distribution. The marketing of products is protected by registered labels or logos. Organic farming represents an alternative and more holistic view of agriculture and food production than conventional farming (Kristensen & Thamsborg, 2002). Häring & Dabbert (2002) described organic farming as a system that relies on the functional dynamic interaction between soil, plant, animals, humans and the environment (International Federation of Organic Agricultural Movement - IFOAM, 1996) instead of external inputs such as pesticides, mineral fertilisers, growth regulators and livestock feed additives. This farming method considers the farm to be an organism that relies on varied crop farming practices. It is concerned with the protection of the environment, aims at restoring and maintaining soil fertility and seeks to produce quality agricultural products that contain no chemical residues. All the component parts – the soil minerals, organic matter, microorganisms, insects, plants and humans interact to create a coherent and stable whole (Siardos, 2002).

The system relies on crop rotation, crop residues, animal manure, legumes, green manures, off-farm organic wastes, mechanical cultivation, mineral bearing rocks and aspects of biological pest control to maintain productivity, to supply plant nutrients and to control insects, weeds and other pests. In the organic system the focus of management is on maintaining and improving the overall health of the individual farm’s soil-microbe-plant-animal system (a holistic approach). The emphasis is on using inputs (including knowledge) in a way that will encourage the biological processing of available nutrients and defence against pests. The soil is a central part of the system. In organic agriculture, management is directed towards preventing problems, while stimulating processes which assist in nutrition and pest management. The overall goal is sustainability (Siardos, 2002). Organic farming is based on the conscious decision to make selective use of modern technologies (Häring & Dabbert, 2002).

According to Siardos (2002) organic farming is expanding because of the recognition that conventional agriculture has become non-sustainable because of topsoil depletion, groundwater contamination, decline in family farms, continued neglect of the living and working conditions for farm workers, increasing costs of production and disintegration of economic and social conditions in rural communities. Consumers are more aware of close links between intensive agricultural practices and problems with environment, animal welfare and food-related health risks. Recent problems that plagued livestock production and products in Europe such as BSE (Mad Cow Disease), the dioxin contamination of food and the foot-and-mouth problem strengthened the mistrust in conventional livestock production, resulting in a growing market for organic products (Kristensen & Thamsborg, 2002). In general, organic agriculture is considered an environmentally sound and socially acceptable land use system with “natural food” production (Rahmann, 2002). Siardos (2002) described the

sentiment of the proponents of organic farming as: “Organic farmers rely on natural pest controls (e.g. insect pheromones, plants with pest control properties) rather than synthetic pesticides which are known to kill beneficial organisms (e.g. bees and earthworms), cause pest resistance and oftentimes pollute water and land.” “The approach of the modern conventional farmer is negative, narrow and fragmentary, and consequently produces imbalances. His attitude to ‘pests’ and ‘weeds’, for example, is to regard them as enemies to be killed – if possible to be exterminated. When he attacks them with lethal chemicals he seldom gives a thought to the effect this may have on food supply or habitat of other forms of wildlife among which he has many more friends than foes”.

According to Kristensen & Thamsborg (2002) human health and safety are the most important motives for buying organic foods. Secondary motives are environmental protection, nature conservation and animal welfare. However, Häring & Dabbert (2002) stated some underlying reasons for the movement towards organic farming in Europe: “As farmers have adopted technological innovations, the productivity of area and labour has increased significantly resulting in an overall productivity increase.” “Today agricultural output is produced in excess and the research focus on augmenting agricultural productivity becomes increasingly questionable. Instead other objectives are put ahead in societal preferences. This is well expressed in the objectives of European agricultural policy, as follows:

- Maintenance of the competitiveness of European agriculture
- Conservation of farming income
- Conservation of food supply and food quality
- Minimisation of negative environmental impacts of agricultural production
- Reduction of surplus production”.

To be sustainable, organic farming must be technically feasible, environmentally sound and economically viable (Wright *et al.*, 2002). Adapted and sustainable farming systems are the backbone of organic farming, considering soil, plants, livestock and humans in mutual relations in the farming cycle (Rahmann, 2002).

