

Study Dairy Cattle in the Region of Gharb: Case of Rural Commune Mograne

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Abstract

The Green Morocco Plan emphasized in its objectives the emergence of agricultural development policy. The dairy sector is central. Commendable initiatives have been expressed by the learned society in all regions of Morocco and in all sectors. At our level, we have targeted the dairy sector in the rural municipality of Mograne of Gharb region.

From the standpoint of practical breeding and dairy cattle, an investigation was conducted. 26 farmers, 4 collectors and milk collection center were our target population. To achieve our mission, we relied on achieving a set of visits over a period of three months to the stables.

The developed diagnosis involves collecting information on the educational level of farmers, herd size (cows), conduct food, hygiene practices, the mode of milking, the state of the stables, the quantities of milk product ...

It comes out that breeders have a low educational level. No guidance in conduct of livestock they have been provided. The practices are traditional.

The amount of milk produced is related to race and the number of existing header in the stable. The structure of livestock farms investigated is essentially cross with a percentage of 73%. In second place comes the red local breed with 21%. The purebred is only 6% of the overall population.

The factors mentioned above associated with poor compliance with good hygiene practices are probably the cause of low milk production in the municipality of Mograne.

Key-Words: breeding practices, milk production, investigation, hygiene

INTRODUCTION

Dairy production in the Gharb region is subjected to a difficult competition. Climatic hazards such as drought and floods have been the cause of droop of more than 90% of production for most of the breeders. The case of Mograne is an example. Added to this is the lack of farmers training, the lack of their support, craft lines in all breeding practices particularly the milking, the poor conditions of collection and transport of milk.

Forage crops known for their richness of fiber, their energetic and protein intake, best used in large crops, were exterminated due to the long period of flooding experienced by the Gharb region, especially the municipality of Mograne.

Such event was, for the most part of breeders, responsible for the stop of the dairy production. Climatic hazards remain the most determinant factor in milk production, because of its direct impact on the availability of forage resources for animals [3].

Soil type, tillage and analysis associated with it are not yet integrated into the agricultural practices of farmers. Such behavior can only worsen the situation and explain the droop of production from year to year in the municipality of Mograne. A refined knowledge of soil inputs associated with a regular monitoring of the conduct of forage crops in order to obtain a better vegetal production both in quantity and quality that can only be prior indicators of a good dairy production. To this is added the food formulation, health monitoring and the respect of the good hygiene practices.

It is in this context that our approach fits. It is to realize a permanent diagnostic of the dairy sector exploration in the municipality of Mograne. Witch determinate the causal factors related to the production droop. Reflections on possible remedies are considered in this work.

MATERIALS AND METHODS

Choice of study area

As Salam cooperative gather more than 106 members (households). It is located in Mograne (24 km from the city of Kenitra Morocco). It is known by the cattle breeding. It has never been subject of study. These are the reasons for choosing the site of Mograne.

To facilitate access to information, we started by coordinate with the collection centers managers. They are two. Then with the voluntary involvement of some breeders, we arrived to integrate 26 cowsheds. Information about the rest was provided to us by four collectors in charge of collecting milk from other farmers.

Diagnostic field

The diagnosis is made on the base of a survey, which includes questions on the cowshed, the equipment used, the breeders education level, the breeders support by local or regional management structures, the respect of good hygiene practices. 26 farmers, 4 collectors and a manager selected to answer the questionnaire.

Several visits were realized during a period of three months. Other information has been emerged from the stables visit. It is the size of the dairy herd, the food conduct, the milking mode ... etc. The essential information recorded in the questionnaire can be summarized as follows:

For managing the collection center	For collectors	for farmers
<ul style="list-style-type: none"> - Compliance with good hygiene practices at room collection - Quantity of milk received at the collection center 	<ul style="list-style-type: none"> - Means of transport - Type of equipment used for milk collection - Hygiene of milk collection equipment - Control the quality of milk collected - Average amount of milk delivered to the center 	<ul style="list-style-type: none"> - Family Group - Size of households - Profiles of members ages - Education breeders - Family Activity in the operating - Activity outside the operating - Distance from the center of collection - Structure bovine - Milk production per cow type - Diet - Water - Marketing Product - Level of compliance with hygiene: <ul style="list-style-type: none"> • Livestock • Stables • Milking Equipment • mode of trafficking • teat

The collected information will be analyzed and interpreted. We will then be able to educe the strong points and the points to improve. An action plan is to propose for: facing the challenges experienced by the dairy sector in the studied region, enhancing the meat and milk production taking into account all local constraints.

