

## ORGANIC SHEEP PRODUCTION

SLAVČA HRISTOV, RENATA RELIĆ, BRANISLAV STANKOVIĆ<sup>1</sup>

*ABSTRACT: The most important aspects of organic sheep production are given based of literature data, as well as implementation possibility of the production in mountainous regions of our country. Organic sheep farming is based on suitable crop rotations, animal manures, clover, low stocking rates and good animal husbandry. Organic sheep unit must be registered with an organic sector body and the production system adopted must meet the specified organic standards. The animals must normally be fed with organically produced feedstuffs and maximum use of grazing. Preventative management is always encouraged, as well as homeopathic and herbal remedies. Veterinary drugs must not be used as a preventative medicine on a routine basis except to prevent distress of illness or injury.*

**Key words:** sheep, organic production

### INTRODUCTION

There are increasing demands for establishing of the organic farming system throughout the world. The basic goals of organic farming system are to manage resources in a self-sustaining manner without chemical inputs and to maintain a strong link between agriculture and nature.

Organic sheep farming is a system that avoids the use of synthetic chemical substance all over the production such as synthetic soluble fertilizers and pesticides for crop production or improvements of pasture and meadow, synthetic remedies, growth regulators, feed additives and so on. The organic sheep farmers rely on good animal husbandry and low stocking rates. The natural animal's immunity is emphasized in combating disease.

The rules for organic farming are set out in the standards. These standards have been developed by organic associations, mainly based on IFOAM's standards (Anon., 1998). In the European Union common standards for organic livestock and livestock products are in effect (Anon., 1991, Anon., 1999). In the UK, the United Kingdom Register of Organic Food Standards (UKROFS) implements these standards (Anon., 2001). In the Serbia and Montenegro there are also standards in place for organic livestock (Anon., 2000., Anon., 2002), which are complies the IFOAM basic standards, the EU regulations and other developed country's regulations on organic farming. All mentioned standards

---

<sup>1</sup> Dr Slavča Hristov, associate professor, Renata Relić, DVM, beginning assistant, Branislav Stanković, MSc, assistant, Institute for Animal Science, Faculty of Agriculture, 11080 Zemun, Nemanjina 6, Serbia and Montenegro

This paper was financed by the Ministry of the Science and Technology of the Republic of Serbia, no. BT 0522

describe fundamental aspect of origin of the animals, period of conversion and feeding, housing condition and health protection of the animals. A comprehensive describe of the most important aspects of rearing, care and welfare of animals in organic farming are given in the paper of Hristov et al., (2002).

Advantages of Serbia and Montenegro's organic sheep production are based on the traditional combination of feeding on hay and silage in winter and grazing on highland's pastures in spring, summer and autumn. Also, nowadays the use of drugs and agrochemicals is at low level, so there is little environmental pollution in the country.

### **ORIGIN OF THE SHEEP**

The most important aspects of breeding goals and strategies for organic sheep production are given in the paper of Conington et al., (2001). Breeds for organic sheep production must be suitable for local conditions. Due to period of conversion to organic meat and milk production, the existing sheep can be retained but can never be sold as organic. However, the progeny of organic managed ewes can be sold as organic following the required conversion periods.

Producers in organic sheep farming are encouraged to rear their own replacements or to buy from other organic units. However, up to 20% of the breeding flock can be replaced each year as ewe lambs or unsuckled hoggets from conventional flocks.

The sale of organic sheep through livestock marts is not generally permitted, with the exception of pedigree stock and rare breeds. Marketing should always be considered before starting organic sheep production. Store lambs from other organic units can be purchased. Conventional store lambs may not be finished as organic stock.

Stock rams can be purchased from conventional units provided they are subsequently managed to organic standards. Hired and borrowed rams can be used provided they are managed organically while they are on the unit.

Conventional stock of another species may use organic pasture for up to 120 days each year. However, this requires permission from the sector body.

