Ecological Sheep & Goat Breeding and Marketing Management

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Abstract: There have been main negative consequences in nutrient procurement and consumption systems related to modern conventional animal production a specially in cattle and poultry production system since 1980. These problems present the dilemmas leading to great controversy both in terms of economy and human / animal health and well-being. These results, which are based on policies aimed at increasing productivity of global groups and selling excess production, are threatening human and animal health and nature today.

Ecological sheep & goat breeding+local cattle was created by supporting traditional animal breeding system with rational and scientific methods. In still production to consumption is a marketing strategy which aims to provide added value to the product obtained from a flock of similar continued production system. This production system ensures that the resulting meat and dairy products are marketed as natural and health-friendly products. The system evaluates soil and animal (local cattle breeds, sheep and goats) and economic management, taking into account sociological balances and enable to controlled extensive production system and product traceability. This system does not carry that economics, sociologic and ecologic issue that was created by promoting of intensive animal breeding since 1980. It can be found implementation possibility in different location due to low investment and operating cost. Due to its breeding system has created Carbon notr negative effect. In terms of animal production that present ecological friendly/natural/Eco/slow food product. It can be found implementation possibility in different location due to low investment and operating cost. If the small and middle scaled enterprises use this information they take maximum income with at least input and this is the animal breeding system that they can do themselves or via cooperative producer association and collective village herd. "Ecological animal production system combined with slow and regional food system. This system can be found implementation possibility in different location due to the low investment and operating cost. The groups that they want to consume natural meat, it creates an alternative product. With gripped of urban and regional food and consumption habits some negative effect of urban food politics and it can create different alternatives. Animal breeding system, cooking and serve/presentation techniques, which are regional, that are brought together and it brings necessity of to be a trademark. Ecological products can be tracked and sold safely along with labeling system and farm name in local markets and butchers.

Reasons for the consumer's decision to purchase the product 1. There is no welfare issue 2.GMO and animal feed additives are not used 3. The amount of medium chain fatty acids (MCT oil) has increased in the native grass 4. Domestic animal breeds have been used 5.The products of the manufacturer that he knows and can easily reach. 6.Natural and environment friendly. 7. It can be used reliably in infant and child nutrition. 8.Oganoleptic quality is high. 9.It creates added value in the rural development of the region where it lives. 10. The product has reached the consumer in a short time and has not been unprocessed. 11.The broker agent is never present or is one. 12. The price quality index is high.13. It has carbon negative effect.

Key words: sustanaible ecological animal production, marketing in animal products, holistic management

1. Introduction

The global population is expected to exceed 9 billion by 2050. United Nations Food and Agriculture Organization (FAO, 2011) estimates this situation to cause a 60% increase in high quality protein demand such as milk and meat. Livestock sector constitutes the world's largest natural resource user and covers 8% of agricultural land used for grazing or animal feed production and 8% of global water use, mainly used for watering the forage of crops. In addition, climate change and the use of pesticides, certain animal health products, feed additive ingredients, the side effects of the use of biotechnology products pose a threat to food safety. The key to the conservation of natural resources is the development of sustainable methods of increasing the agricultural healthy output from the majority of the existing agricultural fields. In order to meet the increasing global food and protein demand, FAO estimates that 70% of the increased production will come from the use of technology, which is an indication that the threat towards food safety will grow at the same level. Animal diseases, zoonotic diseases and animal welfare are the other components of this threat. Reduction of losses due to animal deaths can

significantly increase the supply and access of animal protein. 20% of the annual livestock production is lost due to improper animal breeding (FAO,2011).

There are 3 main components in sustainable animal breeding. These are environmental awareness, economic valency and social responsibility (Grsbeef, 2017).

- Preventing air, water and soil pollution (ammonia, nitrate, phosphorus, etc.) while managing the technology for more efficient use of natural resources per unit of animal food produced in terms of environmental sensitivity, managing fertilizers to provide recycling of nutrients and energy, protecting soil health and biodiversity, attempting to use sustainable resources in order to minimize the environmental and social impacts of feed / feed imports are the main objectives. It is highly necessary to use grazing systems as efficiently as possible.
- In general, social responsibility is to ensure food safety and public health through the improvement and protection of animal health and well-being. In addition, it involves improving the working conditions of the livestock sector and protecting the social rights. At the same time, it conserving local values by protecting cultural values and tastes.
- Economic vitality is the viability of the animal food production in terms of economy. It should allow farmers and other food chain stakeholders to continue their development and investment. They should be able to make a positive distinction in terms of producers.

