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Ruminant Husbandry Survey, Estimation of Livestock Numbers and Trends in Steppe Region, Naâma, Algeria

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Article Info

ABSTRACT:

Livestock farming plays an important role in the agricultural system and in the social life of the population, that pastoralism is both a production activity and a way of life that can be understood as an occupation resulting from a true vocation (Baxter, 1994).

The present study consists in measuring the importance of pastoral breeding and their evolution in the wilaya of Naâma, through the data provided by the various administrative agencies of this region.

With the population growth and the agro-pastoral mode that follows this wilaya, a large number of pastoralists have gradually settled down which has greatly contributed to worsening the degradation of the pastures.

This study has highlighted that the livestock farming system adopted is of an extensive type, based essentially on the use of natural range resources which are rich in forage species.

The surveys was carried out showed that the numbers represented on the distribution maps of the livestock herds in the 12 communes of the wilaya of Naama, have experienced a strong increase in recent years, where sheep farming occupies the first place.

In order to preserve agropastoral livestock in the Algerian steppe, the participatory development and implementation of programmes and projects to protect, enhance and better manage pastoral resources.

Keywords: Range, Livestock, Overgrazing, Bioclimate, ArcGIS. Naama.

1. Introduction

The livestock sector occupies about 30 per cent of the world's land surface through grazing and foraging (FAO and LEAD, 2009).

Of the 20 million hectares occupied by the Algerian steppe (Nedjraoui and Bedrani, 2008), the breeding of small ruminants was mainly based on the exploitation of forage provided by the rangelands. The herders, transhumants, moved from season to season to find the best possible vegetation on the courses of the steppe, the Sahara and the Tell. This method of driving allowed the courses to avoid overgrazing and gave them the opportunity to regenerate from one season to the next (add reference)

Livestock farming plays a major role in preserving biodiversity. It is the major agricultural activity because it values uncultivated spaces, employs labour and plays an important role in regeneration and development (Hammouche and Fhaima, 2017).The latter provides a large part of the human diet in Algeria through milk production and meat production, of which it is a source of profitability for producers and farmers (Bouras, 2015).

Recently, the steppe has been marked by a strong increase in the population, herds and grain forage crop, which have about tripled during this period. This kind of development is also reflected in the reduction of transhumances and the degradation of rangeland and their severely reduced forage production capacity, and farmers have become impoverished (Makheloufi, 2020), However, the steppe faces the twin challenges of sustainable resource management and the fight against poverty and food insecurity in .

This paper focused on the enhancement of livestock farming in an Algerian steppe region, through the distribution and evolution of livestock (cattle, sheep, goats, camels).

2. Livestock population in Algeria

The important breedings practiced in Algeria concerning four main species namely: cattle, sheep, goats and camels.

During the decade 2000-2009, the total number of employees was around 24.5 million head, which increased to 33.6 million head in the period 2010-2017, a 37% growth rate. (Bouzaghi, 2018), However, during the period between 2010-2017, the number of sheep was represented 78% of the total number; 26 Million heads, comes in second position, the number of goats with 14% representing 4.8 Million heads, followed by the bovine species with 1.9 Million heads (of which 52% are dairy cows) or 6% of the total number. On the other hand, the number of camels and equines represents respectively 1% and 0.5%.
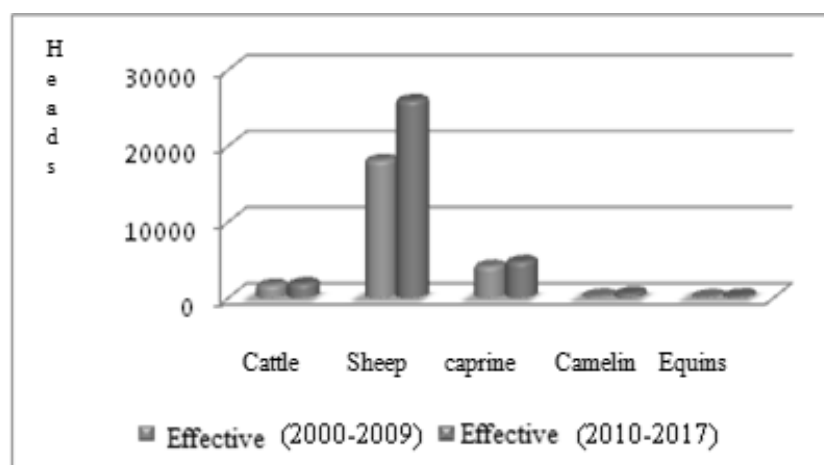

Figure 01: Distribution of livestock in Algeria

3.   Method

In order to deal with a large number of technical livestock parameters, surveys were carried out at the level of the Agricultural Services Directorate (DSA) and the Planning and Spatial Planning Directorate Questions were raised on the structure and overall functioning of livestock (numbers of animals, agricultural areas used, crop and animal production).To better synthesize and clarify the data, we refer to Excel software and ArcGis software that has made it possible to make maps of the distribution of the livestock population.

