

Study on the diversity of products obtained from sheep in the current bioeconomy context *

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Abstract

A concern for the growth and exploitation of sheep has been since ancient times in Romania, the development of this sector is favored by climate and the varied geographical configuration, with wide grasslands, by the economical maintenance system based on transhumance.

This old occupation founded a real domestic processing milk, wool and leather industries with real positive social-economical implications on our material and spiritual life.

The sheep breed which prevailed until the 20th century is ‘Turcana’ and ‘Stogose’ sheep and less ‘Tigaie’ sheep, these breeds being generally unimproved but having a pronounced rusticity and resistance to bad weather conditions and long ways in searching for the food.

The exploitation directions in sheep race is determined by the national economic demanding, and the achievement possibilities by the productive potential of the races and also by the system and growth technology, improvement and exploitation of the races.

Sheep species were very appreciated, on the one hand because of the diversity of products, on the other hand because of the superior nutritional and economical values.

Taking into account the natural conditions and the national economical demanding, the growth of sheep was guided, stimulated and helped continuously, as an important field in zootechny, to an intensive and multilateral development for covering the internal production of the necessary raw materials for the textile, fur, leather and food industry to a continuous technological development and improvement. Both research and the technical staff have a great contribution to the rising of the zootechnical field for the achievement of the priority tasks, in order to resolve the new problems appeared in the development of the sheep growth.

The necessity of combining knowledge which contains a fundamental scientific profile with the applicative knowledge led to an approach of the complex aspects of the development and modernization of growth and exploitation technologies in sheep race.

White variety is the most numerous widely spread. It is appreciated especially for its white wool, which is used in domestic industry for making clothes and other products of popular art, and in textile industry it is used as raw material being very valuable in making Persian carpets.

Keywords

Sheep, milk, wool, bioeconomic, meat,

Introduction

The sheep species has been particularly appreciated, due both to the diversity of its products and their superior nutritional and economic value. Taking into account the natural conditions and the requirements of the national economy, currently sheep breeding, as an important sector of animal husbandry, has been oriented, stimulated and supported, in the direction of its intensive and multilateral development, to cover domestic production of raw materials. for the textile, fur, leather and food industries in continuous development and technological improvement.

The basis for approaching the presentation of the complex aspects of the development and modernization of technologies for breeding and exploitation of domestic and imported sheep breeds, was the need to combine knowledge with a scientific basis, with the applied ones.

Therefore, the treatment of this problem was achieved through the prism of economic efficiency, using a rich material, closely related to scientific and production results, recorded in recent years, in the field of application, mainly new technologies for exploiting the productive potential of the species.

At the same time, special attention was paid to the practical ways of intensifying the breeding and exploitation of sheep, in the conditions of the new revolution in the agriculture of our country. Interest in this species has increased even more, with the development of agriculture and in general with the evolution of socio-economic bills, which have generated new food requirements and raw materials of animal origin.

Thus, the need arose to create new breeds and more productive types of sheep, simultaneously with the recent development of breeding and exploitation technologies with increased efficiency. This explains why sheep have spread to almost the entire surface of the globe and especially in areas with temperate and oceanic climate and less in those with humid and cold climate or humid and too hot.

In order to solve the new problems raised by the development of sheep breeding, at this stage and in the future, both the research and the technical staff working in production, contribute to a certain extent to the raising of this sector of animal husbandry, to the achievement of priority tasks. Depending on the evolution of socio-economic factors and the organizational framework, the exploitation of sheep goes through main stages: As regards current trends in sheep farming, they are mainly based on market requirements, the biological characteristics of sheep breeds and the specificity of environmental conditions.

Table.no.1. The evolution of sheep worldwide 2017-2019

Specification	2017	2018	% of the total on 2019
Africa	164.859	183.562	+1.34
North America	22.410	21.961	-2.92
Asia	293.778	324.561	+21.45
South America	102.563	107.790	-6.45
Europe	126.343	134.249	+5.55
TOTAL	1.044.316	1.120.092	+4.15

Thus, the table above shows that recently, large increases in sheep numbers are recorded in Asia, followed by Africa and Europe, while the other continents mark a slight decrease. In some transoceanic countries, large sheep farmers, such as Australia and New Zealand, until recently the exploitation for the production of fine wool predominated, and now the one for crossbred meat and wool, mainly of

the Corriedale type, has prevailed. In Eastern Europe and the Balkans, concern for meat production has been boosted, along with wool, milk and skins.

