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Greece - Republic of North Macedonia

PAPESHE

Deliverable 3.4.1

Population statistics and phenotypical description of existing Pelagonia herds in the cross-border area

Project acronym: **PAPESHE**

Project full name: **Protection of Autochthonous populations of PELagonia SHEep breed in the cross-border area**

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Key information

Deliverable 3.4.1, Phenotypical description of the existing Pelagonia sheep flocks in the cross-border area



Authors of this Report	Igor Zdraveski¹, Panche Dameski¹ <i>¹Veterinary faculty Bitola</i> <i>University "St Kliment Ohridski" Bitola</i> Correspondent: igor.zdraveski@uklo.edu.com ; panche.dameski@uklo.edu.mk
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Introduction

Evaluation of morphological traits in certain breeds entails the descriptions and documentation of specific variations characteristic to those specific regional breeds ¹. Phenotypic characterization is the pivotal segment of analysis aiming to distinguishing and characterization of certain breeds in given region. Assessing the morphological traits and phenotypic characterization provide essential sustainable source of conserving the biodiversity in animals². Breed characterization based on phenotypic traits serves as a solid ground upon which further genetic analysis can be built³. Morphological traits analysis led by body measurements related to local genetic recourses, has been routinely used nowadays in selection programs to accomplish the desirable productive and reproductive traits. The approach is simple, but comparative analysis of obtained data could provide a vision of the development of the breeds been analyzed.

Pelagonia region has been recognized as a region in which various sheep breed has been breed including some of the declared and also documented indigenous sheep breeds. Identification and morphological characteristics description were the objectives in this investigation, including identification of variations in morphometrical traits of autochthonous breed in the cross-border area.

Methodological approach

The analysis was conducted within period of 4 months (i.e. April 2019 to July 2019), visiting 5 (five) previously selected flocks/farms recognized to breed autochthonous sheep breed. The measurement data and other morphological traits in a approximately 250 animals were obtained using the previously composed protocol and certain measurement tools in five

flocks with five different locations in given region. Only on adult animals with fully developed body were measured. Both animal gender was included.

Body measurement was conducted in barns, early in the morning to avoid the effect of feeding and watering of the animal. The previously composed protocol for body measurements was followed. For measurement were used the Lydthin stick, a tape measure (rippon) and Vernier caliper alternative (Picture 1-3). During the measurements the animals were in tethered position and determining the reference point of measurement was by palpation of certain relevant anatomical structure.



Picture 1



Picture 2



Picture 3

The following body measures were taken: height of the withers, height at the middle of the back, chest girth, body length, chest depth, chest width, rump length, rump width (RW), cannon bone circumference and chest width (Figure 1).

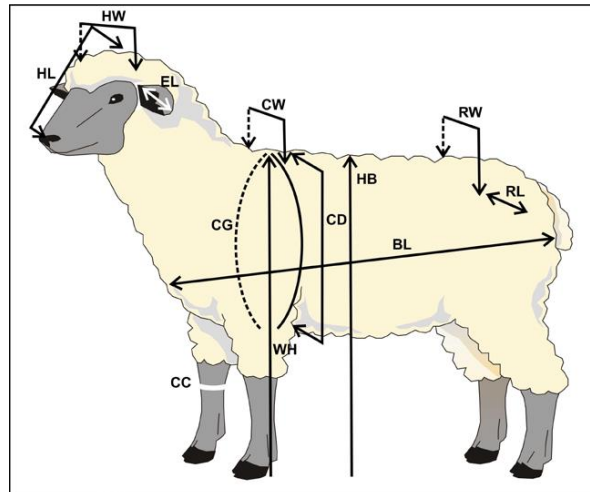


Figure 1

1. **Wither Height (WH):** is the highest point measured as the vertical distance from the top of the shoulder to the ground (bottom of forelegs)
2. **Height at the middle of the back (HB):** is the height at the middle of the back from the ground
3. **Chest Girth (CG):** is the circumference of the chest posterior to the forelegs at right angles to the body axis
4. **Body length (BL):** is the horizontal length from the point of shoulder to the pin bone
5. **Head length (HL):** is the distance between the upper limit of the forehead to the tip of the nose.
6. **Head width (HW):** is the maximum distance between zygomatic arches.
7. **Ear length (EL) :** is the distance from the base to the tip of the right ear, along the dorsal surface (length of the external ear from its root to the tip)
8. **Cannon circumference(CC):** is the perimeter of the right foreleg, between the knee and the pastern.
9. **Chest Depth (CD):** is the vertical distance from the top of the withers to the xyfoid process of the sternum



10. **Chest Width (CW):** is the maximum intercostal diameter at the level of the 6th rib, just behind the elbows
11. **Rump Length (RL):** is the distance from hip to pin.
12. **Rump Width (RW):** is the maximum distance between left and right hurls.

Results

The results of body measurements are shown in Table 1. In total 250 animals were measured, approximately 50 animals per farm in different autochthonous breed farms in Pelagonia region. The measures corroborate to morphometric characteristics described in the literature and give rise on conclusion that autochthonous breeds present in Pelagonia region could be characterized as a medium size breed. The body length in measured animals is greater (65,25) than wither height suggesting that Pelagonia breed has almost square body shape. The chest depth and chest width in not much emphasized indicatenig of average in thorax development. The head dimensions are average with long dropping ears. Rump length and rump width indicate on narrower body structure.

	Mean	St.Dev.	CV	Range (max –min)
WH	65,25	3,32	3,91	72.80-36.32
HB	63,46	3,34	4,00	71.40-35.55
CG	80,89	11,57	14,44	99,20-51,53
BL	70,65	3,72	5,28	81,80-40,36
HL	21,46	1,29	5,99	24,60-13,33
HW	12,73	0,77	6,08	15,20-8,70
EL	12,42	1,44	11,62	18,80-10,32
CC	8,18	0,56	6,84	9,50-6,27
CD	30,52	1,90	6,26	35-18,42
CW	25,47	2,20	8,77	62-24,61
RL	22,63	1,35	5,98	25,80-13,94
RW	18,77	1,27	6,77	21,70-12,13



Conclusion

Body morphology characteristics in indigenous sheep breed in Pelagonia region are consistent with other types of Pramenka breed described by the numerous authors. The animal is of middle size body development with robust body structure, suitable to withstand harsh conditions of breeding.

¹ Rege, J. E., & Lipner, M. E. (1992). Animal genetic resources their characterization, conservation and utilization. In *Research planning workshop* (pp. 55-59).

² Food and Agriculture Organization. (2012). Phenotypic characterization of animal genetic resources.

³ Yunusa, A. J., Salako, A. E., & Oladejo, O. A. (2013). Morphometric characterization of Nigerian indigenous sheep using multifactorial discriminant analysis. *International Journal of Biodiversity and Conservation*, 5(10), 661-665.