4.   Evolution of livestock in the wilaya of Naâma

4.1.   Sheep population

Sheep are among the most efficient breeding species. They adapt to difficult conditions, exploit marginal areas, transform low-quality forages into proteins and do not require a lot of concentrated feed. Easy to handle, they do not require sophisticated infrastructure, allow a quick return on investment and thus constitute a permanent cash flow for the breeder (Boujnane, 2005).

In the wilaya of Naâma, sheep numbers increased between 2002 and 2020, from 817,570 to 1,652,906 head (2021),this increase was mainly due to the food demand of the populations (Margot, 2016), and, the valuable qualities of breeds that show exceptional adaptation in extreme environmental conditions (Laoun, 2015).

Figure 2 shows that the evolution of the sheep population increased slowly during the years 2002 and 2007 until 2008, from 817570 to 864000 head. This number rose from 1,100,000 head in 2009 to 1,161,750 head in 2013, and then increased rapidly between 2014 and 2020 to 1,652,906 head.
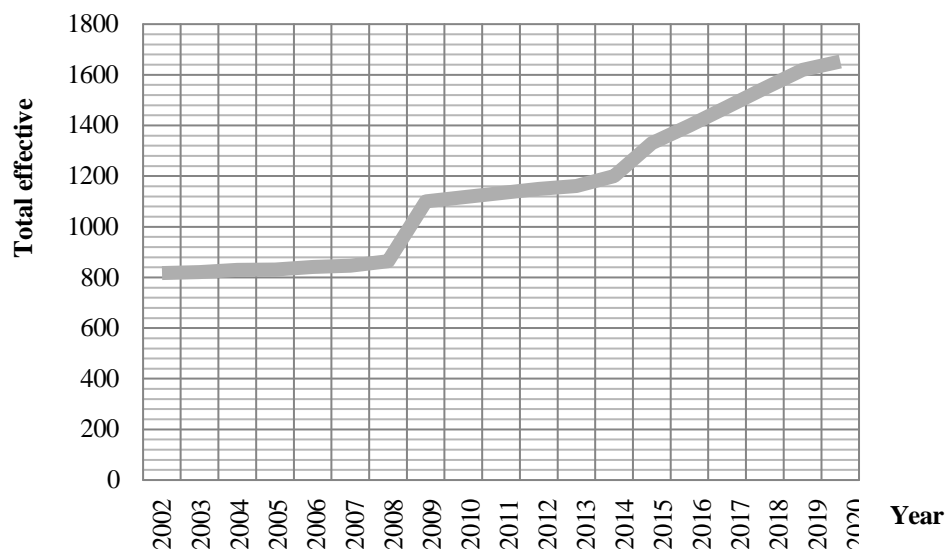

Figure 2: Evolution of sheep numbers in the Naâma wilaya (Naâma, 2021)

This development may be due to the increase in the number of breeders over the last ten years and to the state support to breeders with sheep food and medicines (vaccines).

According to Benyoucef (2005), in the western steppe it is rather the local race Hamra (or Beni-Guil) which was dominant and then became rarefied to the point that it was supplanted in its own cradle by the Ouled Djellal breed and the D'Man breed is also observed in small numbers in the Southwest.

The geographical distribution of the sheep population is very uneven, as most sheep are concentrated in the Steppe regions. (Zouyed, 2005).

