

# CHARACTERIZATION OF DAIRY CATTLE BREEDING IN A SAHARAN REGION (GHARDAÏA, ALGERIA): SOCIO-PROFESSIONAL PROFILE OF PRODUCING BREEDERS

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## Abstract

The dairy cattle breeding is one of the agricultural priorities for economic development in the developing countries, like Algeria. In this study, the various aspects of dairy cattle breeding in a Saharan region (Ghardaïa, southern Algeria) characterized in its socio professional regional environment. The main objective was to establish the socio professional characters of breeder by analyzing the diagnosis related to the dairy industry in this region. This was done through the thematic analysis of the relationship between cattle breeding and its socio-economic environment, especially the dairy industry using the raw milk. A survey was conducted on dairy cattle breeding in the region of Ghardaïa. 53 cattle breeders were selected for this survey. The results showed that only 22.45% of the cattle farms were found to use liberal activities off-farm wage, whereas more than 77% of cattle farms were not. This can be justified by the fact that almost 18% of persons were aged over 50 years. Some relations were established between the criteria of milk production and breeder's profile, through some key indicators of the typology. Additionally, the diversity of breeder's profiles, their representations of animals and working with animals, and their logic livestock were reported.

**Key words:** Dairy, Ghardaïa, Profile cattle breeder, Saharan region, Socio-economic environment

## INTRODUCTION

Currently, dairy production in Algeria is in a critical phase and facing many challenges, mainly insufficient local production which worsened by a very low collection rate and the increase in the prices of raw materials in the international markets [2]. Rural areas, especially the Saharan zones, are now at the core of the concerns of governments, seeking to meet the growing social and economic demand [12]. All these environmental and organizational constraints are imposed on Maghrebian cattle production and induce some challenges, in terms of meeting demand, for all concerned operators: government in the foreground, breeders and industrial milk [14].

The low level of technology and the lack of savoir-faire of farmers contribute substantially in increasing a number of problems [5]. Numerous studies have been conducted to

analyze the constraints to the development of dairy production in Algeria. However, only a very few authors have attempted to discuss the socio-professional aspects. That is why we proposed to evaluate the profile parameters of our breeders through a survey study in different areas of the wilaya of Ghardaïa. Do the socio-professional breeders allow them to make a good production of milk and its derivatives, and then to satisfy the regional or national markets?

## MATERIAL AND METHOD

The approach used in this study was based on the socio-economic surveys and researches which were done within producing breeders, agricultural institutions and local authorities. 53 cattle sheds were investigated. The sheds were selected based on the number of head of cattles ( $\geq 12$ ), specialization of the owner, as well as the potential of production. Table 1 lists the different farms selected for this investigation. All data recorded during surveys were analyzed and discussed to draw appropriate conclusions.

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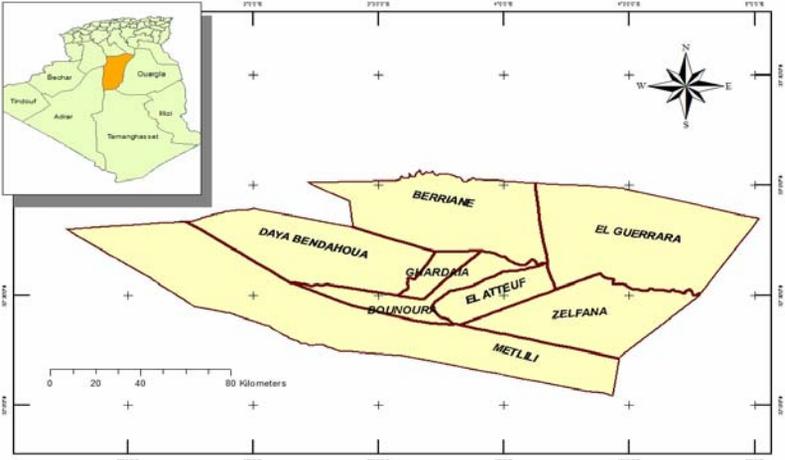


