

Development's milk recording in Morocco (Case Study: Benslimane's MABROUKA Cattle Breeders Cooperative)

Mousili Nadia¹ and El Kharroussi Mohamed²

1 engineer of animal production, Cooperative MABROUKA des Eleveurs de Bovins Benslimane, National Association of Cattle Breeders, Morocco.

2 Professor, University Hassan II Ain Chok Casablanca, National Association of Cattle Breeders, Morocco.

1,2 : n.mousili@gmail.com, coopmabrouka@gmail.com

Abstract

The dairy recording (DR) has been initiated in Morocco since 1968 in the state farms and stables extended to private breeders under the National Dairy Plan established in 1975 (MADRPM 1999). This plan has encouraged producers by grants on imports of dairy heifers, extension of artificial insemination, the establishment of farm for production's heifers (FPH) and the outline of (DR) to create a bovine genetic material improved (Sraïri, 2004).

The (DR) has had its ups and downs until 2007 date when the government is disengaged and handed over the operation of professional organizations (PO) in this context the *Mabrouka* Breeders Cattle Cooperative was the first to sign an agreement with the Ministry of Agriculture and Maritime fishing in Morocco for the practice of (DR) in (FPH) respondents zoo technical standards and that the original pure breed imported (Holstein and Montbeliard). The number of (FPH) subject to (DR) in Benslimane increased from 9 in 2007 to 45 in 2013. Also the number of cows controlled increased from 800 in 2007 to 4,900 cows in 2013, the increase of 585 cows controlled/year and 5 FPH/ year.

The (DR) is the dashboard management for the (FPH), the findings recorded after 7 years at the *Mabrouka* Cooperative are very encouraging for the development of the average milk yield (it went from 4404.25 in 2007 to 6100.00 l / cow / year in 2013), improving the quality of milk (36 in 2007 to 40 g/kg fat in 2013), and evolution of the number of cows per farm (88 in 2007 to 108 cows / farm in 2013).

In parallel, techniques herd (management, artificial insemination, feeding...) have contributed to a better selection of heifers produced which encouraged the Moroccan government to increase the grant amounts from 1500 DH to 5000 DH and lower age selection heifers from 24 months to 8 months.

Keywords: cooperative Mabrouka, cow, dairy recording, farm, heifers, Morocco

I. Introduction :

The development of dairy farming has become the dairy plan in 1975 one of the priorities of the Moroccan government policies in agriculture (ANEB, 2009). The plan targeted the genetic improvement of cattle through the importation of purebred heifers of high productivity, the development of artificial insemination (AI), the establishment of (FPH) and finally the dairy recording (DR) which enables to improve the germplasm characters. All these operations were supervised and supported only by the Moroccan State until 1998 for (AI) and 2007 for the (DR) then they were handed over to professional organizations (PO) through the contracts program.

a/ Evolution of Artificial Insemination:

The (AI) was introduced in the program as the best dairy plan techniques of genetic improvement of cattle breeds and local conservation purebred in order to improve the genetic potential of breeders imported (National Report, 2005), as well as two (AI) regional centers created to provide seeds for all the country.

The execution and implementation of the (AI) has gone through three key steps:

First: 100% handled by the state, from 1973 to 1988

Second: partially and gradually transfer to (PO), from 1988 to 1998

Finally: 1998 total transfer to (PO).

As result, the rate of (AI) increase gradually (Benlekhel, 2011).

b/ History recording milk :

The (DR) has led to the creation of standards studbooks (SS) by a ministerial decree therefore; set the registration conditions of purebred animals in (SS). It is also practiced by ICAR standards (Benlekhel, 1994).

To enroll the (SS) register, a cow must:

- Be identified by loops and enter the register of births
- Be controlled by the (DR) for a full lactation and derived from father and mother enrolled in (SS)
- Be deemed legally free from contagious diseases
- Have at least 25 points synthetic index.

All farms satisfying these requirements may have the status of (FPH). Farmers sign contract with the Ministry of Agriculture according to the following conditions:

- Realize the (AI) or use bulls enrolled in (SS) for reproduction
- Undergo the herd to a (DR), selection and registration in (SS)
- Ensure proper technique for herd (good hygiene...)
- Have animals free from contagious diseases (tuberculosis, brucellosis) (Boujenane, 2002).

On the other hand, the State provides technical guidance for (FPH) by aid and grant for each production of breeders selected by the committee. This grant has gone from 150 to 500 euros / calf heifer.

The reform in the agriculture and its upgrade have made a new political strategy which leads to the withdrawal of the state and transfer the (AI) and (DR) to (PO) by contracts programs integrated in the plan “Green Morocco”.