Figure 3 shows the high concentration of sheep in the north and west of the region to which they adapt remarkably.
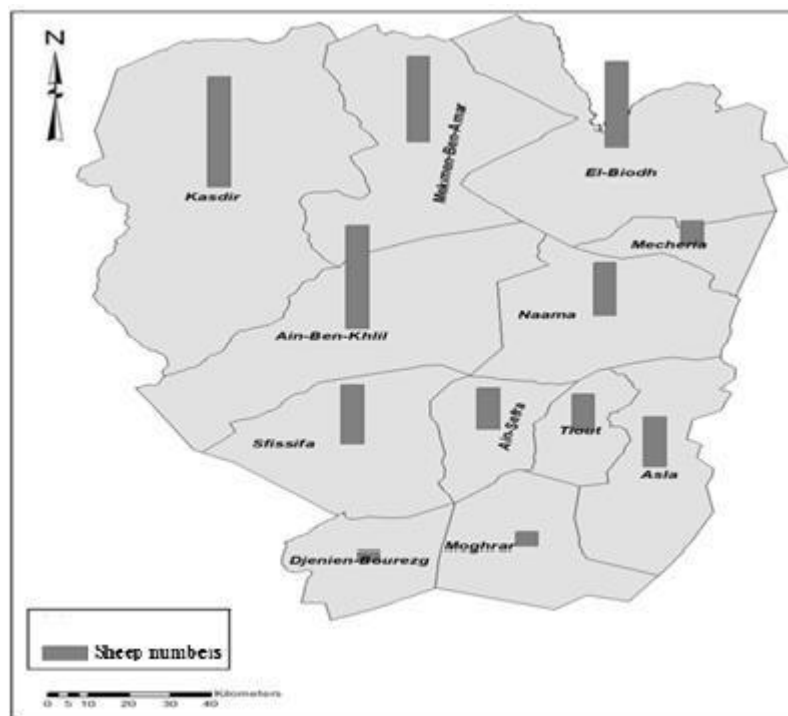

Figure 3: Distribution of sheep in the Naâma wilaya (Year, 2020)

The plain of Ain-Ben-Khelil appears as a space of great favorable expanse and by their central position between Kasdir, Naâma, Mekmen-Ben-Ammar and sfissifa gives it a role of great importance in the agropastoral development and in the valorization of the steppic ecosystem (Mansour, 2011).

4.2.   Cattle population

Cattle farming is a very important activity, it provides a good part of the human diet and it is a source of profitability for producers and agricultures (Bouras, 2015).It is a good indicator in the economy, as it is a source that covers part of the national animal protein requirements and enhances the value of the workforce employed in rural areas, however it is influenced by multitudes of constraints that depend mainly on the environment, animal material and especially by the state policy since independence (Mouffok, 2007).

Estimates of the number of cattle in the wilaya of Naâma based on statistical data provided by the Directorate of Agricultural Services.
Cattle statistics showed that between 2002 and 2020, the number of cattle fell from 36,000 to 34,509 (Figure 4).
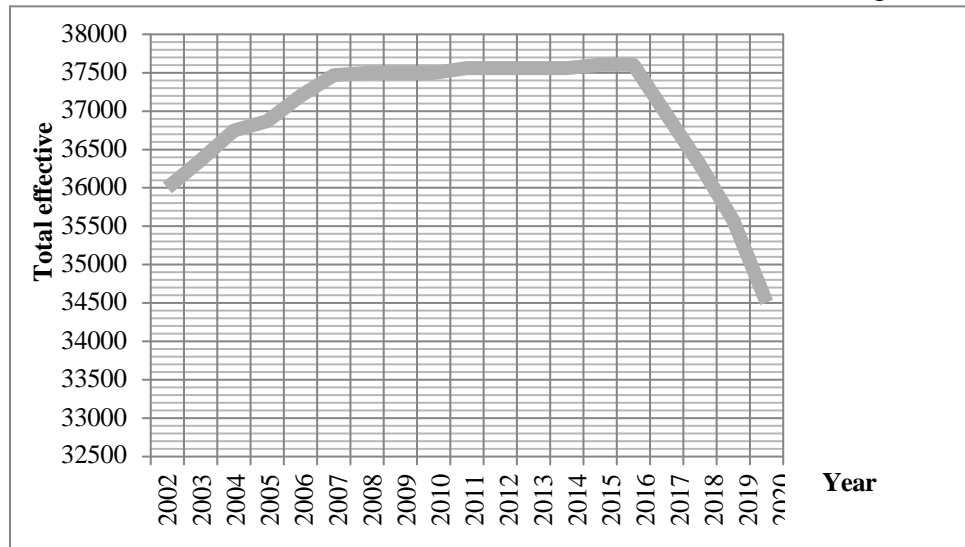
Figure 4: Evolution of cattle numbers in Naâma wilaya (Naâma, 2021)

Between 2002 and 2008, cattle numbers increased from 36,000 to 37,500 head to improve cattle production.

According to Cheddad (2015), cattle numbers increased as a result of the implementation of the National Agricultural Development Program (NADP) during 1996 - 2006.

From 2009 to 2016, the workforce was almost stable, with no more than 37,600 head. Since 2016, this number has gradually decreased until it reaches 34,509 head.

The main reason of these variations would probably the occurrence during this period of certain diseases deemed dangerous and contagious, despite the prevention and control program put in place by the public authorities. These diseases are primarily foot-and-mouth disease and brucellosis (Lalaouine andTakherist, 2017).

