

Mountain pasture management by goat farmers: case of Kabylia region (Algeria)

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Introduction

In mountainous areas of Algeria, like the countries of North Africa and the Sahel, small ruminants contribute substantially to the food and economic security of mountain households (Bengoumi and Ameziane El Hassani, 2013). Changes in the farming environment affected the small ruminant production systems. These changes induced adaptations related to conducting of breeding and production orientation (Dubeuf and Boyazoglu, 2009). In Tizi Ouzou in Kabylia region, dairy goat farming operates in an environment appropriate because of its relief and vegetation (presence of vegetation, forests,). The extensive farming system is the one used in the study area. The herds are of small size and are characterized by low productivity, about 1 kg milk/goat/day according to Kadi *et al.* (2013).

Materials and Methods

Sixteen goat farms were chosen to be followed in March 2012 to February 2013. In the selection of farms, we have taken the consent of farmers to be followed for a year and receive investigators once or twice a month. The farms are spread followed on physical sets the study area. In mountain area where the sole forage is low, goat farms have low utilized agricultural area (UAA) (0-4 ha on average) and the number of dairy goats does not exceed 86 per farm (Table 1). In these 16 farms, goat farming is the main activity.

Table 1: Characteristics of 16 followed farms

Attributes	Minimum/maximum	Average	standard deviation
Number of workers	1 to 3	2,24	0,66
Cultivated UAA (ha)	0 to 4	0,9	1,0
Livestock (heads)	5 to 136	34	32,2
Number of the dairy goats (heads)	3 to 86	16	19,6
Quantity sold milk (kg/year)	72 to 39 350	3 854	9 607

Results and Discussion

Feeding conduct: The concentrates are distributed in small amounts. Monitoring of goat farms has established a forage calendar. This shows the importance of the use of goats grazing in the diet. The extensive system led by goat farmers is based primarily on pasture management to meet the dietary requirements of animals.

Grazing management in goat farms: Goat farms are generally located in mountainous areas of steep slope. According to the calendar feed, the animals graze all year round in the forest. A supplementation is also concentrated all year but with very small amounts (an average of 135 g / head / day). This practice is not reported in neighboring countries like Morocco (Chentouf *et al.*, 2006). Complementation by lopping is practiced in autumn and winter. Plant species most used for feeding goats are Zen oak, cork oak, ash and olive leaves. The animals receive hay during autumn and winter. It's the times when the courses do not sufficiently cover the needs of animals and the grazing period decreases. Stubbles, with small surfaces, are only used for two months after mowing hay.

Furthermore, the time spent grazing varies from one season to another (Fig. 1). In spring (March to May), the grazing time is 7:00. The animals come out from noon until 19:00. In summer (June-August), the time spent grazing increases; it is 9 hours / day. And, the animals graze in the morning and the afternoon. They rest at noon at the goat farm when the temperature is very high. During the autumn and winter period, the grazing time decreases. Animals graze the afternoon (12:00 until 15:00) given the difficult climate and very low temperatures in the mountains. The grazed areas changed from season to season. In spring the average pasture area is 5 ha/farmer. This area is represented by forests, scrub and native

grasslands. However, in summer the area of pasture land is 9 ha/farmer on average. This increase in size is due to the presence of pastures in the stubble during this period.

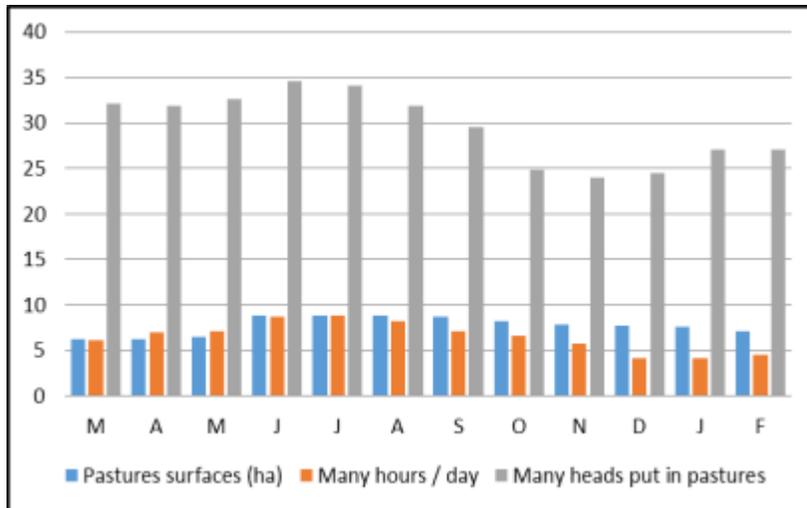


Fig. 1: Pasture Management goat farms (2012-2013)

Complementation in goat farms: In followed farms, breeders also distribute a little green forages, straw and concentrates feed. We deliberately reasoned in livestock unit LU numbers for variables easy to discuss. Indeed, the quantities of green fodder distributed are paltry. For groups of low and medium production, these amounts are 3 kg/LU, while for the group of high production (big farmers) these quantities are double those distributed by the preceding groups (6 kg/LU). Like the green fodder, straw is distributed to small amounts that do not even reach the ½ kg for groups 1 and 3. The green forages and straw are distributed only to goats. The concentrates are distributed on all animals. They can be wheat bran, barley industrial as "dairy cow" given goats. This is the average production group that reports the amount distributed largest (335 g /goat/day and 260 g/goat/day other groups do not exceed 200 grams per animal per day. The low production group distributes less than 100 g /head/day, and the strong production group reaches 150 g /head/day.

Conclusion

In mountainous areas, the goat farms are managed in extensive way. The pastures are mainly forests and natural grasslands. These are the main feed sources for goats. With a goal to reduce feed costs, herds of goats, which are small in size, use these daily and pastures throughout the year. The average area of pastures exploited is 8 ha/farmer with an average time spent on pastures for 6 hours/day. The objective of farmers is to reduce feed costs. However, supplementary feeding is practiced. The quantities distributed are low.

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