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Socio-Economic Mutations And the  
Management of Pastoral Resources in the  
Arid Regions of Tunisia : The case of  
the South-East.

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1 - Covering an area of approximately 5.7 million hectares or 36 % of Tunisian territory, the South-East region is characterized by an arid climate with bioclimatic ranges going from inferior Saharian to superior arid. The annual average rainfall varies from 50 mm, in the pre-Saharian zones of the extreme South, to 220 mm, on the coastal fringe of the South-East, which is exposed to the softening effects of the Mediterranean.

This arid climate results in a vegetation characterized by the presence of steppelike plant formations with *Rhantherium Suaveolens* plant groupings (on sandy soil ) and *Arthemisia Herba Alba* on the alluvial glaxis). Ground cover from these plant groupings rarely exceeds 40 %. Nevertheless, in rainy years, annual species increase and are instrumental in bringing about a very clear improvement in plant cover.

The fodder production from these plant groupings remains low, and yields, on an average rainfall of between 150 and 200 mm, per annum, between 50 and 80 fodder units per hectare per annum.

2 - Despite their low potential of fodder production, the steppes of the Tunisian South-East were, for a long time, the principal source of life for the men and herds of these regions. As a matter of fact, the system of production which continued, until the early sixties, to be greatly influenced by pastoralism, was based on extensive stock farming (sheep,

goats and camels), valorizing steppic lands **and an** episodic cultivation of cereals during the rainy years. Suffering from the hazards of an arid climate, the system of production was characterized by a precariousness which imposed a certain self-sufficiency on the way of life of the populations.

In order to cope with climatic hazards, the local populations developed forms and techniques of valorization of agro-pastoral spaces which were very appropriate:

\* A social organization which protected the collective property of the means of production, especially the land and livestock.

\* A nomadic way of life with transhumance movements notably towards the cereal-producing North of Tunisia, which is damper, and towards the East in Tripolitania (Libya). The lack of judicial impediments (pertaining to the land) and political impediments (frontiers ) facilitated the movement of men and herds. In fact, the practice of transhumance made it possible to develop a system of exchange and of complementarity between the pastoral and oasis regions of the Tunisian South, in general, and the regions of the North, where cultivation of cereals predominated. This system of exchange affected manpower and both agricultural and pastoral production.

Forms of management of natural resources, notably pastoral, satisfy the requirements of the systems of reproduction of these resources. One of these forms of management of natural resources which deserves mention is the practice of "Guedel", a system of defence of the grazing lands which makes possible the seasonal protection of plant cover and the accumulation of reserves of fodder.

3 - With the advent of Independence, in the late fifties, both the social organization and the system of production of the populations of the South-East were to undergo profound transformations which accentuated the process which had already got under way in the colonial period. The mutations which had occurred at the level of economic and social structures were to have a direct influence on the occupation of steppic spaces and the valorization of natural resources (water, soil and vegetation). Among these consequences, the following are worth mentioning:

\* A speeding-up of privatization of the former common lands (for grazing), notably along the coastal fringe of the Jeffara plain.

\*Agricultural valorization based on: (1) the development of arboriculture (especially the cultivation of the olive-tree), with the

technique of dry-farming,(2) episodic cereal-cultivation and, (3) crops irrigated from wells supplied by superficial water-tables.

As part of an overall process of economic and social development, these agricultural and land dynamics brought about an intensification of agricultural activity and the development of an agro-pastoral system based on the integration of pastoral and agricultural activities.

The intensification of this agro-pastoral activity, notably by having recourse to agricultural mechanization and improvement of the techniques employed with both crops and livestock, no doubt answers the socio-economic needs (food, employment, income...) of the local populations. It is, however, liable to bring about dilapidation of natural resources due to the intensification of depletion and the limited ecological potential in arid regions.

In this connection, grazing lands which used to be the basis of all the former system suffered, on the one hand, a gradual reduction of their area to the benefit of the tree and cereal-cultivating areas, and, on the other hand, a drop in their fodder potential due to overgrazing. This evolution of pastoral spaces was accompanied by the development of the process of desertification, especially hydrous and wind erosion (sand-dunes).

4 - Being conscious of the ecological dangers generated by intensification of the system of production in arid steppic environments, the authorities undertook programmes and projects of integrated development in agro-pastoral milieus from the 1970s onwards.

This development, which generated agronomic components (irrigated fodder and vegetable cultivation) pastoral components (improvement of grazing lands) and zootechnical components (genetic improvement, animal prophylaxis), was characterized by its technical rationality. The schemas of organization and management of agro-pastoral spaces advocated by this development are generally based on a modelization of ecological systems. In practice, the technical rationality has proved to be inadequate to render this development operational or to make the state's efforts and investment profitable.

The successive impediments and difficulties encountered by different programmes and projects of agro-pastoral development in steppic environments have caused the promoters of such development to look for the causes underlying these impediments and, consequently, to undertake evaluation and analysis. This analysis has made it possible to put forward the social aspect as the main cause of the difficulties and impediments encountered in the development of agro-pastoral zones. In

the production of the olive oil which is indispensable for the populations' diet, and of by-products which are suitable as fodder. For example, olive-oil cake and coppice wood, are greatly appreciated by livestock. The preservation and stocking of these by-products of the olive-tree make it possible to form reserves of fodder which are very useful in times of scarcity.

\* The development of the practice of "*Achaba*" (leasing of grazing-lands) and an integration of pastoral spaces, with their fodder resources, in a vaster economic space (whether regional or national), dominated by the market system. The speeded-up privatization of former collective grazing lands made this integration easier.

\* An increase in the types of partnership, with annual and seasonal contracts, between populations engaged in livestock-raising. These partnerships usually involve sedentary livestock-raisers, who are settled in the towns and villages of the steppe, and herdsmen-cum-raisers who are exploiting the vast pastoral zones of the South-East (El Ouara, Dahar, Choucha).

\* A development of diversified activities among the agro-herdsmen of the region. The maintenance of an extended family structure (with several households living under the same roof) and the diversification of

economic activities in the region, have encouraged the development of diversified activities. The income obtained from non-agricultural activities (commerce, administration, emigration, services...) will have an important role to play in the upkeep of livestock and in the consolidation of the process of agricultural valorization of the steppe.

6 - It is certain that the new forms of exploitation and of valorization of steppic spaces generate an important ecological problem linked to intensification of the system of mobilization of natural resources in this space. The most remarkable manifestations of this ecological problem are related to degradation of the plant cover of the steppe and the development of hydrous and wind erosion. Nevertheless, it must be said, in favour of the new socio-économique dynamics which are at present under way in the steppic zones of the Tunisian South East, that they enable the local populations to diversify their sources of income, and thus to ensure a certain economic security in an arid environment which is greatly affected by inadequate and irregular rainfall.

Because they did not integrate local dynamics in their development schemas, the projects of agro-pastoral development undertaken by the State have frequently encountered impediments, despite the considerable human and material means at their disposal.

The rationalization of the actions of the agro-herdsmen and those of the State services necessitates a development and a consolidation of the sector of scientific research in a steppic environment. This development of research should take place on the basis of multidisciplinary approaches integrating technical and socio-economic aspects with the following dual goal :

- \* That of analysing and evaluating social dynamics and experiences of agro-pastoral development undertaken in a steppic environment.

- \* That of guiding and supporting these drives and experiences by responding as appropriate to the various constraints and impediments encountered on the technical and socio-economic levels.

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