The type of sheep to which it tends more and more is the one with mixed production, medium size, pronounced precocity and prolificacy, high adaptability and crossbreeding with other breeds.

Description of the area from a geographical point of view

In this paper, the growth of the sheep from the Țurcană and Țigaie Prahova area and the Carpathian curvature was analyzed.

This area starts from the north of Dâmbovița county, where the value-red ecotype of Țurcana grown in Muscel is interrupted. Here, in the north of Dâmbovița County, valuable Țurcana sheep also grow in small numbers in several localities neighboring the Muscel area, such as: Pucheni, Malul cu Flori, Râul Alb.

The growth area continues in the north of Buzău county and starts from Chioști localities, neighboring with Starchiojd commune from Prahova county and extends along the Carpathians in Vran-cea, to the historical locality Soveja, south of Bacău county. The whole area stretches for an area of 30-40 km to the hills. The altitude is 600-800 m.

Among the varieties, the black one has been grown, appreciated for the production of skins, and from the black wool household articles are made: blankets, clothes, carpets. The white variety grows about 25-30% of the entire herd in the area.

Our investigations show that in this area, before the First World War, a subpopulation of valuable Țurcană sheep grew, with a productive potential of 4-5 kg of wool and quite early, as well as a good milk producer.

The development of the industry producing fabrics and cloths in the Prahova Valley and Brasov determined the orientation of sheep breeding towards laughter and types with semi-fine wool - especially the Țigaie breed. Gradually, this breed began to enter the mountainous and submontane area of Buzau. After 1978, the economic situation imposed the production of fine and semi-fine wool in indigen, the țigaization action intensified, so that in the whole northern area - mountainous and premontane - 75-80% of the sheep are Țurcana and Țigaie from the white variety and from the black one. The production of brown wool is 1.8-2 kg, which reminds us of the late Țurcana sheep raised in the households of the population inappropriately. The most valuable Țurcana sheep herds are raised at C.A.P. Chiojdu, which achieved an average production of 3.5 kg and C.A.P. Sirius, with a production of 3.2 kg of wool, in adult sheep.

The action of restoring the Țurcană herds in the Buzău area has started and continues on two paths: the acquisition of ewes and young females from the Sibiu, Alba, Gorj, Vâlcea and Muscel area, as well as the introduction of valuable rams over the hetero- genus and of the Țigaie breed that is currently growing in the area.

In Vrancea county there is a continuation of the existing situation in the Buzău area. Some peculiarities of the structure of races and varieties are insignificant. The Țigaie race entered here a little later. The percentage of Țurcană is slightly higher, especially in the mountainous area and is estimated at 40-50%.

The Țigaie breed comes from the *Ovis vignei-arkar*. From the southeast of the Caspian Sea, where it was domesticated, it spread first in Asia Minor, then in the south of the Soviet Union, in the Danube Mouth region and in Dobrogea, from where it spread to the rest of our country, in the PR Bulgaria, , RSF Yugoslavia, RP Hungarian, R. S. Czechoslovakian and R. P. Polish.



Figure1-sheepTigaie

sours:<https://www.stiriagricole.ro/rase-de-oi-rasa-tigaie-2192.html>

Over time, as a result of transhumance and the action of different geoclimatic conditions in our country, two ecotypes have emerged: a "plain", more massive and with higher wool and meat production, which is also the more numerous and a "mountain" one, with less bodily development.

Before 1950, the Țigaie breed grew in compact herds, on a smaller area, in the South-Eastern Plain and in the Dobrogean Plateau. Around 1950, the "țigaizare" action, by crossing the transformation of the Țurcană breed with the Țigaie breed, took place on a large scale, in the Bărăgan Plain and in the hilly, hilly and plateau areas in the south of the country and inside the Carpathian arch. Transylvanian, as well as from the south and center of Moldova. Shortly after this action, the Țigaia brought and multiplied in the mentioned areas, as well as the one formed locally of more favorable conditions, the basic material for a new stage - the transformation of Țiga into Spanca and even its absorption with the Transylvanian and Palas Merino.

