

Economical and Ecological Assessment for Sustainable Pastoral Land Development in Arid Tunisia

Mohamed JAOUAD¹, Amor TBIB¹

Abstract: Grassland has long been one of the key research areas in the arid regions of Tunisia. Pastoral lands not only provide forage to feed livestock, but also play a critical role in alleviating many of the most challenging environmental and ecological problems that humankind is facing. Five constituents are thus implied in pastoral sector. These constituents are the cattle breeders, Cattle herd, grassland or pasture area, environmental context particularly climate conditions and social and economic environment. This study returns, thus to examine these five components in their Socioeconomic and ecological context. In this work we try to explore the acquired facts of a socioeconomic and environmental survey conducted through a sample of households living in the area of Menzel Habib observatory (in the south of Tunisia).

Key words: Breeders, Grassland, Livestock, Menzel Habib, Observatory, Pasture area,

1. Introduction

The pastoral usage of resources is a set of exploitation techniques adopted by the breeders of the domestic crowds to value vegetable resources and natural courses of a space given by the production of such a number of human consummations. Five essential constituents are involved in the pastoral sector generally (Tbib A, 1998): The breeders, livestock of production, vegetable resources, environmental context or climatic conditions and social and economic environment. The study of the pastoral sector means so examining this set of constituents in their socio-economic as well as ecological context. In this recent work, we content to investigate the experiences of a socio-economic and environmental inquiry led with a sample of residents in the space of Menzel Habib's look-out post.

2. Multiplicity of the roles of pastoral practices

2.1. Economic roles

The breeders often aim at a multitude of socio-economic objectives for the domestic group through pastoral practices. To appropriate a livestock of pension it is to have the means of production and a capital which assures at the same moment strategic productions (meat, milk wool and the others) and a help capital during certain circumstances. The practices of breeding assume economic roles for all the breeders' categories. For small domestic exploitations the presence of a livestock supplied certain number of food possessions (milk, eggs, meat etc.). On the social plan, to be a great breeder, it is to have a social status and a particular prestige within the rural community of place of residence.

2.2. Ecological roles

Sheep, goats and camels are domesticated herbivores to value the vegetable production of the course grounds. Pastoral practices are counted among the best techniques to value vegetable resources scattered on the large course areas (Rambal *et al.*, 1977). The small ruminants are comparable to biologic engines which have the capacity to transform the pastoral phytomass into meat, wool, milk and organic fertilizer (Floret *et al.*, 1982).

3. Methodological approach and main results

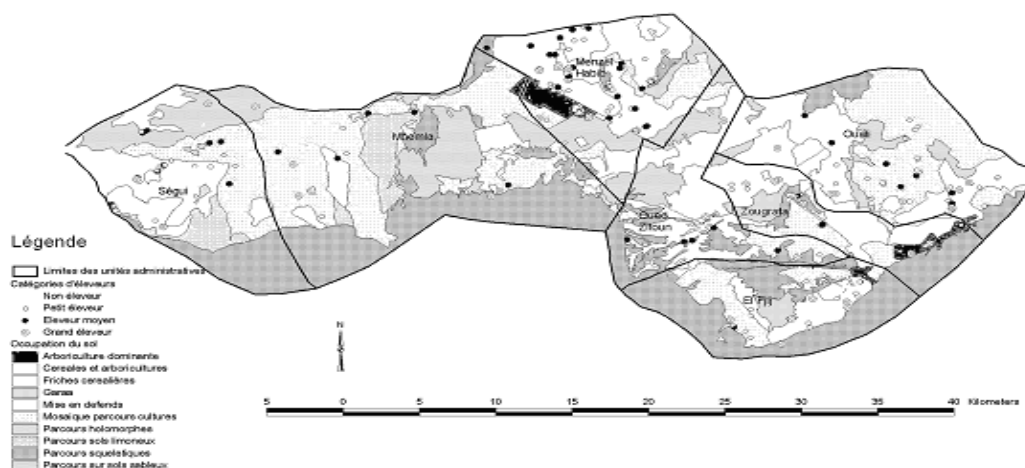
The applied methodology is based on the collection of information related to the reality of ground concerning the population and the livestock of pension in the region of Menzel Habib. It rests on the technique of inquiries with a sample exploitation units (EU) living in the space of the look-out post. The inquiry reveals that the practices of breeding are well spread in all the imadas of the delegation of Menzel Habib (**Table 1**). Inherited from father to son, these practices of breeding constitute the former characteristic

¹ Institut des Régions Arides – Médenine, 4119 Route de DJORF ELFJE

Table 1. Actual breeders and composition of the livestock by Imada.

