A COMPARATIVE STUDY OF THE VARIETIES OF ȚURCANĂ SHEEP BREED RAISED IN THE BANAT MOUNTAINS

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Abstract: *This paper revisits one of Romania's most widespread sheep breeds prized for its adaptability and mixed productivity (meat, milk, and wool) – Țurcană and its varieties (Albă, Brează / Brezată, Bucălăi, Mărcușe, Oacheșe). The authors present the features of the Țurcana breed, as well as its productivity and adaptability traits. Its five varieties are analysed from the perspective of their regional adaptations and traits. The authors also propose a selection matrix for the improvement of the Țurcană breed, a breeding decision tree, a few guidelines for the choice of the proper variety of Țurcană breed, and suggestions for the alignment of variety and production line in this breed.*

Key words*: comparative study, variety, sheep breed, Țurcană, Banat Mountains.*

INTRODUCTION

The Țurcană sheep breed is Romania's most widespread sheep breed prized for its adaptability and mixed productivity (meat, milk, and wool) [3,4,12].

This sheep breed is generally characterised by the following [5,14,15]:

- **Distribution**: it is predominantly found in Romania, where over 6,000,000 individuals are spread particularly in mountainous regions of the Alba, Caraș-Severin, Hunedoara, Sibiu, and Vâlcea counties;
- **Nickname and origin**: it is often called "Regina Munților" (*Queen of the Mountains*) duet to its cultural significance and hardiness; it is indigenous to Carpathian Mountains, with roots that possibly go to wild *Ovis vignei* arkar.

The Țurcană sheep breed has the following **morphological traits** [8,14]:

- **Body and colour varietes**: long limbs, medium height, narrow, straight head, and robust constitution [16,18]; black (*Oacheșe* variety); *gray* (*Bucălăi* variety); *pied* (*Breazăă / Brezată* variety); *spotted / striped* (*Mărcușe* variety); *white* (*Albă* variety) with often dark patches around eyes, limbs, and lips, the most common and selectively bread;
- **Horns and weight**: *in rams*, well developed; *in ewes*, either hornless or with small, forward-curving semicircular horns [2,9]; *in rams*, up to 80 kg; *in ewes*, 35-55 kg [7].

In addition [13,17]:

- **Milk** is characterised by good fat content and moderate yield, which makes it suited for local cheese production;
- **Udder**, globular in shape and well-developed, is adapted for milking;
- **Wool**, coarse and long (20-30 cm), is suited for insulation and traditional textiles.

As far as **productivity** is concerned, the Țurcană sheep breed is valued for its **mixed production type** (meat, milk, and wool), with highly-appreciated meat especially in Arab markets [1,10].

Concerning **adaptability** and **behaviour**, the Țurcană sheep breed has the following characteristics [6,11,17]:

- **Feeding and resilience**: it can survive winters on pasture alone in mild climates; it has excellent resistance to disease and harsh weather with low maintenance costs;

- **Temperament**: it is alert, mobile, and quick to forage.

