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Pastoralism in Algeria: transformation, challenges and prospects

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Abstract. Pastoralism plays a significant socio-economic role in Algeria. However, extensive livestock systems, which are of high nature value, are facing many challenges and their decline might have social, economic and environmental consequences. In this context, the present review contributes to a better understanding of the current situation in which pastoralism in Algeria is evolving and the major developments over the last decades. It draws upon secondary data from the scholarly literature as well as grey one (e.g. reports). The analyzed literature suggests that the pastoral regions in Algeria are subject to a number of social, economic and technical transformations. These transformations occur as a result of the breakdown of traditional balances between social groups and natural resources. The socioeconomic factors induced by demographic growth as well as climate change have also profoundly modified the Algerian pastoral systems (cf. decreased mobility, greater dependence on feed supplements). This study reveals livestock systems and practices instability as well as an increase of competition over pastoral resources use. The results also highlight that in the face of those transformations, pastoral societies are becoming economically fragile, pushing pastoralists towards livelihoods diversification to improve their chances of maintaining their farms in economically and climatically difficult conditions.

Keywords. Pastoralism – Algeria - livestock production - semi-arid areas - pastoral communities - sustainability.

Le pastoralisme en Algérie : transformation, défis et perspectives.

Résumé. Le pastoralisme joue un rôle socio-économique important en Algérie. Cependant, les systèmes d'élevage extensifs, qui ont une grande valeur naturelle, font face à de nombreux défis, et leur déclin pourrait avoir des conséquences sociales, économiques et environnementales. Dans ce contexte, la présente revue contribue à une meilleure compréhension de la situation actuelle dans laquelle évolue le pastoralisme en Algérie et des développements majeurs des dernières décennies. Elle s'appuie sur des données secondaires tirées de la littérature savante ainsi que sur des données grises (p. ex., rapports). La littérature analysée suggère que les régions pastorales en Algérie sont soumises à un certain nombre de transformations sociales, économiques et techniques. Ces transformations résultent de la rupture des équilibres traditionnels entre les groupes sociaux et les ressources naturelles. Les facteurs socio-économiques induits par la croissance démographique ainsi que le changement climatique ont également profondément modifié les systèmes pastoraux algériens (cf. mobilité réduite, plus grande dépendance aux compléments alimentaires). Cette étude révèle l'instabilité des systèmes et des pratiques d'élevage ainsi que l'augmentation de la concurrence sur l'utilisation des ressources pastorales. Les résultats soulignent également que, face à ces transformations, les sociétés pastorales deviennent économiquement fragiles, poussant les pasteurs vers la diversification des moyens de subsistance afin d'améliorer leurs chances de maintenir leurs exploitations dans des conditions économiques et climatiques difficiles.

Mots clés. Pastoralisme – Algérie – production animale – régions semi-arides - communautés pastorales - durabilité

I - Introduction

Mediterranean pastoralism is a cultural fact, heir to a long tradition. Despite the stereotypes that stick to its image, it is anchored in the modernity to which pastoral societies have always been able to adapt and survive. Pastoralism is about men, women, and families, life choices and career paths related to animal husbandry (cattle, sheep, goats, equines, camelids); stories and human relationships that are not reducible to the technico-economic performances of farms. Pastoralism is also a relationship with nature and territory, a set of knowledge and know-how, and a cultural heritage (material and intangible) to be protected as modes of production of quality goods, environmental services and lifestyles, but also emblematic landscapes shaped by populations that coexist or have coexisted on territories to which they have given an identity (Ben Hounet and Guinand, 2016).

In Algeria, in the recent decades, the steppe region has undergone a profound evolution. Its human population has tripled from 4 million in 1977 to 12 million in 2009 (ONS, 2011), increasing the pressure of agricultural (livestock and crops) and non-agricultural uses of rangelands. Moreover, the number of animals present on these rangelands also increased from 6 million in 1968 to 20 million in 2014 (Yabrir et al., 2015), which would have contributed to the decline in spontaneous forage availability in the steppe (Le Houérou, 1995; Daoudi et al., 2013; Hammouda et al., 2013). Successive land reforms have allowed a significant expansion of crops, towns and villages to the detriment of pastures and transhumance corridors. The massive use of concentrates in the feeding of animals, as well as the association of crop growing with pastoralism (cf. agro-pastoralism), allowed some breeders to guarantee the feeding of their animals without regularly making large displacements, to be content with collective and private pastures available in their region of origin (Aïdoud et al. 2006; Ghozlane et al., 2009). This set of changes that the steppe has undergone in recent decades has greatly reduced large herd movements, and is constantly changing the habits of the locals (Abbad & Genin, 2004).