At the beginning of this century, on the slopes of the Bucegi Mountains, in the localities of Teșila and Tres-tienii de Sus (Prahova County) and in others, as well as in the submontane area of Covas-na, Harghita and Mureș counties, it was formed by adapting Țigăia de șes and by the absorption cross of the Țurcană breed, the mountain ecotype of the Țigaie breed.

Currently, the Țigaie breed represents about 26% of the total number of sheep in our country, being raised in the hilly, plateau and depression areas, with atmospheric precipitation of 650-800 mm, and to a lesser extent in some sub-mountain areas.

The Țurcană breed comes from *Ovis vignei-arkar*, having similar phylogenetic evolution and obvious external similarities, production, resistance and behavior with some breeds from R. P. Bulgaria, Greece, R. S. F. Yugoslavia, Italy, U.R.S.S., as well as with other rustic breeds.

It is the oldest race on the territory of our country, its formation dating back to ancient times.



Figure 2-sheep Turcană (own photo).

The Turcana, continues to be the breed that holds the highest proportion of about 40% of the total population. 3-4 decades ago, it represented over 60% of the population, growing both in the lowland areas, as well as in the hill and mountain areas, due to its exceptional resistance and adaptability to different natural environment conditions. This was maintained until around 1950-1955, when the action of transforming sheep with thick wool into sheep with semi-fine and fine wool was initiated, by crossing with Țigaia in the hilly areas and with Merinos in the plain areas.

At present, it is widespread in the sub-mountainous and mountainous areas of the country, but sporadic herds continue to be increased in the hilly areas as well.

Within the breed, 4 varieties are distinguished: white, black, brumărie and rotca.

The white variety

It is the most numerous and widespread. It is especially appreciated for white wool, from which in the household industry clothes and other folk art products are made, and in the textile industry it is a very valuable raw material for making Persian type carpets. This variety is the best milk producer in the breed.

The black variety

It is raised in small numbers, especially in central and northern Moldova, where sheep are crossed with Karakul rams to obtain skins. In the other regions it is sporadically dispersed in white turkey herds.

The variety of brumărie

It is widespread in the hilly and sub-mountainous areas of northern Moldova, near the localities of Bacău, Botoșani, Suceava and Piatra-Neamț. Both wool and "embers" are brumari. Due to their distinct morphoproductive characteristics and reproductive isolation, some specialists consider that the brumărie variety can be considered an independent breed. -milk education.

The rotca variety

It differs from the other varieties especially by the presence of "cap" horns, twisted in the shape of a corkscrew, which is why some authors tend to consider it to have a different phylogenetic evolution.

Material and methods

The researches were performed on Țigaie and Țurcană sheep. The structure of the staff is presented in table no2.

Table no 2

Races	no animals	Sheep with milk	barren	Sheep with problems	rams	sheep
Turcana	228	100	60	15	10	43
Tigaie	185	102	40	5	6	32

From table no. 1 can be seen the total number of Țigaie and Țurcană sheep, 413 sheep, of which 185 with milk, 100 barren sheep (consisting of 20 sheep that had problems with calving and 80 sheep), 50 lambs and 16 rams. Sheep ages: 5 months and 6 years. In the Țurcană breed, the total herd is 228 heads, of which 100 with milk.

In the two breeds, a very small percentage is registered in the case of sheep that have problems. The feeding of sheep consists of grazing during the summer at low altitude and alpine pasture, and for the winter the fodder is produced on their own farm. wool production, meat production and the production of skins, furs and hides, as well as the shelters and sanitary-veterinary actions required in sheep breeding.

Milk production

Milk production is, on average, 80-110 liters per lactation, with a plus-variety of 140-160 liters, the Țurcană breed being the best milk producer among our local breeds.

Regarding the milk content in fat and protein, as it results from the data of tables no.2 and no.3 and graph no.1, it is found that the average percentage of fat varies, throughout the lactation, between 7.54% and 7.78% and the average percentage of protein between 5.70% and 5.83%.

The fat content of milk marks a progressive increase as lactation progresses. The protein content also increases, but has lower values.

