

Dissemination of Organic Meat and Milk Production in Erzurum

Training Material Development GUIDEBOOK

CHAPTER ORGANICK LIVESTOCK: GENERAL PRINCIPLES, IMPORTANCE OF ANIMAL WELFARE AND MARKETING

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INTRODUCTION

At the end of the last century, there was a drastic change in the agricultural model in an attempt to meet the world demand for food and to end hunger. Besides hunger, humanity also faces serious environmental and social problems. In this moment, humanity realizes that it needs a production model that not only produces plenty but also is environmentally and socially just. And the agricultural production model, without a doubt, has much to contribute in this sense.

Obviously, there is interdependence between agriculture and the environment and between the environment and climate change. It has already been proven that the industrial agricultural model based on the use of technologies that directly consume fossil fuels and indirectly in the form of pesticides, biocides, and soluble fertilizers, along with tillage, provokes carbon emissions into the atmosphere, in addition to pollution and intoxications, among other imbalances.

Comprehension of this reality associated with the search for better living conditions for farmers and quality food free of toxic residues as well as the high costs of chemical inputs and resistance to chemical drugs is driving forward Organic Agriculture tremendously in the entire world. This production system considers both social issues and the effects of agricultural interventions in agro-ecosystems in the middle and long term, preserving biodiversity and soil and water health. It also excludes synthetic fertilizers, pesticides, veterinary drugs, and genetically modified animals and seeds. Organic production introduces new values of environmental and social sustainability into the production system. Organic management aims for economic and productive development that does not pollute, degrade, and destroy the environment and that, at the same time, values the human being as the main member of the process, generating local, regional, and global environmental benefits.

This production system is as defined by the **Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labeling of organic products and repealing Regulation (EEC) No 2092/91**

“Organic production is an overall system of farm management and food production that combines the best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes.”

ORGANIC PRODUCTION INCORPORATES A HOLISTIC VISION.

WE MUST CONSIDER THE FARM AS AN ORGANISM WHERE EVERYTHING IS CONNECTED.

In this context, in the animal area we have Organic Livestock, which is a production system with well-determined principles and norms, with emphasis on animal welfare and ethical handling, organic feeding, and mild therapies such as homeopathy, phytotherapy, and acupuncture.

The organic system of production copies nature's mechanisms and associates them with scientific knowledge. One can say it is very easy, but it is also very specialized in its local context, just as in nature. As it is highly appropriate and specialized to its environment, there is no ready formula. And that is why its application is not easy. It requires the capability to observe and comprehend everything, sensitivity, and a wide array of knowledge, beginning with animal behavior, the animals' interrelations with other animals and vegetation, and finally arriving at the ecosystem's balance, which varies a lot according to the different regions.

2. ANIMAL WELFARE AND THE PRECAUTIONARY PRINCIPLE

The main characteristic of the organic system of production is that it is a preventive system, contrary to the conventional system that is curative. This means that animal welfare is the first aspect to be observed and considered because animals should be well-balanced and in conditions to defend themselves from possible attacks from parasites and pathogenic agents. Of course, for this to occur, a set of measures should be taken so that the well-fed, well-adapted, well-treated, well-handled animals will be strong and perfectly able to defend themselves from natural agents.

In other words, the organic livestock's health should be maintained through a set of measures that allow for their perfect adaptation in a way that they can defend themselves naturally from possible attacks from parasites and pathogenic agents. And for this to happen, planning of the property as a whole and attending to the basic needs of the animals are fundamental. This analysis begins with the choice of breed, production, and supply of quality and balanced organic feed according to their needs during life, facilities and adequate space, protection from rigorous weather, pasture rotation to cut parasite cycles, management and adequate treatment of waste.

That way, if their raising is well conducted, the animals should not get sick. If any animal gets sick or manifests signs of weakness or frailty, it means that something is not right, and all of the procedures should be evaluated to find the possible point that should be corrected. Of course, punctual situations can occur, such as extreme weather, less than

adequate feeding, fights, injuries, reproductive problems, among other factors that can momentarily lower the animals' defenses and propitiate the appearance of any sickness. Then, a therapeutic intervention is necessary. In these cases, we should then use permitted therapies such as phytotherapy, homeopathy, acupuncture, for example. But these situations should be the exception and should not occur routinely.

Another difference between the organic and conventional systems is that the organic system does not have a ready formula to be used in any part of world like the conventional model. This is because its basic principle is respect and harmony with nature, working with nature and not against it. Therefore, the organic farmer should adapt to and interact with the location as much as possible. That is why proposals vary from one place to another according to the biome, temperatures, rains, topography, culture, and people's habits, but always respecting its basic principles established by legislation.