According to Siardos (2002) organic farming has many impacts such as reduced costs for supporting commodity prices, reduced depletion of fossil fuels, reduction in the social cost associated with erosion, improved fish and wildlife habitats and ensuring the productivity of the land for future generations as compared to conventional farming practices. In general, it contributes to the overall goals of sustainability in that organic farmers and processors:

1. may discover new and innovative production technologies that apply to other agricultural systems as well;
2. may provide market opportunities for farmers and processors to meet consumers demand;
3. promote national and international public debate on sustainability by creating awareness of environmental and social concerns that merit attention.

CERTIFICATION AND REGISTRATION

Organic standards have been laid down in plant and livestock production as well as in processing for practical application and stipulate not only the prohibition of the use of certain inputs but usually dictate a range of practices to be followed, that will ensure that a farm maintains its sustainable productive capacity (Siardos, 2002). A basic motive of the public to buy organic foods is trust in the certification and labelling of the products. Certification is, therefore, a precondition for any product to be sold as an organic product, using a certification label, e.g. a logo or symbol used by the certifying organisation, which is a guarantee of its organic origin.

Organic standards are based on independently certified and controlled specific standards of production which are described by the IFOAM (1999) and taken from international bodies like the Codex Alimentarius Commission (FAO/WHO, 1999). Historically, cattle, sheep and goats were mainly considered as “manure-producers” (Rahmann, 2002). Now, according to Rahmann (2002), EU-regulation 1804/99/EC defines organic animal husbandry worldwide.

In Europe, the so-called EU-standards are considered the minimum for all national public certification systems. From August 2000 the EU standards have also included livestock products (Kristensen & Thamsborg, 2002). Factors considered to classify organic farming depend partly on local circumstances in terms of needs and

availability of resources. Individual countries have adopted additional requirements, e.g. the UK system (Wright *et al.*, 2002). The result is that several systems of certification and labelling of organic products exist in Europe, which are apparently very confusing to customers. Dimitriou (2002) pointed out that the interpretation of the regulations varies between certification bodies, government authorities and member EU states to such an extent that a unified community legislation cannot be identified. "The basic principles of organic food production have been so distorted by the derogations / loopholes that the legislation constitutes little more than a recommendation to livestock producers that their production methods be rationalised along more 'organic' lines."

Legislation in South African

Presently, no legislation exists in South Africa to administer or control the production and trading of organically produced products, i.e. no legislation is addressing the "organic" production process or the use of the word "organic". However, certifying organisations from countries importing South African produce, mainly horticultural products, are ensuring that the organic standards required by their countries, are met. Some South African producers are using these foreign certifying standards to certify their products for the local market, while others prefer to set their own organic standards and principles when producing for local distribution. The latter is the situation in the production of organic meat and milk for the South African market (Van Ryssen, 2002).

The National Department of Agriculture of South Africa (NDA, 2001) is in the process of compiling regulations to control the organic production of food in the country. Their aim is to set standards for the protection of the word "organic" or other words having the same meaning, thus protecting the South African market for organic produce and enhancing consumers' confidence. A draft of the regulations, based on the IFOAM principles, has been distributed to interested parties for comments. The objective of the NDA (2001) is to prescribe broad regulatory guidelines, but allows private controlling and certifying organizations to handle the control and implementation of these regulations (Van Ryssen, 2002). According to Mr N. Erasmus (NDA, November 2002, pers. comm.) this bill is still in a stage of preparation.

Some of the standards, regulations and legislation required for organic ruminant keeping in the European Union (EU)

This section refers to the article by Rahmann (2002), except when cited otherwise. Statements by Wright *et al.* (2002) refer to standards adopted by the United Kingdom (UK Register of Organic Food Standards – UKROFS, which are stricter than the basic EU standards):

The IFOAM standards:

- Prescribe the conversion period to organic production, stock density on the farm, farm fodder production and issues related to animal welfare.
- Prohibit GMO's and derivatives in the whole production chain, synthetic disinfection strategies in stables and equipment, allopathic disease prevention and antibiotics and hormones in animal feed.
- Demand an independent certification of the production, packaging and processing.

Converting of farm branches and livestock

Animals intended for breeding and/or milk production may be brought in from a conventional source, but must undergo a conversion period. Animals intended for meat production must have been born and reared under fully organic management (Wright *et al.*, 2002).