Indeed, *Mabrouka* Cooperative was the first to sign an agreement with the Ministry of Agriculture in terms of practicing the (DR) in (FPH) that respond to zootechnical standards. These units should have purebred (Holstein and Montbeliard).

As objective *Mabrouka* cooperative presents its achievement in terms of (AI) and (DR) and their impact on the improvement of productivity and heifer production.

II. RESULTS: A Case Study of the Cooperative *Mabrouka* :

Mabrouka Cooperative is composed of a group of farmers. It was created in 1990 in Benslimane. It covers Chaouia-Ouardigha and Casablanca. Its members are cattle breeders, currently numbering 51 farms.

The cooperative has a dynamic staff of 25 person including engineers of animal production, technicians in (AI), (DR), identifiers, milk collection agents, secretaries, administrators and accounting agents providing leadership and management.

The main objectives of the cooperative are the following:

- Development of dairy livestock
- Improvement of cattle performance and production
- Increase the technical and profits of farmers are.

On the other hand, the cooperative is offering a wide range of services such as:

- The supply of imported heifers of purebred
- Artificial Insemination
- Dairy Recording
- Identification of cattle
- Good supply in animal feed and livestock equipment
- Technical supervision
- Farmers training
- Grant applications granted by the state to (FPH) of pure breeds.

a/ Artificial Insemination :

Before 2006 (AI) acts were fluctuating as shown in figure 1. Later, the number of acts performed has grown to 10 123 (AI) acts in 2013.

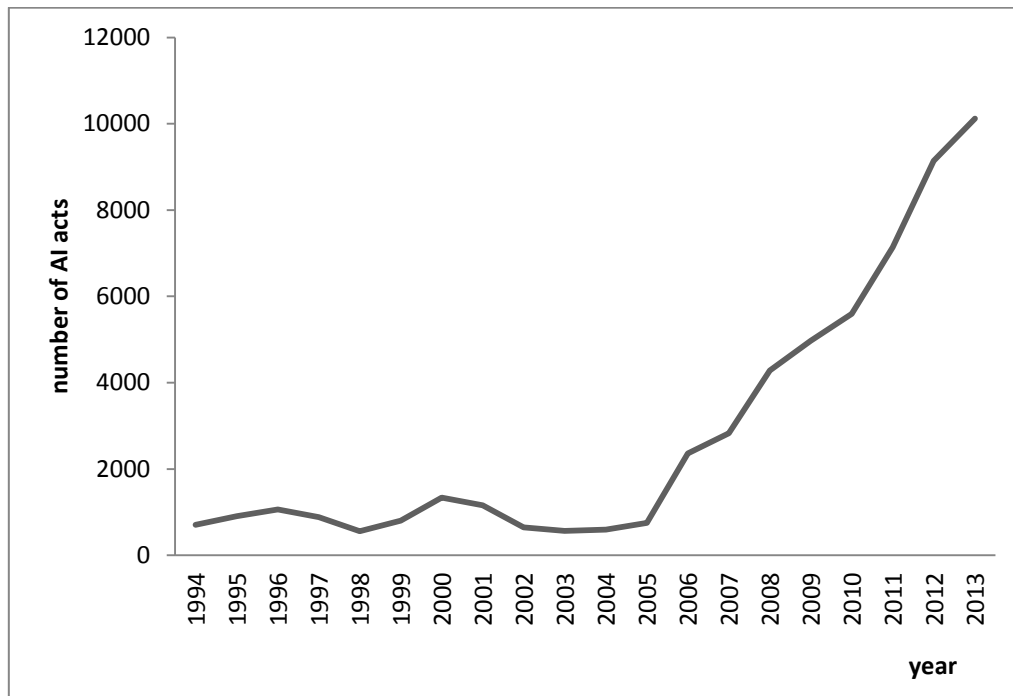


Figure 1: Achievements of the Cooperative *Mabrouka* in Artificial Insemination.

b/ Dairy recording :

In 2007, with a state contract, the *Mabrouka* Cooperative was able to conduct monitoring and data recording slag control program.

In 2012, *Mabrouka* Cooperative signs a second contract with the National Federation of Milk Producers Breeders (FENEPROL). This contract aims to support and reorganize the (DR) inside producing heifers, develop the (AI) programs, extend the program of technical supervision and transfer the management technology of dairy farms.

c/ Impact of Dairy Recording on the development of Farm producing heifers:

Since the start of the (DR), the number of (FPH) in Benslimane has increased, from 9 units in 2007 to 51 in 2013, an average of 5 FPH / year. The number of cows tested has also gone from 800 cows in 2007 to 4900 in 2013 as shown in table 1, an average of 585.7 cows / year.

Table 1: Evolution of (FPH) created in Benslimane.