The distribution of cattle numbers is highly related to the richness of pastures (Kirat,2007).

Figure 5 shows the high concentration of cattle in the north and centre of the region relative to the south due to periods of drought that decrease milk production and livestock yield (Srairi, 2008).
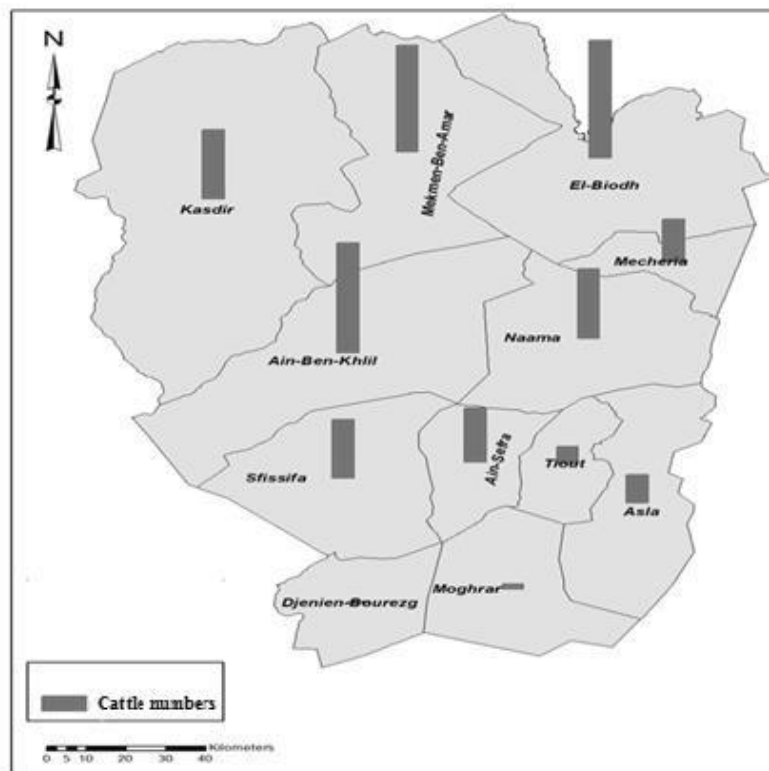
Figure 5: Distribution of cattle in the Naâma wilaya (Year, 2020)

4.3.   Goat population

Goat farming is a fundamental element in small ruminant farming systems, playing a very important role in the social and economic life of rural areas (Djaidja, 2018).

In Algeria, goat farming is one of the most traditional agricultural activities associated with sheep farming (Fantazi, 2004), it is mainly located in areas with difficult access (Hafid, 2006).
In the wilaya of Naâma, the number of goats (Figure 6) increased between 2002 and 2020, from 32,820 to 102,817 head.
From 2002 to 2003, the livestock population stabilized at 33,000 head, and in 2004 this number showed a slight increase, estimated at 55,866 head.
By 2004, the number of employees was increasing, a significant increase until 2021 to 102,817 head. This evolution is mainly related to intensification trials through the introduction of improved breeds (Manallah, 2012).
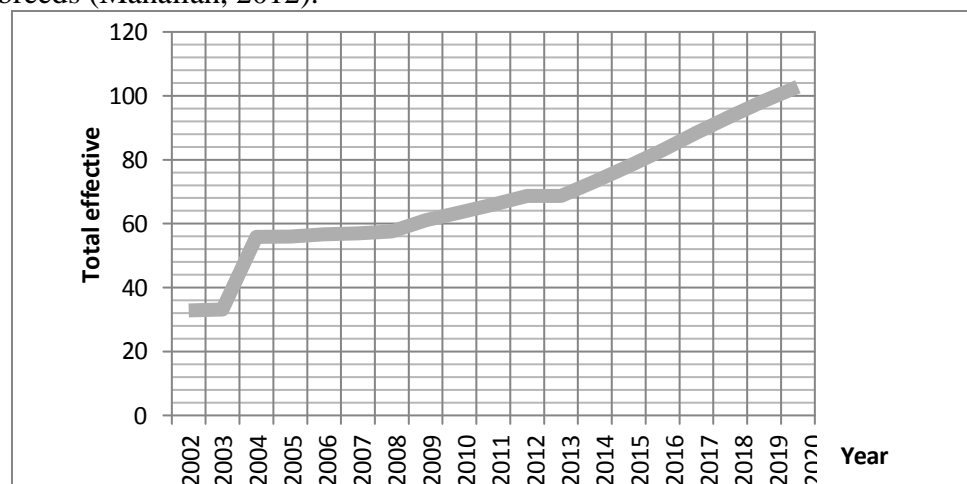

Figure 6: Evolution of goat populations in the Naâma wilaya Naâma, 2021)

The distribution of goat herds across the national territory depends on the nature of the region, the mode of rearing and the importance given to the goat (Hafid, 2006).