### **PERIOD OF THE CONVERSION**

Conversion planning is a very important aspect of progressing from conventional to organic sheep production. In some cases the whole sheep unit will be converted in one block, or the conversion may be phased over a number of years. Where the complete sheep production unit is converted together with the stock, the conversion period can be reduced to 24 months. This applies to lambs born from existing ewes and where the stocks are fed mainly with products from the unit. Stock management must meet all of the organic standards from the beginning.

### **FEEDING OF THE SHEEP**

Organic standards enact that all feeds used in the unit must be free from genetically modified organisms (GMO) from the start of conversion. Organic sheep must be fed on organically produced feedstuffs. Maximum use should be made of grazing, and all of the feed required should ideally be produced on the unit. At least 60% of the feed should be

obtained from the unit or from linked organic units. However, where this is not possible, up to 10% of the feed may come from non-organic sources each year, until particular year according to the standards. Mostly the daily maximum allowance for non-organic feeds is 25% of dry matter intake. Mainly up to 30% of the feed may come from in-conversion sources. Where it is produced on the holding on which it will be used up to 60% of the feed may be in-conversion. The balance of the ration should meet full organic standards.

A rotational grazing system is preferred for better grass quality and parasite control (Younie et al., 2003). The rotation with three to four paddocks, which need not be the same size, is the best. After weaning, lambs should continue to graze good quality pastures, preferably silage aftermaths. Lambs perform excellently on pastures with high clover content. Breeding ewes should not be grazed on red clover, or fed red clover silage for at least four weeks before and after mating, to avoid any adverse effect of red clover estrogens on lambing percentage.

Establishment and management of clover-based swards are vital to the success of organic sheep units. Clover is required to maintain good levels of productivity, especially on improved grassland. Red clover, sown with hybrid ryegrass, can be used to produce bulky silage crops. Molasses, bacterial inoculants and enzyme additives may be used as silage additives.

The basis of the concentrate ration is created on available home produced organic cereals. Organic concentrates can be purchased and the allowance for non-organic feed facilitates the use of other purchased feeds, in particular protein sources that may be difficult to produce on the farm. Purchased feed must meet a number of criteria, including freedom from GMO's, solvent extraction and fishmeal.

Mineral supplementation is only permitted where trace element requirements cannot be met by the practices of organic husbandry.

Maintaining soil fertility depends on appropriate rotations and the careful allocation of recycled manures and slurry. Artificial fertilizers are not permitted, but lime and some natural sources of nutrients can be used. It is easier to farm organically where soil fertility is medium to high. Rock phosphate has been used successfully on organic farms. Some land will not be suitable for ploughing or sward improvement. Permanent pasture and rough grazing will be important in these situations.

### **THE LIVESTOCK MANURES**

Manure for maintaining soil fertility may be brought in from other organic units. According to the organic standards the total quantity of nitrogen applied on the farm may not exceed 170 kg N/ha/year, including that produced by the stock on the farm. This is equivalent to a stocking rate of almost 2 LU/ha. The maximum applied to any one area of soil should not exceed 250 kg N/ha/yr. Permission may be sought to use manure produced on conventional units.

### **THE HOUSING CONDITIONS**

According to the mentioned regulations loose sheep housing for organic production that is well bedded is favored. For each ewe should be allowed 1.5 m<sup>2</sup> with an additional

0.35 m<sup>2</sup> for each lamb. Although slats or wire mesh floors can be used in organic sheep farming they must not exceed one half of the floor area available to each group of stock.

Housing conditions for sheep must meet entirely their biological and ethological needs. The sheep must have easy access to free-range, open-air exercise areas, feeding and watering. Insulation, heating and ventilation of the building must ensure that air circulation, dust level, temperature, relative air humidity and gas concentration, are kept within limits which are not harmful to the sheep. Sheep building must permit plentiful natural ventilation and light to enter. Free-range, open-air exercise areas or open-air runs must, if necessary, provide sufficient protection against rain, wind, sun and extreme temperatures, depending on the local weather conditions and the breed of sheep concerned, stocking densities and the avoidance of over-grazing of pasture. A stocking rate of 1 to 1.4 LU/ha is suitable for organic sheep farming.