Prevention means to take prior measures so that problems do not occur.

We must have a holistic vision and intervene in the causes and not just treat the problems and symptoms.

So, in working in an organic model, we have to get used to looking at everything: soil, topography, water, vegetation, neighbors, trees, pastures, facilities, fences, accesses, animal handling, treatment of animals, people involved, therapies utilized.

THE ORGANIC SYSTEM IS PREVENTIVE AND IS NOT CURATIVE

PREVENTION IS FUNDAMENTAL TO THIS SYSTEM'S SUCCESS

ASPECTS TO CONSIDER

General planning: farm location, neighbors, water, accesses, etc.

- ✓ Contracting the certifier, begin document registration and transition phase
- ✓ Origin and acquisition of animals
- ✓ Feeding
- ✓ Facilities
- ✓ Handling
- ✓ Permitted therapies
- ✓ Inputs, disinfectants
- ✓ Biosecurity

IMPORTANCE OF ANIMAL WELFARE AND PREVENTION

The first basic principle of organic systems is prevention, which means attention to animal welfare in the first place. It is fundamental that basic needs are attended to according to the appropriate behavioral characteristics of each species.

The Objective of Animal Welfare is to know, evaluate, and guarantee the conditions to satisfy the animals' basic needs.

Animal welfare is a broad term that refers to the animal's physical as well as mental well-being.

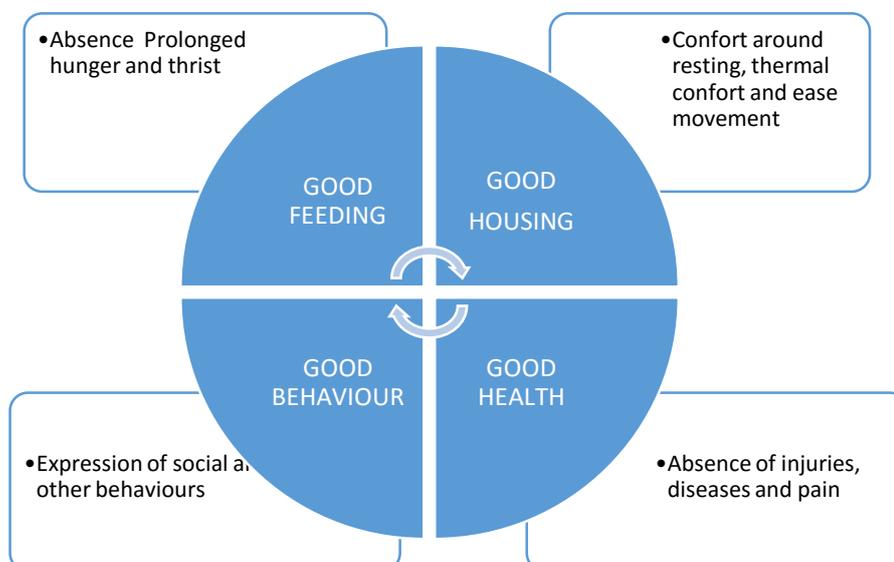
Animal Welfare is analyzed considering different situations, with the concept of the five freedoms serving as a guide: All animals should:

1. Be free of fear and stress.
2. Be free of hunger and thirst.
3. Be free of discomfort.
4. Be free of pain and diseases.
5. Have the freedom to express their environmental behavior.

The five freedoms aim for an analysis from the animal's point of view, and not only from the human's point of view.

WELFARE PRINCIPLES

According to AWIN: <http://www.animal-welfare-indicators.net>



| Welfare principles | Welfare criteria | Welfare indicators | |
|--------------------------------|---|--|---------------------------------|
| Good Feeding | Appropriate nutrition | Body Condition Score lamb mortality | |
| | Absence of prolonged thirst | Water availability | |
| Good Housing | Comfort around resting | Fleece cleanliness | |
| | Thermal comfort | Panting Access to shade/shelter (outdoors only) | |
| | Ease of movement | Stocking density (housed animals only) | |
| | | Hoof overgrowth (housed animals only) | |
| Good Health | Absence of injuries | Body and head lesions Leg injuries | |
| | | Lameness Faecal soiling Mucosa colour Ocular discharge Mastitis and udder lesions (lactating ewes only) Respiratory quality Fleece quality | |
| | Absence of disease | | |
| | Absence of pain and pain induced by management procedures | Tail length | |
| | Appropriate Behaviour | Expression of social behaviour | Social withdrawal |
| | | Expression of other behaviours | Stereotypy Excessive itching |
| Good human-animal relationship | | Familiar human approach test | |
| Positive emotional state | | Qualitative Behaviour Assessment | |