Table no.3 Monthly dynamics of the average protein content

Years	N	Average percentage of protein per lactation	Average percentage of protein per month of lactation						
			Month I	Month II	Month III	Month IV	Month V	Month VI	Month VII
2015	45	5.83	5.69	5.86	5.10	5.86	6.13	6.38	-
2016	52	5.70	5.59	5.63	5.07	5.68	6.03	6.21	-
2017	50	5.77	5.62	5.73	5.11	5.79	5.98	6.42	-
2018	45	5.79	5.59	5.69	5.09	5.83	5.86	6.04	6.48
2019	25	5.86	5.68	5.72	5.13	5.69	6.11	6.19	6.56

In the group of sheep maintained at lower altitude, there are no significant differences compared to the group maintained in alpine pasture, neither in terms of fat content nor in terms of protein content. In both cases, the protein content marked a slight decrease in the third month, which corresponds to the largest amount of milk.

The increase of production registered in the sheep maintained during the lactation period on low altitude meadows is the exploitation of the meadows from the alpine hollows, in the increase of the milk production in the sheep. We consider that the use of low altitude meadows for hay production is more rational than their use as pasture

Wool production

According to the external appearance, the woolen clothing at Țurcană is rare, loose and hanging, characteristics that allow together with the sharp shape of the strands, the easy drainage of rainwater, thus constituting a way of protection of the organism against afrigore diseases.

The fibrillar composition and shape of the strands are determined by the characteristics of the follicular group. The placement of the hair follicles in two layers, one deeper, corresponding to the primary follicles, generator of long and thick fibers and another superficial one corresponding to the secondary follicles, generator of short and thin fibers, determines structurally the conical shape of the strand. In general, the wool produced by the Țurcană sheep is rough, with a usually weak and very poor luster, due to the small number of sebaceous glands. By washing, it loses 30% - 35% of its weight, the yield varies between 65% - 70% in sheep raised in mountain conditions.



The amount of wool varies depending on the feeding conditions and the growing area.

Table no.4. Quantitative wool production

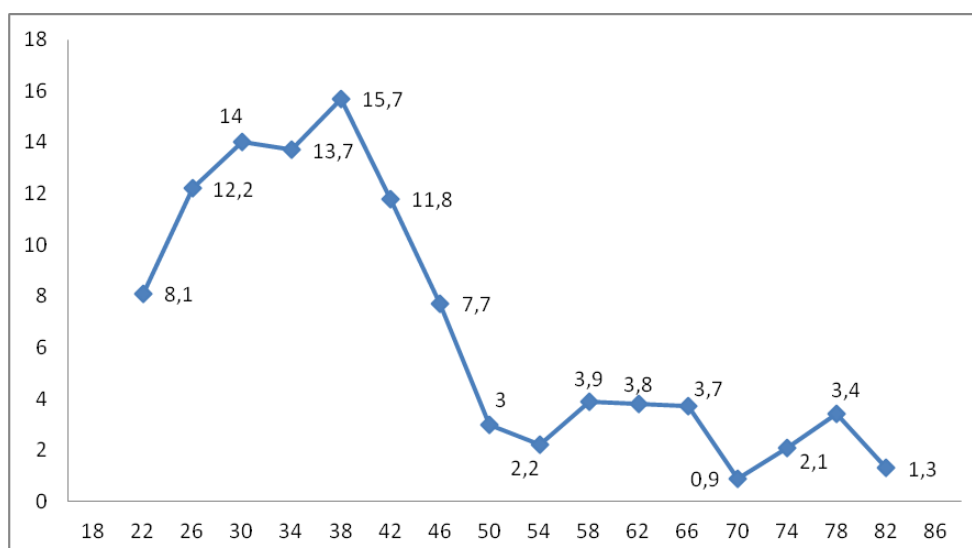
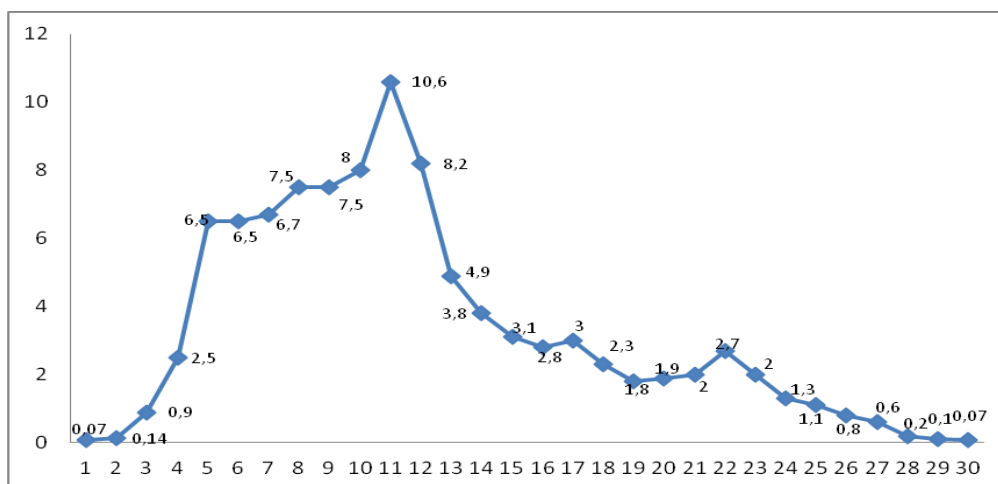
Years	Rams				Adult sheep			
	n	$\bar{x} \pm s\bar{x}$	s	cv %	n	$\bar{x} \pm s\bar{x}$	s	cv %
2015	17	3.87 ± 0.08	0.34	8.78	345	2.75 ± 0.75	0.75	27.24
2016	20	3.27 ± 0.08	0.39	11.91	395	2.33 ± 0.02	0.33	14.23
2017	23	3.18 ± 0.07	0.38	11.92	341	2.25 ± 0.01	0.28	12.47
2018	18	3.63 ± 0.11	0.46	12.66	348	2.43 ± 0.30	0.56	23.25
2019	21	3.88 ± 0.07	0.36	9.27	334	2.54 ± 0.01	0.31	12.20