Housing for sheep will not be mandatory in areas with appropriate climatic conditions to enable animals to live outdoors.

The stocking density in sheep buildings should provide the comfort and well being of the animals. The optimum density will provide them sufficient space to stand naturally, lie down easily, turn round, groom themselves, assume all natural postures and make all natural movements.

The outdoor stocking density of sheep must be low enough to prevent poaching of the soil and over-grazing of vegetation.

Housing, pens, equipment and utensils must be properly cleaned and disinfected to prevent cross-infection and the build-up of disease-carrying organisms. Feces, urine and uneaten or spilt food must be removed as often as necessary to minimize smell and to avoid attracting insects or rodents. Only the products listed in the standards can be used for cleaning and disinfection, and the elimination of insects, rodents and other pests in buildings and other places where sheep are kept.

Outdoor areas may be partially covered and the animals must be able to use these areas whenever the physiological condition of the animal, the weather conditions and the state of the ground permit. By way of derogation from standards, the final fattening phase of sheep for meat production may take place indoors, provided that this indoors period does not exceed one fifth of their lifetime.

Sheep housing must have smooth but not slippery floors. At least 50% of the total floor area must be solid, that is, not of slatted or of grid construction. The housing must be provided with a comfortable, clean and dry laying/rest area of sufficient size. Sufficient dry bedding strewn with litter material must be provided in the rest area. The litter must consist of straw or other suitable natural material. The litter may be improved and enriched with any mineral product authorized for use as a fertilizer in organic farming in accordance with the standards.

## **THE HEALTH PROTECTION**

In the chapter of Boehncke, (1997) the most important aspects of preventive strategies as a health resource for organic farming are specified. Organic sheep producers must maintain a production environment that promotes sheep health and limits any sheep stress. These may include balanced and complete nutrition, selection and breeding of the animals capable for acquirement of resistance and immunity to disease, proper sanitation

and hygiene, exercise, freedom of movement and reduction of stress, pasture management, quarantine of incoming stock, vaccinations as required by law or for diseases endemic to an area, as documented in the specific organic sheep plan and approved by the certification agent, and administering veterinary biologics, vitamins, and minerals.

Sheep producers are required to manage their animals to reduce the risk of parasite infestations through cultural and biological practices, which may include quarantine and fecal examination for all incoming stock, pasture rotation and management, periodic fecal examinations and culling seriously infested individuals, vector and intermediate host control and so on. Worm control should be achieved through careful grazing management practices to minimize sheep exposure to infection (Younie et al., 2003). Some anthelmintics may be used as part of a control programme approved with the sector body, and to treat sheep when clinical symptoms occur.

To minimize the risk of sheep scab, closed flocks are recommended. Care should be taken to avoid contamination from purchased stock, transport vehicles and shearing equipment. If dipping is required, flumethrin can be used. Fly strike should be minimized by dagging tails and keeping wool clean. Where treatment is required, the use of cyromazine and deltramethin is permitted. If any organophosphorus product is used, animals lose their organic status.

According to the mentioned standards (Anon., 1998, Anon., 2001, Anon., 2002) antibiotics, growth hormones, synthetic de-wormers and medicated feed additives, including ionophores, are prohibited from regular use in organic sheep units. The use of vaccines in some regulations is encouraged, while in others they can only be used under certain situation. The regulations highlight that suffering animals must be treated with the most effective therapy available. However, animals that have been treated with synthetic medications or antibiotics cannot be sold as organic. Although the practice is not encouraged, ewes can be treated with certain medications up to the third trimester of pregnancy, and the lambs can still be sold as organic.

In organic sheep farming broad-spectrum preventive practices is always confident, but any problems must always be dealt on time. The use of homoeopathic remedies is also encouraged. Veterinary medicines and antibiotics must not be used as a preventative medicine on a routine basis but should be used to prevent distress in the occurrence of illness or injury of the animals.

The withdrawal period must be at least twice the stated withdrawal period. Where the legal withdrawal period is nil or less than 24 hours, the withdrawal period will be 48 hours.