AWIN SITE: <http://www.animal-welfare-indicators.net>

Several studies prove that when the environment makes it impossible for manifestations of appropriate behavioral activities, abnormal forms of behavior such as cannibalism and self-mutilation can develop. Physical space and handling are also very important because physical or psychological stress provokes a reduction in immunity and an increase in the occurrence of illnesses. With the physical-social change in environment of confined animals, there is an increase in susceptibility to illnesses such as diseases in pigs' urinary system; problems in the locomotor system of birds, dairy cattle, pigs; respiratory diseases in birds and pigs; among others (Zanella, 1997).

That is why, in raising organic livestock, all measures are taken so that there is a balance between the animals and their environment, in such a way that the animals alone can defend themselves from pathogens and diseases, and sicknesses do not occur. If any sickness occurs, it is a sign that something is wrong and should be corrected. The main goal is the maintenance of animal health by encouraging the animal's natural immunological defense, as well as the selection of appropriate breeds and husbandry practices.

WE SHOULD INTERVENE IN THE CAUSES AND NOT ONLY TREAT THE PROBLEMS AND SYMPTOMS

Animals are like us, like our children, if they are well- fed, well-treated, feel safe, sheltered from the rigors of the weather, they do not get sick. That way, animal welfare means a set of factors, beginning with the appropriate breed, feeding (“if we want to have good organic animals we have to be good farmers of pastures”), facilities with space to walk, access to open air, to the sun, conditions for each species to express their peculiarities and not in isolation.

WELFARE OF HERDS IN GRASSLAND: THERMAL COMFORT

Animal performance is directly affected by the combination of a variety of variables. Livestock can be affected by climate in different aspects, and an increase in temperature can cause severe consequences to animals, affecting their health, metabolism, and physiology (McManus et al.1999; Nardone et al. 2006; Nardone et al. 2010). Climatic variables such as environmental temperature, air humidity, and direct solar radiation are the factors that most affect animal production in hot climates (Souza et al. 2010;Klowoski et al.2002). Nevertheless, heat stress can be lessened or even eliminated by implementing a program that includes the provision of shade using appropriate natural resources to reduce heat stress (Leme et al. 2005). According to Glaser (2008), the use of shade is a feasible alternative that promotes thermal comfort and facilitates the animals’ thermoregulation.

In countries with cold climate, the trees help to attack the winds that can be harmful to animals and to pasture growth as with winds occurs less photosynthesis and therefore growth in pasture is slower.

SILVOPASTORAL SYSTEMS

The so-called silvopastoral systems (SSP) are being widely used by combining trees and livestock in a mutually beneficial way. This enhances soil protection and increased long-term income due to the simultaneous production of trees and grazing animals. The trees are managed for high-value sawlogs and, at the same time, provide shade and shelter for livestock and forage, reducing stress and sometimes increasing forage production. Silvopastoral systems are characterized by integrating trees with forage and livestock production.

The SSPs can be a good alternative for sustainable livestock production because they can provide ecosystem services and improve animal welfare. Most farm animals live in groups and the social organization and interactions between individuals have an impact on their welfare.

A remarkable consequence of the use of SSP is the increase in biodiversity when compared with pasture-only systems. The presence of shrubs and trees very greatly increases cover for wild birds, mammals, and reptiles. The greater range of plants increases the number of larger insects, and the more complex soil increases soil insects and other invertebrates (Broom, 2013).

WELFARE AND HANDLING OF DAIRY CALVES

Raising dairy calves, mainly in their nursing phase, demands good handling practices and much attention to detail. It is estimated that 75% of the losses up to one year of age occur during the neonatal period (up to 28 days), which suggests that the viability, health, and growth of the calves are directly dependent on the conditions they face in the peripartum period (COELHO, 2005).

The success (or failure) of raising dairy calves depends, in large part, on the handling employed in the care of these animals. Paradoxically, there is a certain tendency to develop and adopt technologies to reduce the presence of the worker in contact with the calves (for example, feeders and automatic breastfeeding systems), which leads to a substantial reduction in the positive interaction between calves and the people who take care of them (MAGALHÃES, 2007). It is recognized that these positive human-animal interactions are very important in the animal production environment, providing better well-being to the animals and satisfaction to the workers (LENSINK, 2002), bringing benefits to the property's productive performance.