Sustainable livestock systems provide the production of economically viable food production in the food chain, as well as the realization of social and ecological goals, reception of a fair share of profits from the food chain by the production economy, and the understanding capacity of manufacturers in terms of investment, market change, product and input prices and profitability FAO, 2011). The intensive system, product sales techniques and animal breeding techniques using the technology unconsciously implemented since the 1980s have revealed the following results:

- The farmer family income has reduced and the share of retail traders has increased (Van der Ploeg et al,2003; Hoste and Bondt,2004).
- Environmental pollution and ecological degradation has gradually been increasing (Goodlass, 2003). According to FAO (2012), 18% of the total global greenhouse gas emissions in the world is composed of modern conventional livestock, and it is observed that the rate is increased to 27% in case of the addition of forage crops. At the same time, biodiversity and variation are in a dramatically decreasing condition. In Turkey, poultry and herbal seed production experience a similar condition and cattle breeding is at the critical border. Genetic resources are kept under production. No danger in sheep and goat breeding has been observed yet. It is more highly possible to improve these conditions due to the culture breed cattle breeding via sheep and goat breeding as a healthy, natural and economic source of protein. This opportunity is available through healthy ecological breeding system.
- Along with the cultivation of standardized plant and animal breeds, especially those produced using modern or genetic techniques for higher yields, the organoleptic quality and variety of products underwent a tremendous loss and their rate of additives increased.
- In the conventional production, disorders emerge in humans due to the food from animals reared feeding and metabolic problems, autoimmune diseases, cancer cases and prion zoonotic diseases such as bacterial, viral and BSA are observed (WHO, 2017). Furthermore, the use of constant high fertility and hereditary sperm (Beta casein A1 and A2, which cause early onset of nervous system diseases such as Alzheimer's and Parkinson in humans) leads to the emergence of insecurity and uncertainty between producers and consumers in diseases such as Autism, Schizophrenia,

Sudden Death Syndrome of Newborns (Swinburn, 2004;Vuylsteke et al 2004). In order to overcome these problems, efforts are being made to establish trust in the system through methods such as labelling, quality control certification, organic farming, good farming practices, etc. While organic animal breeding approaches environmental and social problems related to food production like conventional agriculture, it actually presents organic, bio-organic solutions to the system. However, organic farming has also been criticized because it is a system consisting of a mandatory and intermediary-based certification, using a costly method of organic struggle and feeding the same groups of capital.

- The low yield particularly due to the stress of intensive breeding on animals, increased susceptibility to diseases and problems in reproduction have resulted in the emergence of the concept of animal welfare. For this reason good animal husbandry practices and organic farming concepts emerged. In 1992 and 2005, it has been stated in a research conducted on dairy cows in the Netherlands that saturated fatty acids in the milk increased at a worrying level due to the intensified breeding system and herbage reduction in feeding (%34-%12) (Heck et al,2009) and the increase in the proportion of feed raw materials such as corn and soy (Van Bruggen, 2007). The high economic and environmental costs created by the modern livestock system clearly demonstrate how far breeding needs to improve in order to render sustainability possible. The possibility of buying 1,2 kg of milk feed with the price of 1 kg of milk (Turkey National Milk Council, 2016) and the formation of the business expenses consisting 64,5% feed costs, 10% energy, 10-15% staff expenses, 2-4% medication, vaccines and health expenses are good examples of high costs of this breeding (Turkey National Milk Council, 2016). The feed cost of obtaining meat protein based on intensive conditions in cattle breeding and relatively expensive raw materials is about 4 times that of milk protein production. Having predicted that the meat production would be provided through the carnivores to be bred in the intensive system, the high feed costs and a stop in the reduction in carcass cost would lead to the lack of an increase in the meat production at the desired level (Akman 2014). The high price of meat and milk sales in Turkey is an important indicator of this situation. The veal carcass price increased by 184.6% between the years 2007-2016 (Akman 2017.) In Turkey, imported feed raw materials used for intensive breeding systems, breeding and animal importation, inadequate feeding, fertilizer management increase the cost of animal husbandry. Despite all these, the share of cattle has gradually been rising when the cattle and sheep-goat meat consumption is compared. The shares of cattle, sheep and goat in meat production were 56%, 35% and 7% between the years1991-93 and 88.3%, 8.7% and 3% in 2015 respectively and their shares in milk production were 84.1%, 11% and 3.3% in 1991 and 90.8%, 6.3% and 2.6% in 2015 respectively (Akman, 2017)
- In the production of animal and vegetable products, industrial production is not sustainable in the long run, and in the short run it has become a form of production with destructive consequences away from natural and healthy conditions. Initially, although this process was successful in providing food safety to consumers at low prices, it has adversely affected food safety and led consumers to seek different options or even have reactions (Van der Ploeg et al, 2003).