It is possible to convert just one branch of the farm towards organic production. If there is clear spatial separation (farm land, feed and dung storage as well as stables) the same species of animal can be kept organically and conventionally by one farmer. A clear separation is needed to avoid contamination (e.g. with prohibited disinfectants, or unaccepted feedstuffs / feed materials) and mixing of inputs (e.g. feed and dung). The conversion period of pastures for ruminants is 24 months. Milk can be sold under the label, "organic" 15 months after the start of the conversion. In some cases it is felt that the conversion period is too short. Calves conventionally reared may have taken in milk substitutes containing animal fat which poses a risk of BSE.

Farmland and related animal husbandry

Livestock plays an important role on organic farms, e.g. to recycle nutrients. Landless animal husbandry is not organic and thus prohibited. The limited livestock density should not exceed 170 kg nitrogen per hectare a year and is measured in livestock units. Though not defined in all countries, in Germany 1.4 livestock units per ha and year are equal to 112 kg of N and 98 kg of P₂O₅.

Maximum number of ruminants per ha per year:

Dairy cow and male cattle above 2 years	2.0
Female cattle above 2 years (not lactating)	2.5
Male and female cattle between 1 and 2 years	3.3
Fattening cattle and others below 1 year	5.0
Ewes and mother goats	13.3

A two year conversion period – between the last application of a prohibited substance and the sowing of the first full organic crop - is required for lands on which organic animal feeds are to be produced. Crop rotation using fertility building crops (legumes) and exploitative crops (cereals and potatoes) are to be planted, though permanent grasslands are permitted. Regular inputs of organic matter (e.g. farmyard manure) must be made. Fertilizers such as lime or rock phosphate, which are slowly soluble in the soil, are permitted, but soluble mineral fertilizers are prohibited. Most manufactured agrochemicals are prohibited, but some natural biocides are permitted (Wright *et al.*, 2002). Application of urea as a fertilizer is prohibited.

Feeding ruminants

Livestock diets must be based principally on organically produced feedstuffs, but a small proportion from conventional origin e.g. 10% of DM intake for beef and sheep (20% in less favourable areas) is permitted. Organic feeds may be purchased from other organic farms. Ruminant livestock must be fed a diet consisting of at least 60% green forage (on DM basis) (40% concentrates). However, livestock must have access to pasture during the growing phase. Calves have to be fed for three months and lambs and kids for 45 days with “natural milk, preferably maternal milk”, i.e. from the same species.

In organic farming, GMO feeds are not permitted. Conventionally produced supplements and fermentation support for silage making are allowed as long as they do not contribute to the animal nutrition. Artificially produced vitamins may not be used for ruminants, but are allowed for monogastric animals. Only vitamins derived from raw materials occurring naturally in feedstuffs are allowed in herbivores. The inclusion of urea in diets is not permitted.

Animal health and veterinary treatment

The principle of animal health is prevention and not curing/treating. Robust, adapted and disease tolerant livestock ensures fit and healthy animals. Local breeds are considered to fulfil these targets. To support animal health, feeding is required to meet the physiological needs of the animals with the emphasis on animal welfare and not on maximising production. It is assumed that animal health can be maintained by prevention – enhancing the immunity of the body.

Treatment of unhealthy animals with homeopathic veterinary remedies or “natural products” is acceptable. Treatment with “chemically-synthesised allopathic veterinary medicinal products” or antibiotics as well as oestrus synchronisation, or antibacterial feeding of additives (growth promoters) are strictly forbidden. Vaccinations are allowed even when the vaccine is produced with the use of GMO’s. Treatment of parasites and vaccinations are not considered as “chemically-synthesised allopathic veterinary medicinal products”. Deworming can be done after a veterinarian has recommended that a heavy infection requires treatment.

If an animal is sick, it can be treated by a veterinarian. Natural methods of disease treatment are to be preferred as long as they help the animal. If these natural treatments do not help, chemical-synthesised allopathic treatments are allowed (even antibiotics). All health related data have to be noted in a herd book and be presented to the certification body. The withholding period is twice as long as requested for the applied drugs. If treated more than three times with chemical allopathic drugs, the animal and its product cannot be sold under the organic label. Livestock health must be based on preventative management strategies: no routine treatment of

healthy animals with drugs, except in the case of known farm problems. When animals are treated with organophosphate-based medicine, the organic status is lost.