In the specific case of handling dairy calves, in addition to improving productivity indexes, the animals' tendency to avoid humans reduces and their tendency to interact with them increases (LENSINK et al., 2000b.).

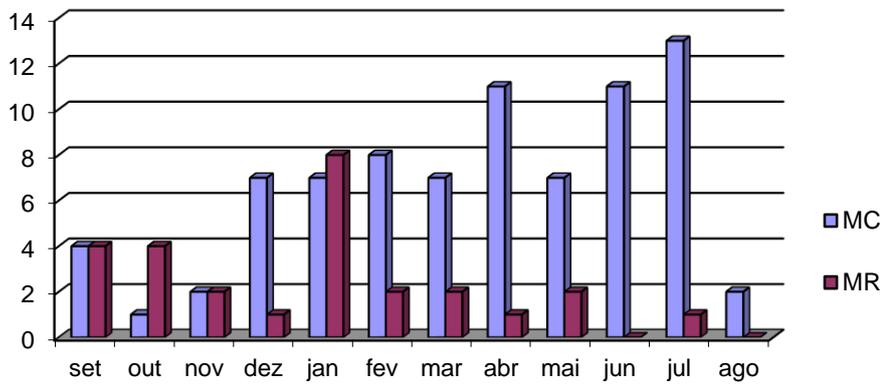
Below are the results of a study that evaluate a new strategy for handling dairy calves. The study "More warmth in the management of dairy calves: a successful experience" was conducted by MAGALHÃES et al. , 2007 , with the implementation of a new handling routine at a dairy farm with 330 cows during the course of one year. The following variables were considered: frequencies of total treatments with medication (FMT), of treatments with antibiotics (FTA), and of deaths (FO) (estimated for every month in the two periods of the study), in addition to cardiac frequency (FC), respiratory frequency (FR), body temperature (TC), occurrence of diarrhea (ODI), and occurrence of dehydration signals (OSD) (checked in all calves in both periods).

The changes were:

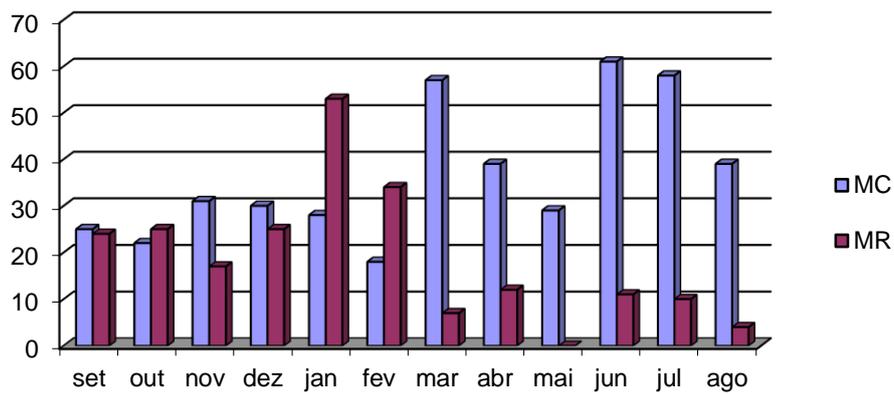
- More space for the calves and more comfortable beds (minimum of 10 cm of straw)
- Milk served in pails with nozzles (for the calves to suck on)
- While they nursed, they were brushed with treaters
- After morning nursing, all the calves were let loose in a picket. Except on rainy days, when the calves were not let loose.

The author concluded that simple changes in the facilities and handling procedures can improve the dairy calves' welfare conditions. See the data.

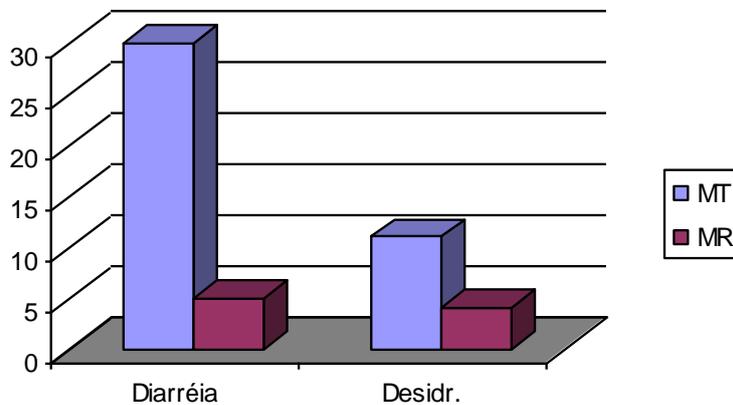
Reduction in calf mortality: 6,67 to 2,25 deaths/month



Reduction of antibiotic use: 36,42 to 18,51 treatments/month



Decrease in incidence of dehydration and diarrhea



3. ORGANIC FOOD: QUALITY AND MARKET

Organic foods combine quality and sustainability. Their production and consumption grow here and in the whole world, accompanying the needs of the planet and consumers' expectations.