Settled societies maintained their livestock by joint use of their landmasses, spreading and jointing during the grazing season until the mid-20th century. The ecological balance of the meadows has gradually deteriorated due to the reduction of pastures, extreme, unconscious and ineffective grazing, global warming and climate change, and wrong political decisions. Large capital groups, which provide input to intensive farming due to the rapid population growth in the world, have been recognized as a production model that should be intensive farming.

2. Sustainable Ecological Breeding in Sheep-Goat Breeding

"Ecological sheep and goat breeding and holistic management approach, supporting traditional breeding system with rational and scientific method created with a new understanding and design, is a sustainable breeding method and marketing strategy covering the period from production to consumption (Arsoy, 2014).

Ecological breeding system, alternating pasture use and holistic pasture management (Allan Savory and Savory Institute, 2015) plan animal production in a simple, rational and scientific way. The basis of these techniques is the natural grazing behaviour of animals. Pasture-based livestock improves the productivity and sustainability of pastures and soil. This livestock is conducted by taking the vegetation type in the region, the structure of the soil, climate, geography, dominant winds, elevations, direction, animal species and breeds, water resources and animal welfare into consideration. In the simplest form, it is it is a pasture management which is applied with the maximum number of animals and the most frequent conversion interval (1 day if possible), which may take place in the partitioned pasture. This system constitutes biological monitoring, financial plan, soil and animal management components. In fact, this system is the adaptation of the "frequent herds and fast movement" conditions through the historical period to today. When animals graze quickly in the partitioned parcels of the pasture in a frequent way without differentiating, the faeces of animals remain in the soil as organic materials. At the same time, the plants which are not grazed and the roots of the grazed plants mix into the soil and the cycle continues with the formation of new roots and stems. In the meantime, the herd management is utilized in the treatment of the barren parcels, the herd is grazed in a strong field and barren plots are taken for defecation. In areas where the system can not be constructed in this way, a more optimal pasture management will be possible by using the modified pasture method within the scope of ecological breeding and by educating the herd owners using the free grazing system and by positively discriminating the products obtained from the cultivated animals. Furthermore, in extensive systems, the incidence of infections in situations where natural environmental conditions are known, and some nematodes may be reduced by environmental regulation of the host parasite relationship (Brundson, 1980; Sellers, 1982; Thrusfield, 1986; Brown-Brandl et al 2009).

The system began to be used in Sweden, in America, Zimbabwe, Australia, especially in cattle breeding. The most important feature of the system is that the farmers call themselves "Carbon Farmers" because it allows the carbon to be buried in the soil. This is because it carries out carbon deposition by increasing the amount of top soil, which is the most common place to obtain carbon, and its ecological content with cycles. Holistic pasture management is being implemented on an area of 12 million hectares in the world and has a biomass that can feed about 450 kg of live animals per acre (Allan Savory and Savory Institute, 2015). Due to the condition of the pastures and the climate characteristics in Turkey, it is difficult to apply the system in culture breed cattle breeding. However, in Turkey (except for some of the dairy goats) and underdeveloped countries, ecological breeding in traditional goat and sheep breeding continues traditionally but requires scientific methods, design change and producer awareness. In this context, evaluating ecological breeding together with slow food approach is a new design concept. A holistic management approach created by the combination of small ecological animal breeding and slow-food consisting of gastronomic food designs and other items is an alternative opportunity to produce sheep-goat meat and milk (Arsoy 2015). The concept of slow food involves the assurance and evaluation of products with specific characteristics as well as the forms of information and organization that the sensory experience has caused and brings together cultural diversity and ecological production (Slow Food 2017). Slow food supports food quality and safety in animal production, the production of human sustainable healthy food resources, the protection of animal and human health and the protection of nature. The subject includes animal welfare suitable for its natural life with minimal stress and immunity to diseases based on the animal type used in animal breeding, race, feeding and management style used in animal production. From the experiences of the traditional system, the ecological sheep and goat breeding are in full compliance with the slow food feeding system, based on the local resources.

