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PAPESHE

Deliverable 3.4.3 Evolution and history of Pelagonia sheep breed in the cross-boder area

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Key information

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1. Introduction

Preservation of the autochthonous sheep breeds and their characteristics presents a challenge from many aspects including economic social, environmental and technical aspects. The present day trends necessitate genetic preservation of the local breed resources, taking into account the positive features that they possess. It is widely known that autochthonous breeds are generally best adapted to the geographic characteristics of the region they originate from, utilising efficiently local feed resources with maximal performances both in terms of production and reproduction. Nevertheless, the population of many autochthonous sheep breeds has been declining over the last 50 years as a result of a continuous replacement with what so called "improved breeds". The fact that the autochthonous breed population consist only small part of the total number of sheep and that the local breeds are highly endangered, it poses the risk for losing the stock breed diversity. Therefore, nowadays, serious steps have been made for preservation of the natural heritage, not just on local but also on regional and global scale. Hence the need for initiating and materializing measures for preserving the stock diversity in general and especially the biodiversity of the country.

2. Sheep breeding – present understandings and perspectives

Sheep farming is the second most important livestock farming sector in our country. The climate, upland configuration, ecology clean zones, the sheep potential and tradition in breeding, are an excellent prerequisite for the development of sheep breeding.

The landscape of the Pelagonia region includes a vast percentage of upland pastures that present an important resource for the development of the sheep breeding in this region. Based on pasture utilization, the extensive (nomadic and semi-nomadic) farming system (mainly transhumance) is practiced more than the intensive farming. Sheep farming is mostly consisted of small, individual family farms with size between 20 to 200 heads, rarely exceeding 300 sheep. The size of the farms generally depends on the capacity of the farmer's facilities. Around 46% of the individual farmers possess only 0.51 ha of agricultural land, while only 8.1% of farmers possess more than 5 ha of land. The farms are managed and sustained mainly as family businesses utilizing also some agricultural land and powered by the family's labour.

The production technology is traditional and is centred around milk production, dairy products and lamb meat and is totally adapted to the natural resources and the natural behaviour of the sheep.

2.1. Statistical data

According to the statistical data by the State Statistical Office, the number of sheep in North Macedonia for 2017 was 724.555 with almost 55 % of the farms having less than 51 sheep, 45% rearing between 101-300 sheep, while about ten farms are rearing more than 1000 sheep. Of the total sheep population, the 16.9% belongs to the Pelagonia region, according to the Food and Veterinary Agency. According to State Statistical Office there was a slight increase (1%) in sheep numbers in the individual farms in 2017 compared to 2016. At the same time, there was a decrease in the number of sheep by 19.7% in the corporate farms. The country's increase in the number of sheep could be a result of the measures for efficient distribution of agricultural subsidies and the measures for stimulating sheep breeding. Still, some of the problems in sheep breeding still exist: lack of feedstuff, fluctuating repurchase prices of sheep products, lack of investments in the production technology and applying the hygiene standards that hampers the product placement on the domestic and foreign markets. Additionally, there is a decrease in the profits that result in diminished interest for sheep farming as a profession.

