# MAMMARY MORPHOLOGY OF SICILO-SARDE DAIRY SHEEP RAISED TUNISIA

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## INTRODUCTION

The Sicilo-Sarde dairy sheep is a local breed in the north of Tunisia used for cheese production.

The study of the anatomical structure of mammary gland is useful for improving milk yield and milking ability. Animals that store a large proportion of milk in the gland cistern produce more milk, and are more able to tolerate extended milking intervals.

There is a little research on udder morphology and milk partitioning in the udder of Sicilo-Sarde. Our aim was to study the relationship between udder characteristics (morphology, cisternal and alveolar milk fractions, and cisternal size) and milk yield in the Sicilo-Sarde dairy sheep raised in Tunisia.

## MATERIALS & METHODS

### Animals:

**Sicilo-Sarde dairy ewes** (n = 52; 43 ± 3.0 kg BW; 68 ± 10 DIM) from the flock of the OTD, Ghezala Mateur farm were used from wk 8 to 20 of lactation.

### Procedures:

- **Milk yield potential** was measured before weaning (45 DIM) by the method of oxytocin.

- **External morphology** was performed 4 h after milking: udder depth (UD, cm), udder volume (UV, $cm^3$), teat angle (TA, ° ), teat length (TL, mm), teat diameter (TD, cm), and Distance between teats (DT, mm).

- **Milk partitioning** and **cisternal scanning** were carried out using 24 ewes at 8 h after milking as following:

1. Injection i.v. 10 µg/kg BW of Atosiban (Tractocile, Ferring Lab, Spain).

2. Cisternal scanning by ultrasonography and machine-milking to evacuate cisternal milk.

3. Injection i.v. of oxytocin (2 IU/ewe) and milking to obtain the alveolar milk.

- Data were analyzed by the PROC GLM of SAS (v.9.0).

## RESULTATS & DISCUSSION

Udder morphology traits of Sicilo-Sarde dairy ewes are shown in Table 1.

***Table 1.*** *Least square means of udder measurements in Sicilo-Sarde dairy ewes (n = 52)*

| Item | LSM ± SE |
|---|---|
| Teat angel (°) | 45.2 ± 10.0 |
| Teat length (mm) | 18.5 ± 4.9 |
| Teat diameter (mm) | 10.0 ± 0.1 |
| Distance between teats (mm) | 7.5 ± 1.1 |
| Udder depth (cm) | 5.0 ± 0.14 |
| Udder volume (mL) | 495.5 ± 27.6 |

**Udders were small** (volume, 496 ± 28 mL), with **medium size teats** (length, 18.5 ± 5.5 mm; diameter, 10.6 ± 2.4 mm) inserted at 45 ± 10° .

Parity had no effect on udder morphology (data not shown).

**Positive correlations** were observed between milk yield potential and udder volume (r = 0.23) and also between udder depth and udder volume (r = 0.17).

On the other hand, **negative correlations** were detected between teat angel and teat diameter (r = -0.40), and between teat diameter and distance between teats (r = -0.24).

Values of **cisternal areas**, **cisternal milk** and **alveolar milk** ranged from 5.3 to 17.2 $cm^2$, from 40 to 250 mL and 35 to 220 mL, respectively. Thus, cisternal milk represented 54% of total milk (650 mL) stored in the udder.

**Cisternal area** moderately **correlated** with cisternal milk ($r^2$ = 0.48; $P < 0.01$) and total milk ($r^2$ = 0.20; $P < 0.05$).

## CONCLUSIONS

The Sicilo-Sarde ewes showed an **adequate udder morphology** for machine milking and ultrasonography proved to be useful for the **evaluation of udder** compartments.