The purpose of this article is to present the context, the results and the conclusions of researches, articles and official reports on pastoral livestock farming carried out by different institutions in the Algerian rangelands, throughout the past decades, in order to identify in broad strokes, the common practices and the possibilities of improvement towards more sustainable pastoral production systems. The paper addresses transformations in pastoralism and pasture management relating to society and culture, economics, environment, and policy and governance.

II - Methods

The article draws upon a review of some relevant documents (journal articles, book chapters, conference articles, official national reports and theses) available on the internet or indexed in the libraries of Algerian universities. Two inclusion criteria were considered for the selection of the documents: geographical coverage (viz. regional or national Algerian study) and thematic focus (viz. pastoralism). Following the scrutiny of titles, abstracts and full-texts, 44 documents were included in this narrative review.

III - Results and Discussion

3.7 Society and culture

Pastoral and agro-pastoral systems are extremely important for the local population of the Algerian steppes. They play a major role in the food security, and social and economic stability of the local population. However, the processes of changes in lifestyle, livestock management, and biophysical environments, linked in part to climate change, have led to dynamics that determined the degradation of natural resources. This situation has had the effect of altering ancestral know-how, known for generating income for the population (Ben Hounet & Guinand, 2016).

The sedentarization process of nomadic and transhumant breeders, the increasing use of complementation (in particular barley and bran) for animal feeding (thus breaking with pastoral feeding practices based solely on grazing) and the individual appropriation of rangelands are the main highlights of the Steppic territories in the last few years (Moulai, 2008). These transformations have resulted in intense degradation of the natural plant resources of the rangelands, the basis of agropastoral production systems in Algeria. This regressive dynamics of steppe alteration has been confirmed by numerous ecological and agro-pastoral diagnostics that have shown the intensity of degradation of the vegetation cover (Le Houérou, 1995; Nedjraoui, 2003; Tarhouni et al, 2007). Although the agro-pastoral and pastoral populations have been able to cope with the extreme variability of the rains, this adaptation, often individual, has unfortunately led to the monetisation of grazed forage resources (natural range, pasture and cultivated land) (Aidoud et al., 2006). Rights holders who do not own livestock, rent their natural rangelands as well as their cultivated areas to farmers (Mouhouse, 2005). The entire Steppic territory is shared among the members of the different pastoral and agro-pastoral communities. The purchase of feed supplements for livestock became systematic (grain or commercial feed) even in years when rains have been abundant (Kanoun, 2012).

Almost all women in the pastoral communities, have animal husbandry roles and activities regardless of the mode of husbandry. In particular, they are involved in feeding young animals, monitoring animals near the place of residence, etc. Their level of involvement differs from one system to another, but in all cases, they do not have the right to intervene in the management of rangelands or even livestock. In these patriarchal societies, women are excluded from rangeland management. Even if the wife owns land, the exploitation and management is carried out by a male member of her family (father, brother, husband, son) (Ben Hounet & Guinand., 2016; Cialdella, 2005). Indeed, in these traditional societies, women have limited decision-making power when it comes to dealing with the outside world, although they contribute to the rural economy through the creation of local agricultural and para-agricultural wealth and market values, and that they remain the guarantors of the sustainability of indigenous tangible and intangible cultural know-how. Several agricultural and craft activities are carried out by women. These activities contribute to improving the livelihoods of rural households. According to Ferroukhi & Benterki (2003), rural households derive their income from multiple sources within the economy (self-production, agricultural production, crafts, asset leasing). Women constitute with their human potential, the main force of production, they play a driving role in the strategies of survival of families and management of pastoral and natural resources. However, women are rarely involved in important decision-making regarding the management of the livestock and its by-products (Ben Hounet & Guinand, 2016).