RESULTS

Collection center (Mograne)

The center is located a few meters from the road to Sidi Allal Tazi. It was created on April 1, 2005. It supplies milk to 26 members. The center also receives the milk gathered by collectors. All milk collected by the center, delivered exclusively to the dairy central company, daily, by a tanker truck.

Collection room

The room surface is approximately 28 m² (length = 6m, width = 4.70 m, height = 3.30 m), built of reinforced concrete and ceramic walls. It contains 3 cooling tanks with a capacity of respectively 850 L, 1060 L and 1170 L. The room is supplied with drinking water and electricity.

Hygienic conditions of collection room

The maintenance of the collection room is periodic, the floor and walls are cleaned with water, detergent and bleach. Tanks are cleaned with water and detergent. The surrounding environment is unfortunately difficult to control where the risk of cross contamination. Collection centers of milk in Morocco are still experiencing many problems related to hygiene as a result the quality of milk, particularly the raw received [5; 8]. The responsible factors are the environment, the high

temperature in some region in the country, the refrigeration system of milk is insufficient, the occasional disruptions of electricity ...

Management of the collection center

The center is managed by a young local man, aged 30, married. He completed his studies at Bachelor. He has no training in relation to the breeding, center management, hygiene, control of milk...

The quality control of milk is made by the contact milk-alcohol. According to the manager this is an indicator of acidity. The making decision is related to the change of the milk nature. If the milk does not change, it's considered good. If there is a power ground (coagulation) of milk, it is considered unsafe to consumption. It will not be accepted.

Collectors

The center receives the milk of four collectors. They are between 18 and 50 years. Educational level of the four collectors does not exceed the primary except one who was able to reach the secondary level provided with an extensive experience in the collection of milk. The only source of income for them is collecting milk. However, they have received no training on methods of collection, transport conditions, compliance with hygiene ... This may seriously affect the quality of raw milk.

Transport

Collectors are responsible for bringing the milk of the breeders do not member in the center. Means of transport used to accomplish this activity are either cars (type Estafette) or horse carts. There is no longer cold. The hygiene of plastic bottles and even aluminum must be reviewed.

Collecting equipment

3 collectors have metal cans. The fourth collect milk in large plastic jugs.

Hygiene of milk collection equipment

Collection equipment is often washed with tap water immediately after emptying of the contents. No detergent is used for cleaning. The experience has shown that water and even mild soap are not able to eliminate microbial contamination. The lack of use of detergent dedicated to this type of food commodities can only encourage the multiplication of microorganisms. Witch if they are without consequences on the health of consumers today, what for tomorrow?

Position control center

Collectors are generally limited to visual inspection of milk and its smell. They sometimes do filtrations on tissue in winter to remove coarse elements. During the summer, they use the technology of control with alcohol. Two of them have a thermolactodencimètre. They control the density of milk fat.

Another factor can affect the quality of milk afterwards. This is the duration of transport. Indeed, the delivery of milk to the center may take a few hours. With the high temperatures of summer and the lack of cold chain can only harm the quality of the milk.

Medium quantity of milk delivered to the center

The quantity of milk delivered to the center varies according to the seasonal periods;

- ◆ The low lactation period represents a medium value of 8861 liters;
- ◆ The high lactation period, brand a value of 37,172 liters.

Breeders

family group

Breeders usually live with their married children in the same farm. They all share the same concern. The one of land work, and breeding. Each family occupies an area of 750 m² for the accommodation and the stable building. It also benefits from 5 ha for agricultural work. Agricultural activities are either for the production of animals food or for the production of culture-oriented economy (silage maize, sunflower, cereals, tomatoes, melon, watermelon, zucchini ...).