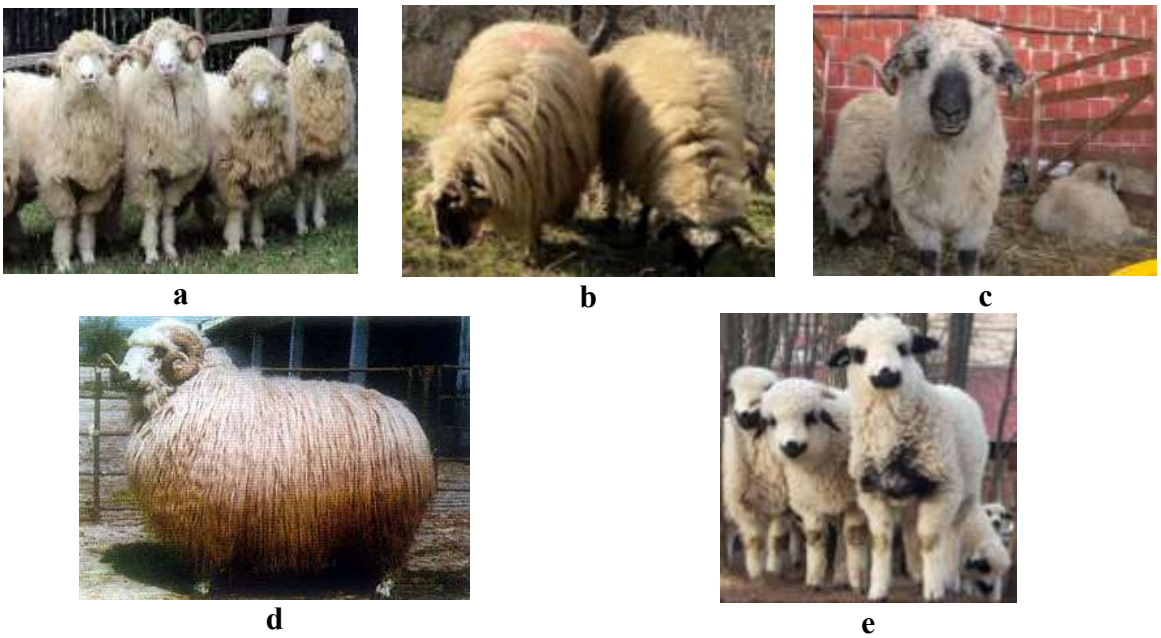
MATERIALS AND METHODS

The material used in this scientific paper consists of a wide range of bibliographic sources, including scientific articles and specialized books, which focus on the Țurcană sheep breed. The research methodology employed in this study is the comparative method, which allows for the analysis and evaluation of data from different sources in order to identify similarities, differences, and trends related to the Țurcană sheep breed, thereby ensuring a more objective and well-founded scientific approach.

RESEARCH RESULTS

The authors of this scientific paper have identified five main colour-based varieties of the Țurcană sheep breed, varieties emerged through insular breeding systems and transhumance shaped by cultural selection and geography. Each of them reflects **regional adaptations and traits**:

- The **Țurcană Albă** variety (white), the most widespread and selectively bred variety, has coarse, long, white fibres and can be found in ecotypes like those in Alba, Argeș, Hunedoara, Sibiu, Vâlcea, and Vrancea counties;
- The **Țurcană Brează / Brezată** variety (pied, i.e., mixed black and white patches) is often seen in transitional zones between ecotypes;
- The **Țurcană Bucălăi** variety (gray with darker head and limbs) is adapted to harsher climates and higher altitudes;
- The **Țurcană Mărcușe** (possible brownish / reddish tones) is less documented because it is rare;
- The **Țurcană Oacheșe** variety (black or with dark patches on white body) is culturally significant though less common.



a **b** **c**

d **e**

Figure 1. Varieties of Țurcană sheep breed: a – Albă; b – Brează / Brezată; c – Bucălăi; d – Mărcușe; e – Oacheșe

Source: own source

As far as **productivity** is concerned, these five varieties of the Țurcană sheep breed are characterised as shown in Table 1 which shows that ***Albă*** variety is most standardised and selectively bred and often used in improvement programs; that ***Brează / Brezată*** variety reflects hybridisation or transitional breeding zones; that ***Bucălăi*** and ***Oacheșe*** varieties have more primitive traits; and that Mărcușe variety is the least documented and possibly a relic type.

Table 1.

Productivity comparison of Țurcană sheep breed varieties

Variety	Meat production	Milk production	Wool production	Productivity strategy
Albă	*Moderate* Good lamb growth	*High* Best udder development Selected for milking	*High* Coarse, long, white wool	Most intensively selected Used in improvement programs
Brează / Brezată	*Variable* Hybrid vigour may boost growth	*Variable* Depends on ecotype	*Variable* Less uniform, mixed fleece	Transitional type Productivity varies by regions
Bucălăi	*High* Robust lambs Good carcass traits	*Moderate* Adapted for rough forage	*Moderate* Less marketable gray wool	Suited for meat in harsh climates Resilient to disease
Mărcușe	*Low to moderate* Limited data	*Low* Rare and rustic	*Low* Brown / reddish coarse wool	Least documented Relic type with symbolic value
Oacheșe	*Moderate* Smaller frame Good meat quality	*Low to moderate* Less emphasis on milking	*Moderate* Black wool Niche uses	Culturally preserved Less commercial selection

Source: own source

In order to guide breed improvement decisions across these five varieties of Țurcană sheep breed (i.e., to visualise strategic breeding priorities, strengths, and trade-offs), one needs a selection matrix evaluating key productivity traits (adaptability, meat, milk, and wool) on a 5-point scale (where 5 – excellent and 1 – minimal) (Table 2).