Figure 7 shows that most of the goat population is in the north and west of the region, whereas the population is small in the municipality of Djenien-Bou-Rezg because of the area in relation to the others and their way of life.

Figure 7: Distribution of goats in the Naâma wilaya (Year, 2020)

4.4.   Camel herd

The camel is considered as the preferred animal among agricultural animals, it plays an important role in the economic and social field among agro-pastoral systems, which can live and produce in spite of drought conditions.

In the wilaya of Naâma, the camelina population has grown strongly, and currently numbers 1844 heads (2021).

Figure 8 shows that the evolution of the camel herd has been slowly increasing during the years 2002 and 2008 from 755 to 812 head. This number rose from 950 head in 2009 to 1143 head in 2019 and then rapidly increased until 2020 to 1844 head.
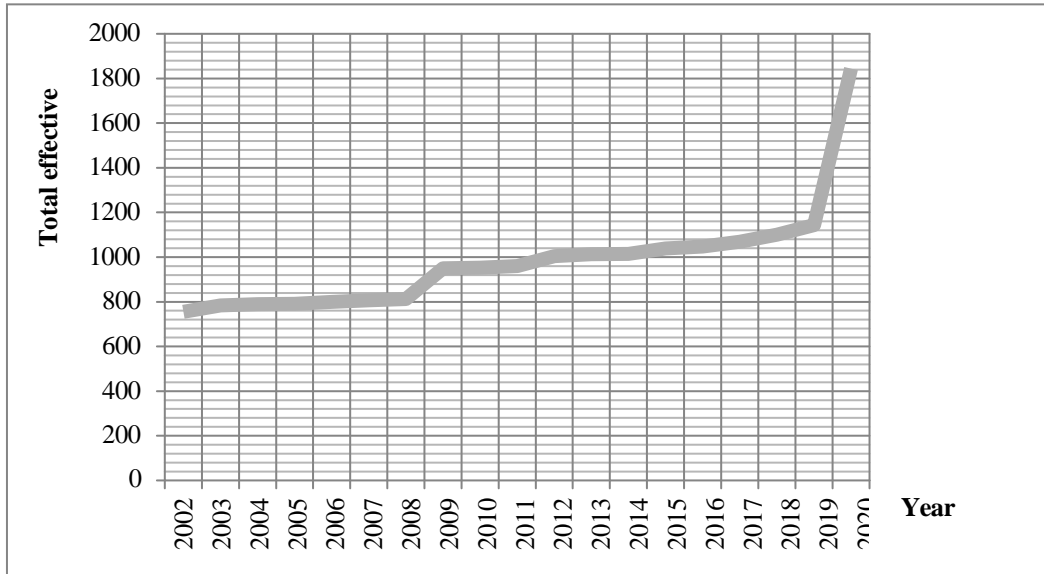
Figure 8: Evolution of camel population in Naâma wilaya (Naâma, 2021)

Effects of National Agricultural and Rural Development Programs (National Agricultural Development Program (ADDP), Agricultural Land Ownership Program (APFA) and recurrent droughts appear to be the main factors explaining the large variations in camel populations (Bedda*et al*., 2015).
Figure 9 shows that most of the camel population is in the south of the region (Moghrar, Asla and Tiout), but the other municipalities have almost no population.

Figure 9: Distribution of camel population in Naâma wilaya (Year, 2020)

It is clear that the largest number of camels is located where rainfall is low, which shows the ability of this species to adapt to extreme and difficult production conditions including feeding (Meguellati-Kanoun *et al*., 2018).

5.   Conclusion

Regarding this study, which enabled us to confirm that livestock farming has changed considerably in recent years, this development has been accompanied by an increase in the population and a large increase in numbers of livestock. Indeed, 6,700 breeders carried out this activity with a herd of 1,793,470 head, despite the fact that deterioration in pastoral rangeland is noticed in the region because of the extensive (overgrazing) breeding method practiced and the unfavorable climatic conditions.

Livestock can potentially serve as a mobile solar catalytic converter, and transform the cellulose contained in plant biomass into simple carbohydrates that make up the soil's food web complexes and help to restore the fertility of degraded lands (Patriquin and Moncayo, 1991).
As well as it can be reduce greenhouse gases (Nair *et al*., 2011) and contribute to the protection of water resources by improving soil properties and reducing pollution (Chara, 2010).

Data Availability

All the data are provided in the manuscript.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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