Household size

The 26 households surveyed count 168 people. The average number of persons per farm is 6. Women represent 47% of the total number.

The table (I) reports the number of persons per household and their percentage in terms of classes. It appears that the households whose number exceeds 7 people represent 50% of the total population. The other half is divided as follows: 32% for households whose number is between 4 and 7 people, the households whose number of persons does not exceed 3 people represent only 18% of the total population.

Profiles of members' ages

In the table (II) the adherents' age classes are recorded also the corresponding number and percentage. It appears that the most active person represent 75%. However, another factor may affect the quality of milk afterwards. This is the duration of transport. Indeed, the delivery of milk to the center may take a few hours. With the high temperatures of summer and the lack of cold chain can only harm the quality of the milk.

Educational level of breeders

The sectoral presentation showed the level of education attained by farmers. According to the survey, it's to note that 52% of farmers have never seen the school. 42% of breeders were limited to primary education. Only 4% who have come to school. This rate too high of illiteracy is another factor affecting the development of breeding sector and dairy production in the region.

It should also be noted that breeding is led by married farmers. They represent the highest percentage with 88%. Single breeders are only 12%. The breeding conduct responsibility is usually carried out by fathers. Singles can not take responsibility just if the father is elderly, ill or deceased. Normally it's the eldest married son who takes over. It is only if need be the single's responsibility.

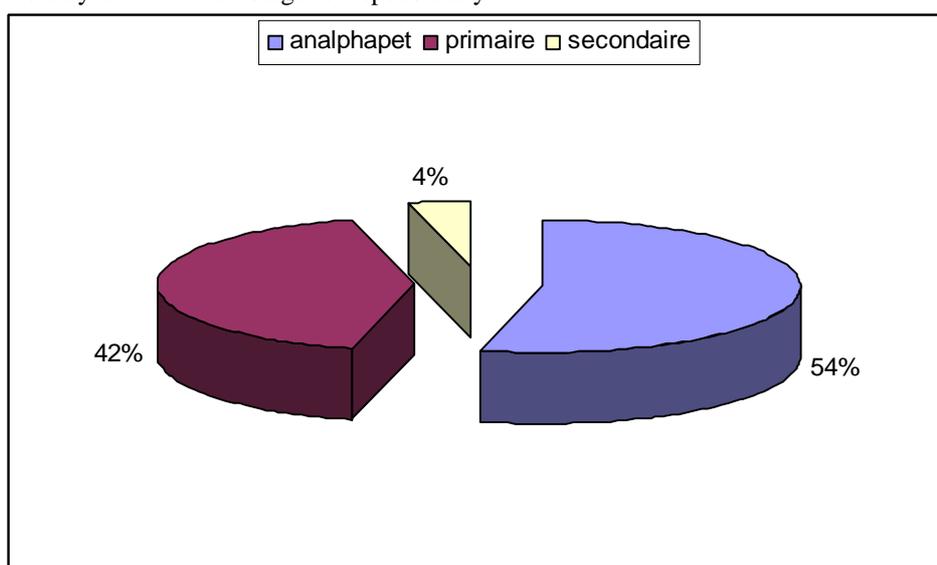


Figure 1: Overview of sectoral percentages of grades breeders. Diagnosis made in the town of Mograne.

Familial activity inside the farm

The adherent shares with his family members their farm works. The women witch represent 47% of the total population, intervene essentially at the milking moment, livestock maintenance and cleaning of buildings. They even participate in agricultural work.

Activity outside the farm

For the 26 farms, 93% of farmers have as job just sol works and breeding. The remaining 7% of breeders are not limited to agricultural work but also participate in parallel activities. They work as seasonal labor.