Figure 1 Geographical situation of the studied area

**RESULTS AND DISCUSSIONS**

**IDENTIFICATION OF THE BREEDER**

The identification of the breeder is of extreme importance, because the studied variables could be considered as an indicator of how farmers are conducting their farms. From the offspring, through the succession whether insured or not, passing through the origin of the activity of the breeder, his level of education enabling him to integrate new techniques, via innovation, towards the working capacity required in the breeding. In

a professional association frame the task would be needed for taking care of all the issues, before or after, including the production process. It is the organization of various links (Production, processing and marketing), actions and measures to improve productivity, quality and reducing production costs [3]. Such elements are of significant value to improve an appropriate system, in the occurrence of the dairy cattle. Allowing, through the same aspect, to make profit and ensure its reproduction.

Table 1 The different farms selected for investigation

Town	Total number of beef farms	Number of cattle farms surveyed	percentage
Guerrara	45	20	44,44
Berriane	10	6	60
Zelfana	13	7	53,84
El Atteuf	10	6	60
Bounoura	5	3	60
Daya ben Dahoua	11	6	54,54
Ghardaïa	7	5	71,42
Total	101	53	57,74

**MAIN ACTIVITY**

This activity is therefore a mere sideline and the breeder cannot count on to live with his family on the income that generates [4]. This activity therefore, plays an important role far greater than what some writings suggest. Unlike sheep, the dairy cattle as main activity is not a distant tradition. These

breeders can be considered as true professionals, and have another important feature. The stability of their activity as dairymen, which is not the case for many other subgroups of breeders.

The economic dimension, which is much greater, and the availability of land put them in a position to adopt strategies based more

on fast reaction to changes in the economical environment rather than on the technical mastery [7].

We notice that breeding cattle is the main activity in the majority of the encountered cases (75%), and characterizes all the studied areas (Guerrara, El Daya, Bounoura, El Atteuf, Zelfana, Berrian, Ghardaïa, and Metlili). The first objective is milk production, which (15%) are qualified according to breeding standards of animal feed (availability of fodder especially during odd periods, quantitative and qualitative rationing balanced and practice of ensilage...), hygienic conditions (Visit veterinary, health food, hygiene watering, maintenance and hygiene of animals and buildings), reproduction and selection (The reproduction includes the age of puberty, setting the reproduction of males and females, mating and fertility in terms of the selection through the choice of the parent, heifers from good dairy practice the artificial insemination), the rest (60%) of these breeders forget breeding standards. Finally, in other cases (25%) main activity is outside the breeding, they practice other activities.

#### AGE OF BREEDERS

The number of breeders approached and the percentage relative to the different age groups are shown in figure 2.

From the figure 2, we notice that (30.18%) are young breeders whose age does not exceed 40 years. it continues to grow among adults (40-60 years) with (50.94%) of breeders. the last category (over 60) is denoted with (18.86%).

According to the survey, it appears that the majority of breeders in the area of Guerrara are rather young than old, while all producers in the area of El Daya are young but the area of Metlili is characterized by both young and old breeders.

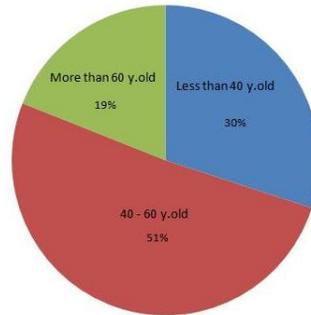


Figure 2 Distribution of the breeders in function of age

Otherwise, we found that the study area is mainly characterized by a breeding where family members participate directly or indirectly in the production process. This suggests that the succession is assured by the succession of breeding activity of parents to their offspring. Unlike the other areas (El Daya, Ghardaïa, Berrian and Metlili), the area of Guerrara, breeders are individuals who invest their capital in financial operations. The transitional regime is characteristic of Saharan agriculture; it inversely varies with the age of the operator. It is worth noting the absence of female breeders, because of the nature of the Sahara.