Imadas	Menzel H	Zograta	Ouali	Oued Zitoun	El Fjij	Sègui	Mhamla	Total
Breeders (NB)	72	20	43	21	23	35	25	239
Breeders (%)	80.9	66.6	71.6	87.5	82.1	77.7	75.7	78.3
Sheep herd size	22.7	22.7	20.4	47.1	17.3	17.1	74.8	27.8
Goat herd size	11	8	3	12	6	6	23	10

Source: socio-economic enquiry 2004

**Fig. 1. Card of soil occupation and distribution of the different classes of breeders.**

of the tribe of Béni Zid.

In some imadas, such Zograta, bearing in mind the importance of pastoral practices in this zone, it seems that the reduction of the natural courses began to slow down the perspectives of the pastoral development. In the others, such Oued Zitoun, the dimension of the stake in culture of lands let us suppose that the practices of breeding take place in integration with cultural practices. The data analysis shows that the meadow in different routes is especially indicated in the imadas of Fjij, Segui and Zograta. For certain regions, such El Fjij the meadow of the domestic crowds takes place as well probably on grounds deprived of the developers as on the routes of the bordering mountains. It is to note that the technique of rotation of courses strikingly lost its chances of application at least in four imadas of our look-out post (Menzel Habib, Ouali, Oued Zitoun and Mhemla). The privatization of lands and the stake in culture strikingly reduced the spaces of natural routes in the delegation of Menzel Habib (Genin, 1999). To establish an idea on the nature of the ground in the region, one used experiences of a thematic cartography which was led by basing itself on the experiences of measures and phyto-ecologic observations and on the experiences of a satellite picture covering the zone of the look-out post (Lacaze *et al.*, 1978). This Image has been used to this cartography in March, 1999.

The legend of this occupation card (**Fig. 1**) enumerates four categories of different courses, namely, in ascending order, routes on scrawny grounds (62 %), sandy (20 %), halomorphs (10 %) and on muddy grounds (8 %) (Romdhane, 2003). The spaces of strict courses form a portion of 37 % of the total surface of the look-out post. It is to underline that the spaces of natural routes tend to become more and more reduced for the reason of stake in culture of lands and levels of anthropisation which become more marked only in the course of generations. To establish an order of height of the load of the natural routes for the set of the look-out post, the average load of a hectare of route is of the order of 0.75 small ruminant/ha. This value is obtained by taking into account only the non-transhumant livestock. The consideration of the transhumant livestock gives us an average load of 1.2 head of small ruminants by ha of route.

4. Constraints of the pastoral sector

Factors and causes having led to the loss of cattle are multiple and fluctuate from an imada to another. In the whole region of Menzel Habib, the climatic aridity and the diseases of cattle form the main causes of loss. Generally, during the periods of severe and prolonged drought, we attend a fall of production of the natural routes. In these circumstances one often reveals problems of cattle food. In case when adequate measures were not taken in the right time to surmount this constraint, the risks of disease of the crowds can lead to a certain level to the losses of livestock. The experiences of the inquiry showed that just a portion of 10.8 % of the leaders of exploitation which recognized that pastoral practices can be one of the causes susceptible to provoke a degradation for the natural routes and the resources in ground generally. In the said of the investigated, the standing about of the small ruminants represents certain danger for the state of surface of a given route. The complementation of the crowds is the fact of supplying cattle food well in order to maintain their health in general. The owner of the livestock begins with the necessary measures to supplement its small ruminants. The results of the inquiry show that the complementation of the small ruminants became commonness for 97 % of the breeders of Menzel Habib, against 37 % only in 1996. On the scale of imadas, the level of the animal pressure fluctuates from 3.5 in Fjij to 13.7 in Menzel Habib. In fact, this level of theoretical pressure can not persist without causing damages in pastoral resources in place. One imagines that in the current state, vegetable forming are incapable to meet the necessities of the livestock in place.

5. Conclusion

The pastoral sector occupies a portion about 78 % of the EU investigated in Menzel Habib. The average size of the livestock of the small ruminants is of the order of 36 heads by breeder. The domestic livestock is lower than 20 heads with 39 % of the investigated breeders. The availability of the natural routes remains reduced and the crowds of 75 % of the breeders graze on the same spaces of courses along the year. The technique of complementation became almost generalized (93 %), for this category of social actors. About 22 % of the investigated breeders practise transhumance in the far away regions during the dry years. This mobility interests 40 % of the livestock of small ruminants of the zone.

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