3.8 Economics

Animal husbandry and its productions are major issues for the people of the steppic areas in Algeria as well as for the national economy. In fact, the livestock sector contributes with 51%

of agricultural GDP, and the percentage is probably higher if other livestock intermediate values are assessed more adequately (Akhilu, 2002). This sector is also a supplier of raw materials essential to traditional economic activities that valorizes milk, wool and dromedary hair.

One of the weaknesses of the economic literature on pastoralism in Algeria is the discretion of research on the determination of the real weight of pastoralism in the agricultural GDP and in the national wealth produced. Despite the strong intuition of the contribution of the pastoral sector in the national economy, there is very little scientific contribution focused on a global approach to this activity in Algeria, and the existing one is relatively old. This orientation requires, among other things, the updating of studies on the economic viability of pastoralism. This would have the advantage of quantifying economic arguments in order to stimulate, simulate and facilitate decision-making oriented towards the economic development of pastoralism. This could, for example, results in the determination for the Algerian State, of the overall cost they would have to bear in supporting the pastoral economy in relation to economic, social and environmental benefits (Ferroukhi & Benterki, 2003; Bedrani, 2008).

Milk and meat production are the main objectives of livestock farming in the steppic regions of Algeria. Apart from the self-consumed portion of production, the surplus is generally destined for marketing. However, we tend to see a preference among pastoralists for the production of meat, at free prices, than milk, whose prices are controlled (Sraïri et al., 2007). Generally speaking, the pastoral milk production in Algeria faces two major constraints: price competition and supply instability (Yakhlef, 1989). To increase the effectiveness of the marketing of pastoral products, it is not enough to focus on strategies to support and control supply. It would also be advisable to develop strategies to strengthen the competitiveness of pastoral livestock products, targeting the needs of the sector and, above all, respecting the intrinsic characteristics of this activity. This could, for example, take the form of support for securing the environment and improving infrastructure and marketing standards (Bencharif, 2001).

3.9 Environment

In order to be sustainable, livestock systems must be consistent with ecological and social issues as well as economic imperatives. Development options should favour production systems that are best able to meet all of these challenges (Davies et al., 2010). The efficiency of pastoral systems in valuing arid and semi-arid areas is now recognized, but not by all stakeholders, and their ability to respond to the three challenges is insufficiently scientifically justified. There is therefore a major challenge to demonstrate that these extensive livestock systems, simple in principle but complex in their implementation since they develop in difficult environments, preserve a fragile environment while securing rural societies (Derry & Boone, 2010).

For a long time stigmatized as an environmentally degrading element with the development of concepts of "overgrazing", "desertification" and "land degradation", pastoralism benefits from a return to grace through the recognition of its contribution to the development of its environment. By re-characterizing the environment of pastoralists in arid areas of uncertain, variable, ecosystem imbalance, etc., the major contributions of Ellis & Swift (1988), Westoby et al. (1989), Behnke et al. (1993), Scoones (1999), Ellis (1999) and Perrier (1999), have helped to rethink the ecology of the rangelands and to seek to determine the respective shares of climatic factors and pastoral activity in the degradation of pastoral environments.

In Algeria, and in other African countries, where the environment is considered to be

permanently in an unbalanced state, both climate and herbivore predation on vegetation and water resources are variables that are part of the system. Through this approach, many scholars have put forward an explanation of the repeated failures of breeding projects, which have focused on finding balanced solutions based on the idea of “carrying capacity”. Their contributions have enabled pastoralism to be rehabilitated, believing that it is not sufficiently influential in the sustainable degradation of such an environment. Conversely, it even appears that the mobility strategies implemented by pastoralists are likely to counteract environmental risks (Morton & Meadows, 2000; Briske et al., 2008).