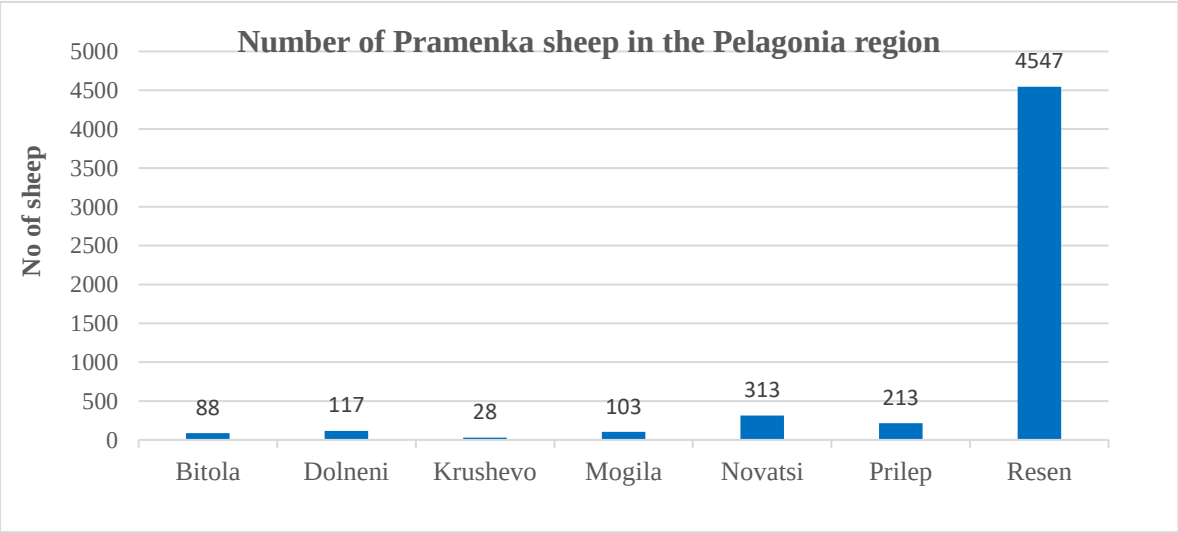

Figure 1. Number of Pramenka sheep in the Pelagonia region

In the Pelagonia region, the autochthonous breed Pramenka is presented with 5409 sheep of which most are in the Municipality of Resen (4547), then Novatsi (313), Prilep (213), Dolneni (117), Mogila (103), Bitola (88), and the least are in the Municipality of Krushevo (28) (Fig.1).

Still, the situation of the autochthonous breeds in North Macedonia is general, and in the Pelagonia region, can be said to be steady and not related to the population of other sheep breeds.

3. Origins and autochthonous diversity of sheep breeds in the Pelagonia region

The history of the Pramenka as a primitive and autochthonous sheep stretch on a wide geographic area on the Balkan peninsula. Today, it is known that the breed stems from the Mediterranean Zackel group, belonging to the autochthonous breed of sheep that is widely known as Pramenka, the name implying the type of wool that is characteristic for this breed. As time passed, in different regions separate types of Pramenka were formed, differing in their phenotype and production features. The sustainability of the types of the autochthonous sheep in the past was due to its adaptability to the region's breeding conditions. As in other regions of our country, in the Pelagonia region the three types of Pramenka are recognized: Ovchepolka, Sharplaninka, Karakachanka, each presented in different percentage. Beginning in the middle of the XX century, in order to improve the performances, initiation of cross breeding of Pramenka and high productive sheep breeds was done. This trend was due to the competitive market for sheep products.

Picture 1. *Autochthonous sheep*

The diversity of the autochthonous sheep breed in the Pelagonia region includes the three Pramenka types, which features are recorded in the data base of FAO DAD-IS (FAO Domestic Animal Diversity Information Service). Out of the three types of Pramenka, the most presented is the Ovchepolka type (60%) which is considered stable, then the Sharplaninka type (30%) which needs more data to support it, and last is the Karakachanka type (10%) which is considered critical. The Karakachanka type is included in the breeds currently recorded in the global databank for animal genetic resources where it is listed as a critically endangered breed.

3.1. Phenotypic and production characteristics of the Pramenka breed

The data about phenotypic traits along with genetic and historical data provide the basic information that is necessary for the characterization of animal products (AnGR). Those three types of information are common between all three types of Pramenka. The differences between the three types are based on exterior marks and production data.