Vaccination is permitted in cases where there is a identified disease risk that has been settled with the sector body. Single vaccines are preferred to more complex multiple vaccines, unless such cover is specifically required.

Where a sheep or group of the animals receive more than three courses of treatment within one year, they lose their organic status, with the exception of vaccination, treatment for parasites and any compulsory eradication schemes. Lambs or other stock with a lifecycle of less than one year may only be treated once before they lose their organic status. Stock could get back their organic status if they go through a further conversion period.

A comprehensive plan must be drawn up, preferably in conjunction with a veterinary surgeon, to show how the organic sheep production system will be developed to promote good health and become less dependent on veterinary medicines.

## THE CONCLUSIONS

When people choose organic sheep meat, milk and wool production, they are in turn strengthening family farms, protecting community values, providing good profits to the farmers, enhancing rather than exploiting or destroying the environment, and renewing our natural and economic resources for future generations. A farmer considering the organic option should look at the subsequent the most important aspects of this system:

1. Soil fertility: it is easier to farm organically where soil fertility is medium to high. Rock phosphate has been used successfully on organic farms.
2. Stocking rate: a stocking rate of 1 to 1.4 Lu's/ha is suitable for organic farming.
3. Livestock system: the organic sheep farmers rely on good animal husbandry and low stocking rates. Suckler sheep are suited to organic farming. Under good husbandry natural immunity to parasitic and infectious diseases can develop. A grazing system, which reduces the worm burden, should be established.
4. Housing: loose sheep housing for organic production that is well bedded is favored; mainly the conventional straw bedded sheep house conforms to organic standards.
5. Clover: clover is essential. Good clover stands can double pasture production.

Pasture sources of mountain regions in our country have had great importance to economic development, and basically they were the only support to rural economy development. There is no serious alternative in livestock production development in this mountainous region, which makes considerable of territories of areas of our country, with the exception of organic farming models based on biological self-preserving pasture exploitation by sheep and goats and supported and followed by other forms of organic agriculture, considering depopulation and shortage of financial sources.

## REFERENCE CITED

ANON. (1991): EEC, The Council of the European Community. Regulation on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock production. Regulation (EEC) No 2092/91.

ANON. (1998): IFOAM basic standards for organic production and processing, 60 p., Tholey-Theley, Germany.

ANON. (1999): EC Council Regulation, (1999). Council Regulation (EC) no1804/99 supplementing regulation (EEC) no 2092/91. Official Journal 222, 24/08/1999 p. 0001 – 0028.

ANON. (2000): Zakon o organskoj poljoprivredi. Službeni list SRJ, br. 28/2000.

ANON. (2001): UKROFS (UK register of organic food standards), Feb., 2001.

ANON. (2002): Pravilnik o metodama organske stočarske proizvodnje. Organska proizvodnja – zakonska regulativa, 261-289, Beograd.

BOEHNCKE, E. (1997): Preventive strategies as a health resource for organic farming. In: Isart, J. & Ilerena, J. J. (eds). Resource use in organic farming. 3rd ENOF workshop, Ancona (Italy).

CONINGTON, J., LEWIS, R.M. & SIMM, G. (2001). Breeding goals and strategies for organic sheep production. In: Proc. Organic Meat and Milk from ruminants, Kyriazakis I. & Zervas, G. (editors), Athens, Greece, 4-6 October 2001. EAAP Publication No. 106 pp 135-142.

HRISTOV S., HOPIC S., BOGDANOVIC V., RELIC RENATA, PERISIC P. (2002): Uzgoj, nega i dobrobit životinja u organskoj stočarskoj proizvodnji. Organska proizvodnja – zakonska regulativa, 175-184, Beograd.

YOUNIE, D., THAMSBORG, S.M., AMBROSINI, F. & RODERICK, S. (2003): Grassland management and parasite control. In (Editors., Vaarst, M., Roderick, S., Lund, V. and Lockeretz, W.) Animal Health and Welfare in Organic Agriculture, CABI, Wallingford, UK, 384.