Table 2.

Selection matrix for the improvement of the Țurcană sheep breed

Variety	Adaptability	Meat production	Milk production	Wool quality
Albă	4	3	5	5
Brează / Brezată	4	3	3	3
Bucălăi	5	5	3	3
Mărcușe	4	2	2	2
Oacheșe	4	3	3	3

Source: own source

The data in Table 2 show how Albă variety excels in milk and wool and Bucălăi variety excels in adaptability and meat.

A **breeding decision tree** is a structured framework for selection based on farmer's goal (adaptability, meat, milk, or wool) aimed at expanding the productivity profiles of the

five Țurcană sheep breed varieties. In order to define the breeding objective, a farmer needs to choose his primary goal. Thus:

- If **adaptability** is priority, he needs to select the ***Bucălăi / Mărcușe*** variety or, as a crossbreeding option, the ***Bucălăi*** x ***Mărcușe*** hybrid for adaptability + meat;
- If **meat** is priority, he needs to select the ***Bucălăi*** variety or, as a crossbreeding option, the ***Bucălăi*** x ***Albă*** hybrid for meat + milk dual-purpose;
- If **milk** is priority, he needs to select the ***Albă*** variety or, as a crossbreeding option, the ***Albă*** x ***Brează / Brezată*** hybrid for balanced milk + adaptability (Pădeanu *et al*., 2016);
- If **wool** is priority, he needs to select the ***Albă / Oacheșe*** variety or, as a crossbreeding option, the ***Albă*** x ***Oacheșe*** hybrid for colour diversity + fleece texture.

Choosing the proper variety of the Țurcană sheep breed should follow the guidelines in Table 3 below.

Table 3.

Guidelines for the choice of the proper variety of Țurcană sheep breed

Goal	Recommended variety	Main motivation	Recommended crossbreeding
Adaptability	***Bucălăi / Mărcușe***	- ***Bucălăi***: mountainous resilience - ***Mărcușe***: extreme rusticity	***Bucălăi x Mărcușe*** (adaptability + meat)
Meat	***Bucălăi***	- Resilience - Rapid lamb growth - Good yield	***Bucălăi x Albă*** (meat + milk)
Milk	***Albă***	- Well-developed udder - High yield - Intensive selection	***Albă x Brează / Brezată*** (milk + rusticity)
Wool	***Albă / Oacheșe***	- ***Albă***: long, white wool - ***Oacheșe***: artisan, black wool	***Albă x Oacheșe*** (colour diversity)

Source: own source

The individual appraisal and selection should consist in the evaluation, in each animal, of body shape (proportions, weight), lactation capacity (duration, volume), resistance to climate conditions and disease, and wool structure (colour, length, thickness).

The last step to make in integrating the animals in an improvement program is to align variety and main line:

- ***Albă*** – milk and wool main line;
- ***Brează / Brezată*** – balance and adaptability line;
- ***Bucălăi*** – adaptability and meat line;
- ***Mărcușe*** – archaic line with patrimonial value;
- ***Oacheșe*** – conservation and colour diversity line.

CONCLUSIONS

The Țurcana sheep breed (including its varieties – Albă, Brează / Brezată, Bucălăi, Mărcușe, Oacheșe) is one of Romania's most widespread sheep breeds prized for its extraordinary adaptability and mixed productivity (meat, milk, and wool).

Its five varieties, identified by the colour of their wool, have specific regional adaptations and traits which determine their productivity. Guiding breed improvement decisions across these five varieties of Țurcană (i.e., visualising strategic breeding priorities, strengths, and trade-offs) needs a selection matrix evaluating key productivity traits showing which variety excels in what. This is necessary before making a breeding decision based on a breeding-decision tree which, in its turn, depends on the farmer's choice. Aligning Țurcană variety and production line is also paramount.

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