The value of the wool washing efficiency is influenced by hereditary and environmental factors, with the percentage of impurities in the wool is closely correlated with the care and maintenance of sheep, both during grazing and especially during the stable period.

The oscillations registered in the wool production are the consequence of some feeding mistakes during the respective years.

The most important physical and technological properties of wool are: the length of the strands, the fineness of the fibers, their strength and extensibility.

In general, the characteristics of wool differ from one ecotype to another and show a great variability in the coat, from individual to individual, both in terms of diameter and length, as well as the type of strand, pigmentation and degree of corrugation of the fibers. wool.



The diameter of the wool fibers

Table.no.5. The relative and absolute length of the wool fibers

relative length - Cm -	absolute length		
	n	$\bar{x} \pm s_x$	cv%
24.0	195	12.32 ± 0.48	51.29
27.0	136	16.08 ± 0.34	43.32
20.0	149	11.73 ± 1.30	31.62
23.0	181	13.85 ± 0.31	29.38
17.0	124	9.07 ± 0.39	48.40
20.0	138	9.54 ± 0.51	59.64

18.0	117	9.52 ± 0.36	41.70
24.0	118	12.60 ± 0.56	48.80
16.0	120	9.95 ± 0.33	36.18
21.0	132	12.66 ± 0.45	39.09

On fiber types, the average diameter in sections in the middle of the fibers is 72.42 microns in the long ones, 41.22 microns in the medium ones and 37.13 microns in the short ones. On average, the diameter at 1500 fibers is 50.26 microns, data presented in table

The variability in the diameter of long fibers that increases from base to tip is explained by different feeding conditions during a year and the physiological condition of the sheep. The larger diameter is co-responsive to the May-September period, when the sheep are grazed and weaned the lambs.

Table no.6 The average diameter of the types of fibers in the Țurcană sheep strand

Specification	Type of fiber	Fiber section location	Number of fibers	Diameter - microns -	
				$\bar{X} \pm s_x$	Cv%
Sample at 10 sheep	lengthen	middle	500	72.42 ± 0.64	19.4
	Medium sized	middle	500	41.22 ± 0.58	31.3
	Short	middle	500	37.13 ± 0.49	29.3
Medium	-	-	1500	50.26 ± 0.52	30.2

From the analysis of the obtained data, as well as from the observation of the shape of the strand of its intimate structure and the degree of corrugation, it is found a close correlation with the absolute average length, the average diameter, the types of fiber in the strand and the level of wool production.

The data regarding the wool characteristics, to different biotypes of the Țurcană albă breed, show that for the future the researches must be intensified in order to establish the selection methods for increasing and improving the wool production for this sheep breed, by identifying the most productive biotypes.

Absolute tear strength and extensibility are important properties of fiber, as they determine the strength and plasticity of wool fabrics. These properties are closely correlated with the fineness of the fiber, in the sense that the fine fibers have a lower strength and extensibility than the thick ones, in correlation with the body region and environmental factors..