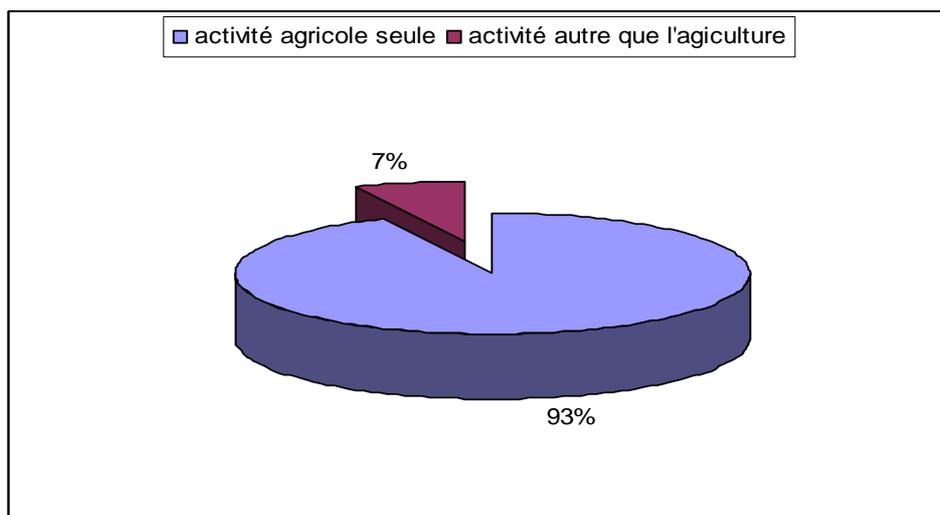


Figure 2: Sectoral Presentation in percentages and post operation. Diagnosis made in the town of Mograne.

Distance of the collection center

The adherents are nearby the collection center. They bring their milk on foot. The farthest point from the center is 5 minutes. Other farms far from the center are obliged to sell their milk to collectors.

Bovine structure

Livestock production

The total number of cattle of 26 farms is 230, including 105 cows are lactating, that is 45.65% of the total. As a reminder, the total number is located in a farm of more than 130 ha. Such area can support 390 head of purebred. On the other hand, if we consider the cross breed (most widespread in Morocco), livestock numbers supported can reach 650 head.

According to the graph, the available area is underexploited.

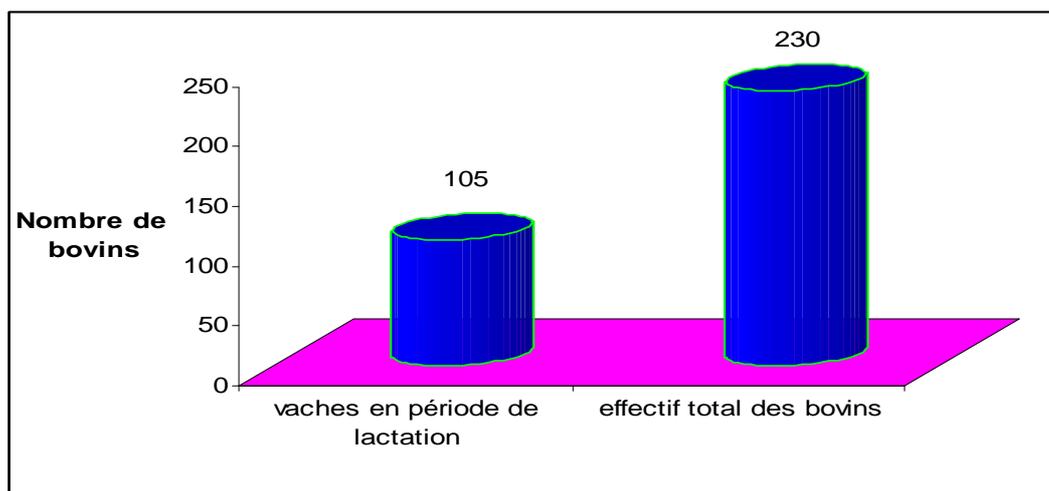


Figure n°3 Presentation of the number of cows producing milk against the total. Diagnosis made in the municipality of Mograne.

Types of dairy cows

The structure of the livestock at the farm is generally homogeneous. We find in the stable only the cross breed, pure breed or local breed. It's rare to find pure breed with the cross or cross breed with the local. The pure breed is formed exclusively of Holstein.