Husbandry management practices, transport and slaughtering

The breeding of ruminants should be done by natural mating. Artificial insemination (AI) is allowed, but not embryo transfer, oestrus synchronisation, etc. Male breeding stock has to be kept on the farm. Conventionally kept breeding stock may be used. Animals intended for meat production must have been born and reared under fully organic management. Animal cruelty of any kind is prohibited. The tail-docking of sheep and dehorning are not allowed. Castration should be done at a very young age or under anaesthesia by a veterinarian. Feeding systems leading to anaemic conditions (e.g. white coloured veal production) are prohibited. Ruminants have to be kept in groups to meet their social needs.

The transport of livestock is not clearly defined, but stress-reduced loading, transporting and unloading of livestock without the use of allopathic tranquillisers, electrical shockers or similar tools is strived for.

Housing

The tethering of livestock is prohibited. This is a problem in cold countries where animals stay indoors during winter. It is obligatory but recommended that ruminants should graze on pasture (free-ranging) and not fed in stables as long as weather and pasture conditions are suitable. Housed animals must be provided with bedding – totally slatted systems are prohibited

Final fattening of lambs and beef cattle in stables is possible if the period is less than one fifth of the animal's life and a maximum of three months of the fattening animal's life. A minimum surface area for indoor housing and outdoor exercise areas is defined.

MARKET SHARE

According to Siardos (2002) organic farming constitutes 2% of agricultural land in the EU, 0.1% in the USA and 1.34% in Canada. The area farmed organically nearly tripled from 1993-1999 (Häring & Dabbert, 2002). The market share of organic products is still small, even in Europe. The highest market share is in Denmark at >3%. However, the market is growing substantially in some countries, e.g. in UK at a rate of 12-30% per year. In most European countries vegetables and cereals form the bulk of organically produced products, though milk is the most important product in Austria, Denmark, Sweden and Switzerland. Organic beef is 4th or 5th in seven out of 18 countries and organic sheep production is important only in two countries (Kristensen & Thamsborg, 2002). Kouba (2002) predicted that 30% of all farming in Europe may be organic by the year 2010.

PROBLEMS IN MEETING SPECIFICATIONS

Dimitriou (2002) pointed out that although the extensive farming systems in Greece are close to organic production, there are some specifications in the regulations which are impossible to meet because of the structure of livestock farming in Greece. The problem is that a number of specifications are more applicable to highly intensive systems, and do not take into account the nomadic nature of goat and sheep production in Greece.

- Registration of grazing areas with a system of inspection and certification is impracticable due to the idiosyncratic nature of their ownership rights
- Storage facilities for manure or any form of manure management are non-existent
- Adequate protection from weather conditions cannot be provided
- Physical castration cannot be carried out by qualified personnel
- Certain times of the year forage is unavailable and the welfare of animals suffers
- Available water supplies are not always suitable for drinking
- Homeopathic veterinary treatments are in an embryonic stage
- Welfare problems exist with transporting of animals
- Common-use community grazing for organically raised livestock cannot be segregated from that for conventionally raised animals.

During the conference some delegates objected to the banning of urea as a ruminant feed. This was emphatically rejected by delegates from western Europe.

SITUATION IN SOUTH AFRICA

Since no legislation that regulates the production and selling of organic produce is in place in South Africa, some groups have been producing “organic or natural” animal products for the local market, using their own standards. These are usually based on overseas guidelines and perceptions. However, there is a strong feeling among some of these groups that regulations governing organic meat and milk production in South Africa for the local market, should be Afrocentric, i.e. acknowledging conditions of livestock production pertaining to this country, rather than blindly following European standards (Van Ryssen, 2002). An example is the use of urea as an animal feed. In many grazing regions of South Africa nitrogen and phosphorus are deficient in diets of the grazing animal. The use of urea as nitrogen supplement has been thoroughly investigated and can be fed safely and cheaply to livestock. Unfortunately, a strong lobby in South Africa consisting of people with no connection to or knowledge of livestock production or knowledge of the metabolism of protein in the ruminant body, is adamant about the banning of urea as an animal feed in the standards proposed to govern organic production of animal products to be sold in this country. Their sweeping argument is: “urea is a poison”.

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