Absolute tensile strength and extensibility are determined with the Schopper dynamometer, both for thick and long fibers, as well as for thin and short fibers, harvested from the region of the case and thigh. .

The high variability of the absolute tensile strength property is explained by the different strength of the wool fiber on its different segments, due to the variability of the diameter thickness,

Meat production

The research undertaken in recent years highlights the skills of the Țurcană and Țigaie breeds in the direction of large meat production, with superior qualities, due to the precocity of some sheep populations. The rational use of reformed adult sheep for meat production is an action that should be given due importance. Only by reconditioning the re-trained sheep is an increase of meat of 20-30% and an improvement of its quality, thus contributing to raising the economic efficiency of the units with large flocks of sheep.



Figure 4 -Sheep carcass and semicasing Țurcană (own photo).

The research shows that the reconditioning of reformed sheep corrects the quality of meat, increases body weight by 15-20% and the slaughter efficiency by up to 20%, compared to reformed sheep slaughtered without being reconditioned.

By reconditioning, the adult sheep achieve 202 g of average daily gain. The proportion of live meat expressed by the slaughter yield increases by 7.3%, and after fattening the share of sheep in class I quality increases from 8.7% to 95.6%.

Production of hides, skins and furs

Among the breeds of sheep raised in our country, the Țurcană breed produces high-quality leathers for the leather goods and leather clothing industry.

The skin from Țurcană is more resistant, because the collagen fibers are woven together in a denser structure. The skin is more resistant to elongation and tearing. The resistance of the skin to Țurcană is given by the lower number of hair follicles per unit area, as well as by the way of locating them in the thickness of the skin in the two floors; the primary follicles deeper, and the secondary ones closer to the surface of the skin.

The quality of the skins is conditioned by a series of natural and genetic factors, among which we mention: individuality, sex, health, skin size during pruning, physiological condition of the animal, slaughter season, age, feeding conditions, care and shelter. .



Figure-5-.wool sheep; and 6-shearing sheep-Turcana

Source-<https://www.stiriagricole.ro/rase-de-oi-rasa-tigaie-2192.html>

Țurcană lamb furs slaughtered until weaning, when the wool does not exceed 3 - 5 cm, are used to make clothes. All these productions are also obtained in compliance with the sanitary-veterinary measures

Calendar of sanitary-veterinary actions

Within all sheep exploitation systems, it is necessary to take measures to prevent and combat various diseases, according to the Technical Action Plan D.V.S.-M.A.I.A. detection, prevention and necessity



Figure 7 and 8- Traditional shelter for sheep (own photo)

In this species morbidity and losses are the consequence of non-specific diseases also known as medical or internal, generated by non-compliance with growing and exploitation conditions, to which can be added parasitic diseases, especially those related to pasture.

Therefore, in order to ensure a perfect state of health, it is necessary the permanent supervision of the sheep, through clinical observations, anatomo-pathological examinations, feed control, hygiene conditions, etc.

The sanitary-veterinary actions undertaken are grouped as follows:

By purpose:

Detection

Prevention

Tackling

According to the specifics of the action:

Mandatory

Optional

Of necessity

O By season:

Stable

Pasture

According to the system of growth and exploitation:

Extensive

Intensive

Regarding the sanitary-veterinary actions in the extensive exploitation system, they are grouped as follows:

a) In the winter season, under stable conditions, the following is performed:

1. general and permanent control of feeding, in order to prevent abortions, infections such as hysteresis, hypogalaxy and lung diseases in lambs;
2. immuno-prophylactic actions, which consist of the serological examination for the detection of or-hiepididymitis and tuberculosis separately; vaccinations against anaerobiosis, salmonellar abortion and agalaxia;
3. antiparasitic actions, which consist in the control for the detection of scabies, the isolation and treatment of animals with local lesions and treatments against fasciolosis, estrosis;

b) In the spring season, once the grazing is done, the following is performed:

1. vaccination against anthrax and enterotoxemia in lambs;
2. organization of prophylactic grazing;
3. antiparasitic actions, such as: pasture control and ameliorating and chemical interventions on them.