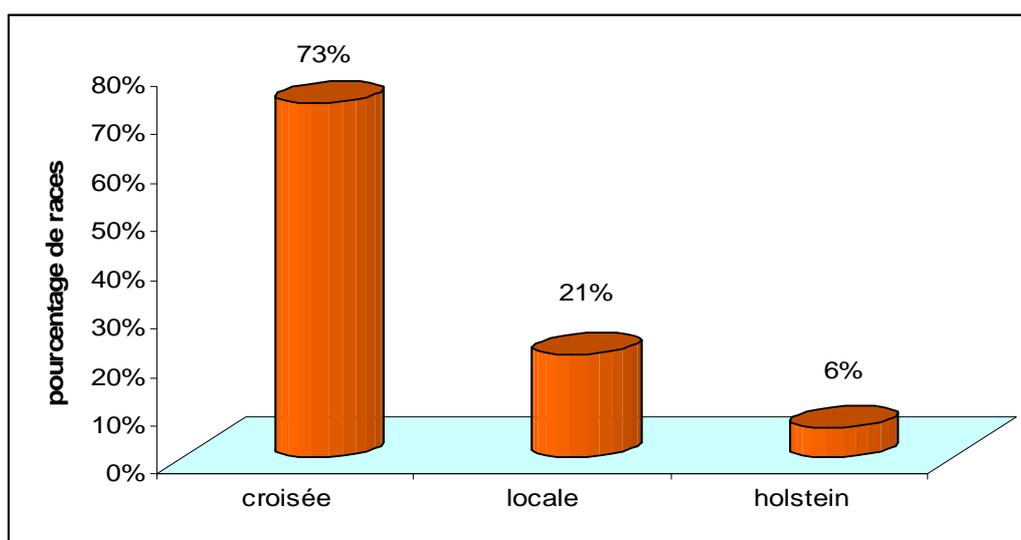


Figure 4: Presentation of three races percentage met in the surveyed farms. Diagnostic made in the municipality of Mograne.

The figure (4) shows that the crossbreed prevails over the rest of the races. Digital technology of breeding at all farms surveyed gives 73% of pure breed against 21% of local breed. The share of pure breed is still weak, it doesn't exceed 6%.

Discussion

The quantity of milk consumed at home depends on several factors: the number of people in the family, the frequency of guests, season, period. But the average consumption found in the municipality of Mograne is recorded in Table V. It emerges that the families of Mograne drink less than 5 liters per day. The percentage is 84.61%. Families who drink more than 5 liters a day are rare. They represent only 15.39%.

Despite the development of milk production during the past 35 years, the level of consumption of milk and dairy products is limited, it is equivalent to 52 liters of milk per inhabitant per year in 2007 (SAM 2007). Nutritional standard recommended by international organizations (FAO and WHO) is equivalent to 90 liters of milk. [9]. This can be explained by the standard of living of the Moroccan population. Even though milk is essential remains still expensive. It is not commonly available for most of the Moroccans

The center receives milk of adherents for a price of 2.70 dirham per liter. And he sells it to processing company at a price of 2.90 dirham. Processed milk is sold to the public at 6.40 dirham.

The center receives milk twice a day:

- In the morning from 8am to 10.30am.

- In the evening from 17h to 19h.

The milk is received daily. We tried to represent in Table VI the total monthly stocked with milk. It emerges that as a firm period of one year the arrival of milk pass by low levels and others high. It is the low lactation and high lactation. The maximum quantity of milk supplied is recorded in May. It is 57,096 liters.

Reading the information provided in this table (VI) permits us deducing drop milk gradually from June to attain its minimum level in November. The quantity produced at this time is 7165 liters. From this month, the milk back up dramatically to reach its maximum level the month of May.

We can also deduce the influence of the season on the amount of milk produced. Table VI declares a period of high lactation (PHL), spreading out from January to June, with a maximum production during May (57,096 liters). It also states a period of low lactation (PLL) is between July and December, with a minimum production during November (7165 liters).

Dairy production

Table n° (3) shows the dairy production depending to the breed. It emerges that the most important breed in milk production is the pure. His daily intake can reach 34 liters. Production values obtained for the other breeds do not exceed 15 liters. Local breed hardly reaches a maximum of 8 liters against the cross may be able to produce 15 liters of milk a day. For the three breeds, the production is depending on the lactation period, the availability of food, without forgetting the climatic factor. According to the work of Araba and al (2001), the milk production is severely affected by climate.