Pastoral systems, which accommodate a large part of the population, are also areas particularly exposed to the risk of desertification. This situation results from the impoverishment of the soil and the decrease of water resources (Tabet-aoul, 2008). In the Algerian High Steppe Plains, climatic disturbances, and more particularly lower rainfall, are an important cause of the fragility of these environments. Natural forage availability is becoming more and more random. Studies by the Long-Term Ecological Monitoring and Observation Network (ROSELT) in the southern Algerian steppes showed a loss of pastoral production equivalent to 236 feed units (UF)/ha for a decrease in annual rainfall of 104 mm/year (Bneder, 2018). Halfa grass is disappearing, although this plant accounted for 80% of the vegetation cover of the pre-existing system, this disappearance being of course even faster in the grazed plots. In addition, inadequate cropping practices result in annual ploughed areas subject to wind erosion being estimated at nearly 1.2 million ha (CREAD, 2018). The recurrence of drought cycles, which have become longer and longer, accentuates this desertification. The development by remote sensing of a map of sensitivity to desertification has shown that already more than 570,000 ha of land in steppic areas are completely desertified without the possibility of biological ascent and that nearly 6 million ha are very threatened by the effects of wind erosion (Nedjraoui & Bedrani, 2008).

As a result, farm households are likely to see their sources of income decline. At the level of the population as a whole, prices of the main agricultural products could rise significantly, threatening the country's food security. Domestic prices for animal products (meat and dairy) could also see substantial increases due to reduced pasture productivity (Bessaoud, 2016).

3.10 Policy and governance

The second pillar of the Algerian agricultural policy, which covers the concept of “rural renewal”, is aimed at households living in rural areas, or nearly 40% of the Algerian population (11 million rural residents). According to the Ministry of Agriculture, Integrated Rural Development Proximity Projects (PPDRI) have been implemented around four axes: the modernization or/and rehabilitation of villages, the diversification of economic activities and the improvement of living conditions in rural areas, the protection and enhancement of natural resources (steppe, oasis, mountains), and the protection and enhancement of the tangible and intangible heritage of rural territories (Ferroukhi & Bentourki, 2003).

Bessaoud et al. (2019) also note that the State, aware of the risks incurred both by pastoral activity and by people in steppic areas, has taken into charge this aspect by implementing technical and institutional programs and measures. These include: the strategy to combat desertification and drought, the development of the map of sensitivity to desertification and degradation of steppe rangelands, the establishment of the High Commissioner for Steppe Development (HCDS) and its provision of material and human resources to monitor risks and to act in the framework of the development of steppic areas (e.g. agricultural development with a ban on cereal ploughing, creation of water points for livestock, drilling for irrigation, epidemiological monitoring, development of sheep, bovine and cameline sectors, support and capacity building for pastoralists, etc.).

Nonetheless, few questions arise, on the one hand, whether those proceedings will represent the ultimate solution to the multiple risks and problems faced by the rural and pastoral communities, and, on the other hand, will they be thoroughly implemented in every region of the country to ensure maximum efficiency.

IV - Conclusion

What is important to note from this study is that the steppe region in particular and the Algerian rangelands in general have undergone strong changes marked by an increase in the number of livestock and the rural population. Pastoral resources have declined due to the extension of cultivation, failures of agricultural policies and climate change (droughts). This has made pastoral communities much more fragile and vulnerable. In this context, farmers have adopted a set of strategies (complementation, mobility, irrigation, etc.). Pastoralists with land seem to be more resistant to decapitalization. Therefore, the development of agro-pastoral activities in the Algerian steppe and rangelands is, today, a necessity, in order to protect their natural resources, improve incomes, guarantee food security and provide enough jobs to a growing population. Underestimating, or neglecting, these development possibilities may not only lead the particular vegetation of the steppe to shrink, its soils to degrade and its agro-pastoral population to become impoverished, but also to see its livestock farming gradually evolve towards a kind of farming that is subject to price fluctuations of different imported grains, and seeing the particular quality of the livestock products, especially sought by consumers, to deteriorate.

Finally, and because the Algerian pastoral systems are evolving amidst very high fluctuation in both climatic and economic conditions, we highlight the urgent need for broader, more in-depth long-term studies, that cover all the aspects of pastoralism, in order to clarify and complete the different analyses and diagnoses available. It is also necessary that the different actors (e.g. researchers, breeders/pastoralists, officials and policy-makers) join their efforts to promote a strategy to exploit reasonably and sustainably all accessible resources, whether renewable or not, such as water, arable lands and pastures.

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