3.1.1. Ovcepolka (Ovchepolian sheep)

The Ovchepolka breed is a domestic breed of Pramenka, which is named after the Ovchepolian Plateau, where it can be naturally found. Nowadays the Ovchepolka is prevalent in the Eastern and Western Republic of North Macedonia. The breed produces a better wool than other breeds of Pramenka and is resistant and very durable to external influences. Ovchepolka has a firm constitution and belongs to the group of small to medium-sized and long-tailed sheep. The height of the ewes measures up to 61.3 cm while rams can reach 64.8 cm. The head is long and tightened, it has a pointed muzzle that is usually hairless, but sometimes it can be covered with short hair. The color of the head range from white to black with a constant or irregular pattern. The face, especially around the muzzle, eyes and ears is black. The neck is usually long, slightly muscular, overgrown with wool on top and on the sides, while the chin can be hairless. The corp has a form of a slightly slanted rectangle with rumps higher than the crest. The tail is usually long. Fleece is half open and white. Legs are characterized by high strength. Body weight depends on the sex: ewes are around 37 kg and rams are 10 to 15 kg heavier than ewes.

Regarding reproduction, on average 85 to 90% in a batch of 100 sheep are lambing. They usually give birth to a single lamb and the twinning percentage is low, ranging 5 to 10%. Body weight of newborn lambs varies between 2.9 and 4 kg.

The meat randment in elderly sheep and lambs is 43% and 60% respectively.

Lactation in Ovchepolka is 190 days and they yield around 73 liters. Separate sheep can produce up to 120 L of milk. In those sheep the daily production of milk is higher. Usually daily milk production per sheep is around 378 mL.

The wool is mixed, its finnese is unsatisfiying and usually, of low value. Wool quality is rendered to category C. The yearly wool production is on average 1.25 kg per ewe and 1.75 kg per ram.

Regarding production characteristics, Ovchepolka is used for the triple purpose: wool, meat, and milk. Nowadays, in order to improve the production properties, Ovchepolka is mixed with Merino and Vitemberg sheep.

Picture 2. *Ovcepolka (Ovchepolian sheep)*

3.1.2. Sharplaninka (Sharplaninian Pramenka)

The Sharplaninka belongs to the domestic breed of Pramenka. It is named after the north-west region of Shar Planina, where it can be found the most. Although its origin is not well-known, it is assumed that Europian mouflon is Sharplaninka's ancestor. On the other hand, Sharplaninka is usually related to the wild sheep of the Steppe region. Today, Sharplaninka is mostly prevalent in Western Republic of North Macedonia.

Sharplanika provides great quality wool, and it is a better producer than the other two breeds of Pramenka. Sharplaninka, similarly to Ovchepolka has advantages of natural hardiness and is well adopted in the cold mountain climate, primary because of its solid body constitution. Sharplaninka belongs to the group of small and long-tailed sheep. The height of the crest varies from 55 to 62 cm in ewes and 67 cm in rams. The head, ears and carpal and tarsal regions of legs are overgrown with coarse. The fleece is white, wool is open with 20 cm in length. Legs are strong.

Ewe's body weight varies between 32 to 35 kg and ram's usually reach 45-50 kg.

As for fertility, this breed usually gives birth to one lamb, with a body weight around 3 kg and twinning is rare, 5-20%. The meat randement takes 43% and 55-58% in ewes and lambs, respectively.

Milk production is around 55-60 L, with 6.4% fat. Separate sheep may produce up to 210 liters milk in total. In that case, daily milk is bigger correlated to the average milk production, which is 378 mL.

Wool quality and it's finnese is poor and it is usually categorized to C or D class. The average wool production yearly varies from 1.3 kg in ewes to 1.6 kg in rams.

According to above mentioned production characteristics, Sharplaninka has a triple purpose use: for milk, wool, and meat. In the present, as a quality improvement standard,

Picture 3. *Sharplaninka - Sharplaninka is mixed with Merino and Vitemberg sheep.*

3.1.3. Karakachanka

Karakachanka is a domestic Pramenka farmed by the Vlachs and Karakachans (where the name comes from). It was mostly present on the Balkan peninsula and in the R. Macedonia. Today, the Karakachan sheep is facing extinction.