Diet

Basic rations: Almost all adherents use berseem as basic ration. But we found that the diet of the surveyed farms pass through two periods. The winter period determined by the cultivation of berseem. This cultivation occupies all farms suspected. During the same period a very small percentage is devoted to cereal crops (hard wheat, tender wheat, barley ...). this is to recuperate the straw.

The summer period for its part, is characterized by the cultivation of silage maize and sunflower. Both products and berseem are cultivated successively to cover the annual needs of livestock. To these products must make food corrections. These are gathered in the form of a concentrate.

Concentrate intake: Unfortunately, the culture of correction is not yet developed at the municipality. The most of breeders are limited to the basic ration. Only two of the 26 farmers surveyed find that supplementation of the basic ration with the concentrate is a necessity. It to note, that both farmers adopt the breeding of purebred. Their accompaniment is done regularly by experts in the field.

Watering

The water available to livestock is drinking water. Conduct adopted for watering cattle is similar in all farms. The water is brought to cows before milking operation. It can be made available after feeding. We encountered only 3 breeders who water cows at will.

Conditions and hygiene

Stable:

The prospected stables are either built in reinforced concrete, wood or wood covered with mud reinforced with straw. The proportion of each type of construction is illustrated in Table IV. The stables made of wood are presented with a percentage of 19%. The stables in reinforced concrete and those of wood covered with mud reinforced with straw are represented successively with 24% and 57%.

The production of quality milk is fraught with hygiene problems, especially housing conditions (design non hygienic of stables, lack of cleanliness, litter inadequate or in poor condition, ...) and the difficulty of remediation of the dairy herd from mastitis [6].

Livestock

Apparently, the herd is thin. Most of the cattle prospected suffer from food problems. Indeed, it is not the quantitative intake. Cattle can afford to coarse feed (straw, wild grass ...). However, to benefit from a balanced diet seems missing action in breeders' habits. This is probably due to the cultural level of breeders, lack of support; lack of training ... Added to this the lack of knowledge of good hygiene practices. It follows the emergence of periodic diseases. The most common example is mastitis. The hygienic breasts are generally considered bad for most farms. The skin of the udder is a potential source of contamination of milk. No cleaning, or if it is, not well practiced. It usually brings thermo resistant microorganisms [4].

The cleaning of udder does not exceed in the best cases the use of warm water. We observed that the use of soap just for 2 breeders. The use of antiseptic absolutely lacking in all farms. According to previous work, the bleach destroys microorganisms associated with cows' udders (Agabriel and al. 1995). In our survey, we found no breeder using individual dish cloths soaked in bleach.

The milkier:

All persons responsible for milking do it without hygienic precaution. They rarely wash their hands with water much less with water and mild soap. It should be noted that the milking operation is almost reserved for women. Contamination may not come only from hands. As a reminder, it is also possible to contract the contamination of the remaining components of the human body. Personal cleanliness and clothing cleanliness and health case of the milkier, play a significant role in determining the final hygienic quality of raw milk (Alias, 1985). At this level, considerable effort must be made to succeed the animal's health. Otherwise heavy economic costs will be paid from the breeder.

Milking

Milking does not occur in areas dedicated to this activity. It is usually made in the stable under the roof or outdoors. They sometimes limit to cleaning the place of milking. Milking is essentially manual. Only 7.14% of breeders do it mechanically. It's adopted two times a day, morning and evening. This avoids the possibility of increasing the rate of leukocyte in milk. Indeed, this rate increases with the variation of milking schedules.

Manual milking increases the risk of contamination of milk. Good hygiene practices are lacking. It emerges that an increase of milk spoilage by the environment microorganisms [10].

Regarding transport, the time taken to bring the milk to the collection center does not much. This is due to the proximity of adherents to the collection center. The maximum time taken to get to the center does not exceed 45 minutes. This reduces the risk of proliferation of microorganisms in raw milk. However, in some cases, the milk collected is often kept at ambient temperature for several hours before being transported to the milk collection centers to be refrigerated. This is generally noted with the milk of the evening milking. The milking time coincides with the closure of the collection center. Milk is often loaded with a variability of microbial flora[7]. Milking equipment used is generally plastic (bottles, bowls ...). Plastic is used with a percentage of 85.71% against 14.29% of aluminum material. As a reminder, aluminum is delivered to breeders by the processing company with easy payment.