The production, consumption, and demand for organic foods grow all over the world, accompanying consumers' concerns over food quality, the environment, and animal welfare. Organic foods of animal origin, such as meat, milk, eggs, honey and derivatives, including fish, also accompany this growth, all over the world. Nevertheless production are very far from attending to and taking advantage of the enormous existing demand.

INFLUENCE ON DIET QUALITY

In 2015, the Institute of Environmental Research of Sweden conducted an experiment with a family of five, including three children. After switching to an organic diet for just two weeks, the agrochemical levels in their bodies (blood and urine) dropped significantly. A study with similar results had already been found considering 4.500 people in the U.S., the country with the greatest consumption of organic foods in the world. "Tell me what you eat and I will tell you the agrochemical levels in your body," pronounced Cynthia Curl, author of the work.

MORE NUTRITIOUS

In addition to being free of agrochemicals, antibiotics, hormones, and other contaminants in its production system, organic foods have also shown to be more nutritious than conventional foods in most comparative studies.

Research throughout three years in the United Kingdom concluded that organic milk has an average of 68 percent more Omega-3 than conventional milk. Omega-3 is an essential fatty acid fundamental for growth, with an important function in the prevention and treatment of heart disease, hypertension, arthritis, cancer, inflammations, and autoimmune disorders. Numerous scientific studies, including those from the University of California, in 2005, proved that meats from grass-fed animals have greater levels of vitamins A and E, less fat, and more Omega-3.

In May 2015, FiBL published a dossier about Quality and Sustainability of organic foods confirming the nutritional superiority in various aspects of food originating from grass-fed animals, as occurs in organic systems, in comparison with confined animals whose diets are based on grains and feed.

In resume products from pasture-raised animals are naturally high in vitamin E, beta carotene, conjugated linoleic acid (CLA), omega-3 fatty acids, vitamin A which are powerful antioxidants that help our bodies cope with various types and kinds of toxins. They contain more protein and less fat.

BREAST MILK

A work published by the British Journal of Nutrition, in 2007, showed that the consumption of organic dairy products and meats by breastfeeding women improves the nutritional quality of their own breast milk because of the increase in fatty acid content, especially CLA, a substance that is believed to reduce the risk of cancer, obesity, diabetes, and other immune system disorders and, for newborns, to aid in the development of the immune system. Not to mention, of course, residues from agrochemicals, antibiotics, and other drugs consumed by the mother through contaminated foods can be found in her breast milk. Surely, as this information falls into public knowledge, organic foods are valued and consumed more.

SUSTAINABILITY AND HOLISTIC ASPECTS

Since the 80s, environmental issues and climate change have become of increasing importance in the world. Because of this, little by little, in addition to the concern over food quality, other aspects have entered the scene. With awareness regarding sustainability's significance for humanity's survival, the importance to adopt a production model that has a friendly relationship with the environment by preserving biodiversity and natural finite resources becomes more evident. Therefore, the increase in food production is a necessary condition but not sufficient to satisfy future needs. Biodiversity loss, the unsustainable use of water, and soil and water contamination are problems that compromise the future capability of food production.

Seen with much skepticism in the beginning, the organic system of production gradually gains validation, recognition, and believers because, in addition to prohibiting the use of poison and transgenic seeds, it prioritizes and improves environmental aspects. Even, in 2011, the United Nations published a Report pointing to agroecological systems as the solution to decreasing hunger and recuperating blighted areas in the world.

At the same time, market demands evolve. If before only parameters of food quality were considered, consumers currently go beyond. They look for and value foods that are produced without harming the environment, promote fairness to all those involved, and respect the welfare of animals.

The prediction is that in 2050 we will be nine billion people. And the great challenge is to produce foods in quantity and quality and, at the same time, conserve the natural resources and mitigate the impact of agricultural activities on climate change. It is quite the challenge on a finite planet where the dominant system is not sustainable. However, consumers finance the world; therefore, it is up to us to decide what model we want to uphold.

To respond to the generalized growth of demand, the network also needs to develop itself and faces various challenges.

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