#### EDUCATIONAL LEVEL OF REEDERS

The survey results showed that the educational level of farmers in the region is low (primary qoranic religious zaouiās). Therefore, we understand that it is almost impossible for these people to keep records of their rudimentary cattle farms. Their low level of education is a handicap for the adoption of newly introduced breeding in the region which requires technical expertise. Different levels of education of breeders in the region are shown in figure 3.

According to Figure 3, more than half (57.87%) of surveyed breeders have a length of service of more than 10 years in the field of breeding. However, the share of farmers practicing breeding depends on the level. It reached (35.17%) of breeders who have a moderate level, followed by primary with (24.56%). As for breeders who have a high school, are denoted by (21.39%). Finally, comes the category of illiterates and the

academics with (12.25%) and (6.53%) respectively. In terms of driving and performance achievement, breeders with average, secondary and university levels are characterized by good control of breeding standards, feeding (rationing) sanitary conditions (animal maintenance and local), reproduction (mating and selection). According to Faye (1986), the breeder is the backbone of breeding. By its expertise, breeder determines the success of its operations.

If experience is an asset for the success, this experience is based on empirical knowledge with very little scientific knowledge. This is inconsistent with good conduct breeding. Breeders of low technical level are often unable to foresee quickly situations that may affect the performance of the animals. According to Badrani (1995), farmers, in Algeria, are still at a technical level which often insufficient. The government should intervene in the field of popularization and training. Finally, through these skills, is the breeder able to create a committee of milk? Can he develop a production plan of heifers substituting the importations? Is he able to set up a development partnership between the dairy industry and farmers' associations to upgrade the sector (productivity, quality...) in the main towns of Ghardaïa?

Breeders of the kind maintain of business the milk producer, their professional investment, from full employment, tillage, construction of livestock buildings, know-how, and learning farming techniques, relations established with the profession, markets and management structures [6].

The control of these parameters has allowed the increase of the size of the workforce on farms. Thus, breeders from areas of Daya Metlili reached a number of dairy cows ranging between 32 and 60. The same, a breeder in the area of Guerrara has a potential animal large enough (62 dairy cows and 40 heifers) and milk production ceiling in average 1300 litter per day.

Breeders should have better understanding of livestock management, market conditions, including the prices. Research, training and extension (Extension general and specific) are not eligible means significantly increased. They will better integrate and develop significant synergies.

Most breeders are not trained to deal with difficulties they may encounter. Breeders do not care about the profitability and productivity of their animals. Due to the lack of supervision, they do not have mastered the techniques of genetic improvement, installation of forage, conservation of fodder in the dry season and do not apply adequate veterinary monitoring.

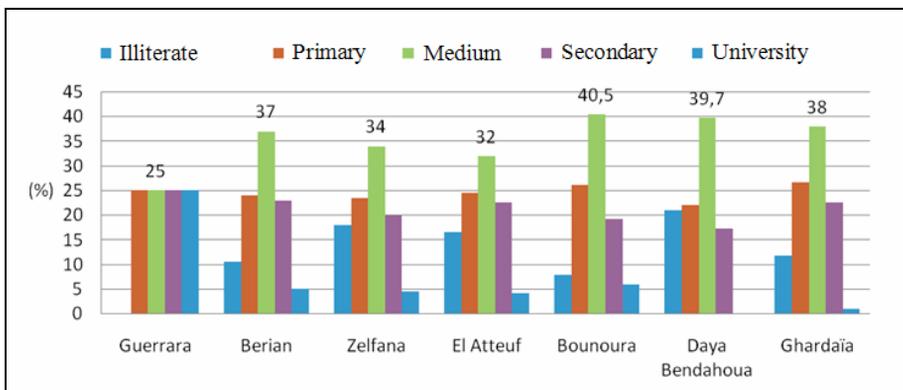


Figure 3 Percentage of the education level of breeders by town

#### NATURE OF THE ACTIVITY

We find that the majority of cases encountered (77.51%) is devoted exclusively to

the livestock activities which are the characteristic in all areas approached (Guerrara, El Daya, and Metlili). This is the

main source of income for breeders, whereas in (22.45%) of the cases, the practice of dairy cattle is considered additional business. They also engage in other activities outside breeding. It should be noted here that the number of cattle head per farm varies with the non-agricultural activity exercised by the breeder.