Treatment of diseases

The questionnaire is based on the types of diseases faced and preventive and curative treatments adopted. We found the dominance of babesiosis and / or t el erieuse. It is fatal if veterinary intervention was not at time. We have also noted cases of mastitis; witch is easily recognized by most of the farmers. They treat it with a typical ointment called "carmocr eme." We can not finish this file without mentioning the case of metritis and hoofs that we met. The treatment of these diseases is generally by vet intervention.

Breeders are accustomed to receiving regular visits from representatives of the state for vaccination services.

Control of milk quality

The control of milk quality is done by a simple examination at lactometer. Adherents claim the refusal to supply their milk. They claim that they had never undergone a training or mentoring in the field of milking, good hygienic practices or training in the system of breeding in general. They do all their work by hand. All farmers practice breeding as an agricultural activity. This constraint is one of the factors hindering the dairy sector in Morocco. The experience and know-how also seem to be just as essential prerequisites [10].

CONCLUSION

Dairy production in the rural municipality of Mograne is low considering the water potential, substratum and climate potential. The observation can only be subject to great questions. The researchers are committed to finding answers. To do this, we began by conducting a survey of the target population (Mograne). The survey focused on collecting information about the educational level of breeders, herd size (cows), food conduct, hygiene practices, the mode of milking, the state of stables, quantities of milk produced ...

The work took three months of prospecting and research of information. It emerges that the farmers did not grade to drive livestock to the expected level of state policy. Similarly, breeders currently receive no formal training in dairy farming to correct their mistakes in breeding. The techniques of conduct adopted in their stables now remain traditional. The result of handling mentioned above is reflected in the level of milk production. Witch is low. According to the stables, the amount of milk produced depends, according to the survey, mainly to the number of head of livestock and also component of the race of cows.

The genetic structure of cattle of farms suspected is generally homogeneous. Pure breed (Holstein) has not entered in the breeding habits of the farmers of the municipality. It's still low at it level with 6%. The cross breed occupies the first rank with 73%. The race has started off slowly is the local breed. She continues to lower year on year to finally reach a percentage of 21%.

A serious problem is encountered in the municipality is the failure to comply with good hygiene practices. The ignorance of the farmers of the basic tools of good hygiene practices are essentially the origin of certain diseases. We cite the example of mastitis. Such behavior acts on the profitability of milk production on both the quantity and quality. Collection center receives daily a very small amount of milk given the number of supplier stables. The improvement of production can not be achieved without guidance, financial support, technical support and ongoing training.

Table I: Presentation of the percentage of the number of persons per household. Diagnostic made in the municipality of Mograne.

Number of persons per household	Than 7 people	between 4 and 7 persons	less than 3 people
Pourcentage%	50	32	18

Table II: Presentation of the percentage of members' age classes surveyed.
 Diagnostic realized in the municipality of Mograne.

Age in year	less than 40	40 to 60	More than 60
effective	7	13	6
%	26,92	50	23,08

Table III: Presentation of the medium quantity of milk produced per race.
 Diagnostic made in the municipality of Mograne.

Race	local	cross	Holstein
Quantity (L / D)	4 à 8	7 à 15	12 à 34

Table IV: Distribution of stables. Diagnosis made in the municipality of Mograne.

Stables	wood	reinforced concrete	after straw
number	8	10	24
Pourcentage%	19,05	23,80	57,15

Table V: The quantity of milk consumed per farm and per day. Diagnosis made in the municipality of Mograne.

Amount of milk consumed in liters / day / exploitation	0 à 2	2 à 5	5 à 8
Effective operations	10	12	4
Pourcentage%	38,46	46,15	15,39

Table VI: Quantity of milk received at Mograne collection center from June 2006 until May 2007.

month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May
Quantité/l	22111	13302	12232	9804	8301	7165	10557	17249	23196	39214	50353	57096

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