Year	2007	2008	2009	2010	2011	2012	2013
Number of FPH	9	18	20	25	29	39	45
Nombre of tested cows	800	2340	2976	3190	3549	4295	4900

In 2007, all cows tested were only Holstein (red and black Pie pie), but since 2008 the population of the province has becoming more diverse by the extension of other races, in 2013 the Holstein reaches 78% of all controlled cows, the Montbéliard 16%, 4% for the Fleckvieh and the Normande 2%.

Table 2 : Racial Constitution of tested cows.

Year	2007	2008	2009	2010	2011	2012	2013
Holstein	800	2060	2530	2550	2697	3436	3822
Montbéliarde	--	210	297	479	639	644	784
Fleckvieh	--	70	149	161	213	215	196
Normande	--	--	--	--	--	--	98

All (FPH) members of the Cooperative are characterized by a mixed system (milk and meat), they keep the broutard for fattening.

d / Selected produced heifers:

From 2008 to 2013, 5066 heifers were selected for their milk. An average of 844 heifers / year; the number will increase even more since the age of selection of heifers is no more 24 months but only 8 months. Therefore the subsidy offered by the state has increased from 150 to 500 euros / heifer. Hence, farmers are encouraged to increase the size of their herd and to join the operation (DR).

Table 3 : Evolution of the number of selected heifers.

Year	2008	2009	2010	2011	2012	2013	Total
Number of selected heifers	150	560	439	689	1460	1768	5066

e/ Dairy cow productivity and quality of the milk:

The average performance of selected animals amounted to 4404.25 liters / cow / lactation standard in 2007 and reached 6100 liters / cow / lactation standard in 2013, 16% in 2007 and 60% in 2013 compared to more the national average which is 3800 liters / cow / lactation standard (Aneb, 2009). This increase is due to the good selection of imported semen selected dairy purposes, good reproductive management and also the proper guidance of the Cooperative in rationing elsewhere the average fat content is a witness, it has raised 4 points between 2007 and 2013 (36g/kg, 40g/kg).

Table 4 : Evolution of the dairy cow productivity and milk fat.

Year	2007	2008	2009	2010	2011	2012	2013
Average milk yield (Litre/lactation)	4404,25	4580,7	5875	6010	5860,5	6279,6	6100
Fat content (g/kg)	36	37	38,5	38	39	41	40

III. Discussion :

The results show that the (DR) has been enhanced after the transfer to the (PO), and thanks to the program contract signed with the Cooperative *Mabrouka* , (DR) affected a larger number of (FPH), who have purified their livestock breeds (Holstein , Montbeliard , Fleckvieh and Normandy) by importing purebred heifers and practicing the (AI).

The (FPH) were encouraged by the increase of aid granted by the State (150 to 500 euros / heads) in the production of dairy purebred heifers of young age, as result, they have increased their herds. Moreover, the number of selected heifers is limited compared to the number of heifers produced and eliminated due to either non-compliance morphological or lower production requirements. The farmers have been also encouraged by technical support provided by the Cooperative *Mabrouka* such as the use of frozen semen selected for dairy

purposes, good reproductive management through respect of the timing of (AI), recording and monitoring production parameters.

Rationing was a highlight of the services presented by the Cooperative and the key to improve the quality of milk and also increase the productivity of animals. Until now, the (DR) data in Morocco are not sufficiently exploited to start a reasonable coupling program.

IV. Conclusion :

Mabrouka cooperative has been inspired by ICAR standards, and farmers had been encouraged to join that system. Several other cooperative have announced that they will perform this operation. The efforts and success experienced by the (DR) in the Region Chaouia-Ouardigha is just the beginning of a busy schedule, they are rewarded by an agreement with the Walloon Breeding Association in Belgium to use the (DR) data. This data will be entered in a repository accessible to various organizations for national centralization and used for a possible rational coupling program.

Bibliographic references:

- ANEB. (2009), Evolution et objectifs de son développement. L'élevage bovin laitier N°14.
- Benlekhel A. (1994), Amélioration génétique bovine au Maroc : Structure et organisation. Direction de l'élevage. <http://www.anafide.org/doc/HTE%2063/63-1.pdf>.
- Benlekhel A. (2011). Nouvelles modalités d'organisation de l'insémination artificielle. Elevage Bovin N°19.
- Boujenane I., 2002. Races Bovines au Maroc.
- MADRPM (1999).- Elevage en chiffres.- Rabat : Service du Suivi et de l'Evaluation, Direction de l'Elevage, Ministère de l'Agriculture, du Développement Rural et de la Pêche Maritime.
- Rapport National sur l'Etat des ressources génétiques animales, 2005, 52-53 p.
- Srairi M.T. (2004) ; Typologie des systèmes d'élevage bovin laitier au Maroc en vue d'une analyse de leurs performances.