The development of private enterprises, after the opening of the economy in the context of globalization, has led to a growing

diversification of the range on the market to the great satisfaction of the consumer [13].

Livestock is a simple activity but a minimal knowledge must still be acquired before embarking on this kind of activity in order to avoid errors that may be irreparable [9]. Otherwise, we notice, on the ground efforts by some breeders, the improvement of product quality.

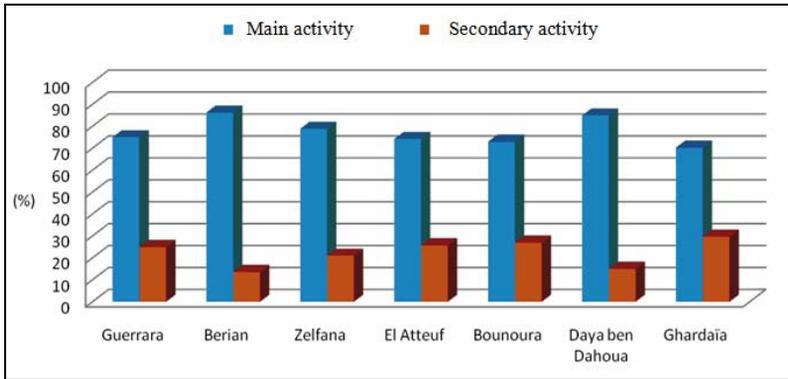


Figure 4 The nature of breeders' activity by town

These are breeders who, to cope with the difficulties of the socio-economic environment and to cope with the vagaries of climate, perform other activities, they go up to the sale of dairy cows for slaughter to provide an income that allows them to maintain the survival of their farms or reproduction of their systems, the presence of sheep, greenhouses, chicken coops, in some of these farms belonging to the productive orientation, is the proof [6].

### WORKFORCE

The man is usually the responsible for activities that require more physical strength such as tillage, harvesting, collection of crop residues and animal care. The labor force on farms is permanent, seasonal or familial.

From the Figure 4, we note that in (35.35%) of cases met, the labor force used is seasonal, whereas only (26.26%) is permanent. The use of this type of hand works varies in proportion to the size of the operation. According to the statements of breeders, it is involved in farming activities occasionally. However, our investigations reveal that (38.38%) surveys rely exclusively on family labor. The use of this type

of labor is relatively common in farms of 10 cows. The use of family labor seeks to minimize costs and to cushion the blow of unemployment among family members of working age, especially in the absence of other alternative employment or income.

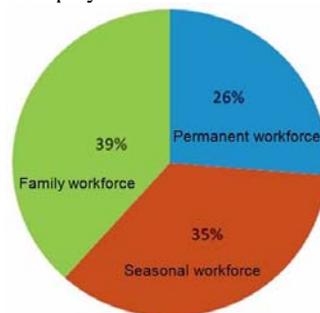


Figure 5: Identification of the workforce in function of durability

In the availability of the labor force, it was recorded more than half of the cattle farms have difficulties in engaging workers timely, because it is a young workforce with no experience and low qualification. Surely, those who had not graduate training. The

nature of the workforce and working hours depend mainly on the type of practice breeding and conduct [2].

#### AGRICULTURAL TRAINING AND ADHERENCE TO NADP

According to the results of our investigation, it appears that the 53 breeders (39.62%) had agricultural training course, usually short trainings (21 breeders including 12 breeders who had short trainings, 5 engineers and 4 technicians).