Advantages and results of the system

- It provides an assessment of specific components of each geographical region.
- It renders small and medium sized businesses sustainable.
- It allows cooperation, participation, locality, common action, sense of self-worth of manufacturers and use of knowledge.
- It ensures the protection of the public well-being along with animal welfare and health.
- It allows the safe production about which consumers are convinced.
- It contributes to the creation and strengthening of producer markets.
- It plays an important role in revitalizing the regional trade.
- It promotes sustainable and traceable food production and food quality.
- It includes the transfer of preventive medicine activities to the foreground.
- It helps to reduce the distance and increase the confidence between producers and consumers. It would be possible to present the milk and meat obtained in this way to consumers as fresh as possible via producers or cooperatives and local producer associations without major intermediaries,
- It provides a new and creative approach to support local food and gastronomy,
- It improves grazing areas; It increases the quality and quantity of the vegetation cover because of the soil and at the same time prevents the loss of soil,
- The low investment and operating costs of organic livestock can be an alternative providing the same results,
- It provides "nature friendly ecological (Eco)" products in terms of animal production,
- It does not use feed sources with GMO which are not from the region because the diversity of the vegetation cover positively contributes to the components of milk and meat and the proportion and diversity of the natural and different components in the animals' meats and milk increases according to the region. Therefore, animal breeds incompatible with that region are also not used and protection of genetic resources is ensured.
- It protects and grows plant and animal genetic resources,
- It is possible that small and medium-sized enterprises can use their knowledge to obtain maximum income with minimum input, and that they can do it on their own or with cooperatives, producer associations and village herds,
- It creates an alternative to the groups that want to consume natural meat, milk and dairy product, imposing a rivalry on processed functional meat and meat products obtained from animals raised by conventional methods,
- Since the aim is to produce high quality and healthy products rather than production in large quantities, it is ensured that the price of products is also a little more than the conventional ones.

Meat and milk obtained with ecological sheep and goat breeding have many health related benefits. Many research have been carried out on this topic. In addition to its known benefits, increasing amounts of Conjugated Linoleic Acid (CLA) and unsaturated fatty acids, particularly in goat's milk, in extruded animals that have been cultivated since 2000 have prevented the functioning of LPL enzyme which helps to store fat in the body and help to reduce the amount of fat stored in the body and are also used as anti-inflammatory medication) (Woodford, 2007). CLA is also sold as a fat burner supplement. Caprylic acid, found in goat's milk and meat, is used as a supplement in cancer treatments especially in recent years (Haug et al 2007). CLA and L-Carnitine in the most natural form are the main components of lamb meat. Lutein, an important component of the lamb's meat, is an antioxidant known to reduce the risk of macular degeneration, which can go up to the blindness (Yenice et al, 2007). At the same time**,** kid sold in many European countries (France and Spain and South America), also called "Cabritos (Chevon in Northern Europe), which are 1-year old", is 2-3 times the price of calf and lamb

meat on the market. The fat content of the meat obtained from the 10-12 kg carcass weight is also very low (Woodford 2007). Goat and sheep milk is important in making cheese and yogurt. It is known that 193 kinds of cheese are produced in Turkey. Sheep and goat milk is widely used in cheese production. This is because the special textures and tastes of the cheese are dependent on the local vegetation and the breed of sheep and goat. By year of 2012, only 9 kinds of cheese have received geographical marks. The Eastern Anatolia region geographically labelled cheese varieties are of great importance as these regions perform sheep and goat breeding based on the ecological-ecological pasture. In addition, Karaman Divle obruk cheese entered the list of Presidia, which is considered as a Slow Food registered geographical sign. The Kars kaşar cheese made from unpasteurized milk obtained in a three month period of the year from animals free-grazing in the pastures of high mountains only from 2 thousand meters received geographical indication in 2014 (Turkish Patent Ins.2017). Cyprus halloumi requires 50% of sheep and goat milk to be used in halloumi production in order to get a geographical indication from the EU and the process is ongoing.