As the other types of Pramenka, the Karakachanka is disease resistent and resilient but low productive. It belongs to the Pramenka types with a small body size and short tail. The height of the crest is on average 55 cm in ewe and 60 cm in ram. Body weight in adult sheep is 23-40 kg in ewe and 35 kg in ram. The head, ears and legs are overgrown with black hair.

The fleece is opened, made of open strands. The legs are very robust. Very often the females have horns (up to 10%).

Regarding fertility, usually they give one lamb per lambing, and the percentage for twins is around 5%.

Milk production is around 55-60 L per year. The wool by its quality and finness is unsatisfying. The average wool production is 1.3 kg in ewes, and 1.5 kg in rams.

The Karakachan sheep is kept for production of wool, meat and milk. Nowadays, this type of Pramenka is either extinct or crossbred.

Picture 3. *Karakachanka*

4. Measurse for perservation of the autochthonous types of Pramenka

Protecting the biodiversity as one of the most valuable features of our planet is a global strategy of the time we live in. The goal of the measures taken towards conservation and maintenance of the animal genetics is to protect the wealth of diversity and utilizing the benefits of it. Maintenance of the livestock diversity includes activities from many aspects. In many countries, as in ours, the strategies for maintenance of the livestock diversity include

measures for improving the rural development and measures for preservation and innovation.

At a national level, the measures taken for maintaning the biodiversity are regulated in the following direction:

- Taking part in activities at global level as part of the Convention for biological diversity – UN;
- Fulfilling the international responsibilities and participation in other international programs that are related to the Global ecology fund, and
- National programs, projects and action plan in coordinance with the national legislation framework.

The measures taken at national level include programs for protecting the biological diversity in the stockbreeding with the emphasis on the autochthonous breeds or types in the autochthonous environment as well as education and training for raising the public's awareness for the importance of the biodiversity. The legislation framework comprises the basic principles for protecting and maintening of the genetic pool of different stock breeds, including the Pramenka i.e. precise and systematic identification and classification of Pramenka as autochthonous breed. One of the measures is implementing a specified regime for preservation by recording a breed in a register for autochthonous breeds. The name of the autochthonous breed is internationally secured by ratified contracts and agreements. These measures administer monitoring of the biological diversity through systematic surveillance and analysis. The monitoring of the biological diversity of animal genetic resources is done through scientifically comparable unified information system that can help create the referent database. The support and development of the sheep breeding with emphasis on autochthonous breeds is achieved through the national programs for financial support and subsidies of the farmers that keep the autochthonous breed Pramenka (Ovchepolka, Sharplaninka and Karakachanka); they are identified and recorded in the Register for sheep breeding farms and in the register of the official organisation for breeders of Pramenka sheep. The programs provide financial support for the expert tasks, as well as for the physical and juridical subjects that practice the preservation of the genetic pool in stock breeding. The strategies for development and maintenance at the same time conduct projects that include

programs of small and large grants that support the initiatives for revival of the autochthonous breeds that are traditionally present in this region for centuries and that are completely adapted to the climate.

The goal of the activities mentioned above is to secure that the taken measures are being successful and sustainable and will give good results on the long run. Nevertheless, summing all of the activities undertaken nowadays for maintenance of the population of autochthonous breeds of sheep, few conclusions can be made in two directions: positive movement and things that are still missing.

The positive movements are:

-the individual activities (part of the scientific society, Nongovernmental organizations and some farmers) that can provide isolated information for the undertaken activities in the preservation of the biological diversity in the domestic animals

-the legislation for the protection of the biological diversity in the stock breeding

-the autochtonous breeds are internationally certified through their recording in the FAO information system of DAD IS and EFABIS

-inclusion of the biological diversity in the stock breeding and in agricultural programs, strategies and policies

What is still lacking is:

-systematic field monitoring, assessment, research, knowledge, securing and collecting data

-organized system for surveillance and recording (inventorization) of the local breeds and following the treends and risks in the field of the endangered local breeds

-international cooperation in the field of genetic resources of the livestock

-improving the public awareness.

More information about the project

Papeshe.vet.auth.gr

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