Concerning the grant is of NADP, only (53.33%) of farmers have benefited. Almost half of the farmers could not benefit from this program because they do not own livestock buildings. They appeal to any location since they are new in the field. Otherwise, the breeder who delivers his milk processing is encouraged with 7 Da per litter of raw milk delivered and the transformer is encouraged with 2 Da per litter of raw milk received [13]. The breeder may also benefit from FNRDA aid for the acquisition of agricultural materials under intensification cereal, for example, which will also allow it to develop its fodder.

While (46.66%) did not benefit from this program, are close to the two percentages mentioned before, can be explained by the location of the farm and the NADP goes for older breeders.

#### THE ADVANTAGES OF ASSOCIATIVE FIELD

In the Sahara regions, human activity is organized to maximize the value of water and approximately arable land [8]. According to our survey, it appears that almost all breeders (95.6%) in the three zones studied (Guerrara, El Daya, and Metlili) adhere to the association of cattle breeders. While only two breeders (Guerrara) grant no interest associative filed.

The participatory agricultural development is taking place on territorial basis. It concerns the decentralized state services, local collectivities, cooperatives and local organizations involved in agricultural and rural development. The interest of national associations will be sought to support participatory development and facilitate the integration of cattle breeders.

Otherwise, many problems negatively affect the development prospects of associative field, and the affinity between farmers is zero although they practiced the same task. Secondly the problem of reimbursement particularly the case of a grant limit from a large number of farmers. It is added that the breeders of average levels of education are responsible for the administrative support of the association. They are not qualified and have no experience of university breeders and veterinarians.

These associations must participate in the development of the sector through the promotion of professional organization; supplying production, funding, demonstration, seminars, visits and fairs [3].

Extension trials deserve to be engaged in this sense [11]. In addition, some breeders doubt the interest of the association. Despite these constraints the association of cattle breeders has set several objectives namely:

- Help breeders in the livestock sector in finding solutions to problems.
- Decision Support for a successful modern breeding through government subsidies.
- Generalizing the technique of artificial insemination to allow an increase in the level of production.
- Linking specialists and teachers involved.
- Support and improve the training of members.
- Centralize scientific and technical knowledge.
- Establishment and relay ongoing relationships between members and other associations that chasing the same goals.
- Relay between public and professional rural.
- Organization of local, regional and national conferences, debates, seminars, meetings, roundtables on general topics or specific activities sectors;
- Contribution to the breeding of cattle.
- Establishment of program technical support farmers in feeding flocks, production management, health management and techno-economic farm.
- Organization of production and marketing of producers.
- Supply of farm inputs members.

## CONCLUSIONS

Factor analysis of the integration of dairy cattle in Ghardaïa denotes certain fragility in terms of technical and professional. In addition, the low level of technology and the lack of expertise of breeders accentuate the problems. It has broadened the thinking and considering some ways forward for the consideration of the context within which agricultural sustainability of milk production in Algeria takes part.

To face this challenge in the context of an open economy to compete in the foreign market, investment in dairy cattle profitable required well-forming the socio professional of breeders. To develop large breedings, so called industrial, those require large amounts of capital with sophisticated facilities and salaried staff. To do this, serious reflection on the future of the cattle farm, it is important to consider all constraints that faces the socio-professional.

To develop a sustainable breeding on a larger scale, public support and socio-economic support are unavailable to promote the transition of breeding systems. Efforts are needed to better support the sustainability of cattle farms in production systems. Management of cattle farms is complex, for the supervisors and development for producing breeders. This is due to the complexity of strategies facing those responsible to implement the decrees relating to the breeding and organization facilities. This stable management should be based on a dialogue between managers and ranchers to remove all constraints on the improvement of milk production. It is only on this condition that we can inscribe in these government interventions as far as sustainability is concerned.

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