3. Conclusion

3.1. Sustainable ecological breeding and marketing model in sheep and goat breeding (Holistic management)

In the proposed system, it is necessary to establish the consumer presentation within the scope of healthy and natural product first under the ECOmeat and ECOmilk branding, taking into consideration the situation of the meadows in Turkey, the small ruminant breeding and the consumer habits. Only meat and milk of animals raised with pasture nutrition should be sold with labelling and branding indicating ecological production. The inclusion of special information in the labelling system or on small cards will provide an understandable and traceable food presentation for consumers. For example: ECOmeat-Kid-hair goat-Toros-Mersin-7 month-caprylic acid amount, ECOmilk, -healthy milk-SaanenxHairGoat hybrid- Canakkale region-Linoleic acid amount, ECOmeat-Curly lamb- 8 months- Bursa region- lutein amount . For the products obtained from the production of sheep and goat, it is necessary to transform the healthy and natural product perception to consumers by using all communication methods. At the same time, in the context of gastronomy, introducing both local dishes and new food designs from the ecologically produced products to the media will increase the demand for products. In addition, restaurants should be evaluated within the scope of special meals or healthy menus. Furthermore, it is very important to make people conscious and raise awareness in terms producer trainings, especially of veterinarians, zootechnists, and landlords.

This will increase the value of meat and milk for consumers by bringing a new, healthy and environment-friendly dimension to the concept of meat and milk which is a standard and trust problem and it will allow gaining confidence. The model can be summarised as Ecological breeding of sheep and goat + Slow Food approach + Traceability + Geographical marking + Local and new food designs in gastronomy = Holistic Management Strategy = ECOmeat, ECOmilk

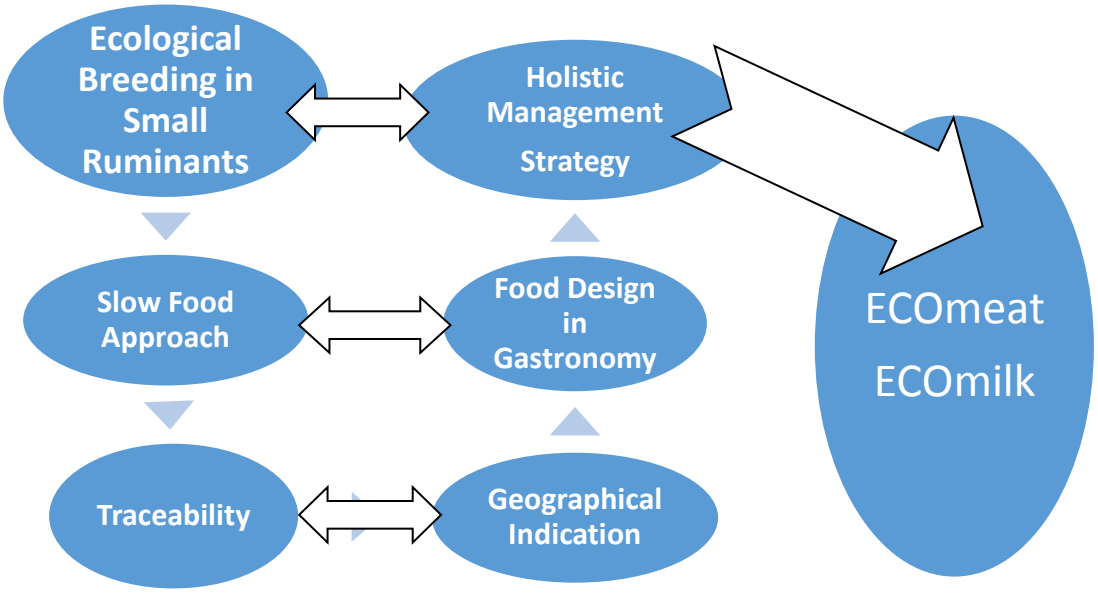

Figure 1: ECOmeat and ECOmilk production model

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