Regarding the sanitary-veterinary actions in the intensive fattening system, they are grouped as follows:

A) For youth:

L. Organization of the inpatient and the sanitary-veterinary provider;

2. Loss according to possible clinical signs, especially hypotreptic ones; prophylactic treatments against pulmonary diseases and against pulmonary and gastric strongylatosis;
3. Surveillance of feed, to avoid indigestion, biochemical indigestion, urolithiasis, listeriosis;
4. Treatments against scabies at flow, monilioze, dictiocaulosis;
5. Vaccinations.

B) For adult sheep:

1. Treatment against scabies, fasciolosis and dictiocaulosis, pododermatitis;
2. Vaccinations against anaerobes, foot-and-mouth disease and anthrax.

The lambs are vaccinated with Evomec + the yolk treatment, and the bathing is done with Lindaved once a year - in spring.

Pruning is done twice a year: spring and autumn.

Theoretical - methodological problems regarding the study of efficiency economic benefits of sheep farming

The economic efficiency of animal production is largely determined by the results obtained by cultivating fodder plants, the low cost price of fodder contributing to raising the economic efficiency of production from animal husbandry.

Given the significance of animal husbandry in general and sheep farming in particular, for the fact that they must provide the necessary wool for industry and some increased quantities of meat and milk for human consumption and create availability for export, in this paper we proposed to make a contribution to the methodology for determining the economic efficiency of production and for analyzing the main economic indicators that characterize sheep production, as well as establishing ways to raise the level of economic efficiency of production in this sector of activity.

In carrying out the works to establish the economic efficiency of sheep production, the existing links between the two aspects of production efficiency were followed, namely:

A. The economic efficiency of the total production obtained from sheep to be established in several units with similar natural and economic conditions, so that by comparability to identify the unit or units with the most favorable production conditions.

B. Economic efficiency to be established on different sides and elements of production, within the branch of production or breeds of sheep.

Some conclusions in the problem of establishing the analysis of the level of economic efficiency of production can be summarized as follows:

The notion of economic efficiency of sheep production has a complex content and should not be limited to the notion of profitability;

The establishment and analysis of the economic efficiency of production cannot be limited to a single indicator, but a system of indicators must be used that can reflect the complexity; economic phenomena that take place within the various branches of production in agriculture;

The development of the production branches must be based on the principle of obtaining the highest economic efficiency;

The general principle underlying the assessment of economic efficiency is to obtain a maximum production with minimum labor costs and material resources per unit of product.

The literature presents different opinions on the methodology for establishing the economic efficiency of production, especially in terms of the number of indicators that can be used to assess its level.

Being living organisms, sheep require the maintenance of uniform or progressively improved living conditions, with difficulty bearing certain deficiencies in feeding, sheltering and exploitation, being permanently under the influence of natural or artificial environmental conditions.

To establish and analyze the level of economic efficiency of sheep production, a system of indicators capable of mirroring the complexity of economic phenomena, which take place in different stages of breeding and exploitation, especially in different breeds and categories of sheep, will be used.

Conclusions

Sheep breeding is a traditional activity. The diversity of the productions they make, the low energy consumption and the nature of the fodder they consume, give to the breeding and exploitation of sheep the character of a sustainable and promising activity;

Development of new systems and technologies for breeding, breeding and intensive exploitation of sheep, under the conditions of an improved diet and adequate sanitary-veterinary and experimental research actions, designed to contribute to the achievement in the shortest possible time of bioeconomic objectives set for the sheep sector;

Ensuring the quantitative and qualitative food needs, in relation to the breed and the physiological state of the sheep, especially in June - August in the lowland area and in the winter months for the hill and mountain areas;

Since sheep are grazing animals, the biological requirements for housing conditions are limited only to winter housing, which is why investments are lower than other species;

The technical-hygienic requirements of the shelter concern, mainly, both the location and the assurance of the microclimate comfort conditions, according to the biological and exploitation requirements of the respective species;

Due to the advantages obtained from the breeding and exploitation of sheep through the multiple products they provide, as well as due to the large capacity for efficient use of natural, material and social resources, increased herds in parallel with improving their breed structure;

Regarding the current trends in the orientation of sheep farming, they are mainly based on market requirements, the biological characteristics of sheep breeds and the specific environmental conditions. Thus, in central and western Europe, exploitation for meat production predominates;

The rational use of material resources, labor and the entire production capacity of agricultural units in order to obtain maximum yields, is one of the essential requirements for raising the economic efficiency of production.

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