J. Appl. Environ. Biol. Sci., 6(12)27-40, 2016
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ISSN: 2090-4274
Journal of Applied Environmental and Biological Sciences
www.textroad.com

Evaluation of Bovine Reproduction Management Settings at Dairy Cattle Farms in Western Algeria

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Received: August 16, 2016
Accepted: October 12, 2016

ABSTRACT

Our research work is a prospective study on reproductive management of cattle farming in the west of Algeria. The survey was conducted in 2014/2015 on 66 cattle farms with 566 cows belonging to 04 wilaya in the west of Algeria. The breeding followed for 12 months has involved the analysis of reproductive performance of 73 dairy cows belonging to a private farm with a herd of 110 cattle.
The results of the survey show that 74% of farms have agricultural land (UAA) of less than 20 ha. Furthermore, 66.66% of the farms operate workforce of less than 10 dairy cows .Quant the conduct of reproduction, it is characterized by a weak development of artificial insemination (11%) with performances below and technical objectives economic: the IVV with an average of 408.94 ± 76 days is outside the accepted norms, IVIF expresses an average of 125.84 ± 66 days days. The success rate in 1st IA 45.8% on average and cows rates require 3 IN and exceeding 20% and a coital index above 1.6.
KEYWORDS: management, investigating, monitoring, livestock management, performance.

1. INTRODUCTION

The concept of the dairy cow is relatively new, it goes back to the immediate postwar period and the effort to increase production and specialization who accompanied him. Thus the old joint family cow has given way to new specialized breeds 'meat' or 'milk' higher and more consistent herds [18].

In 2010, the cattle population in the world was estimated at nearly 1.5 billion heads, over 250 million dairy cows, providing an annual production of over 600 million tonnes, ie over 83% of milk consumed in the world [27].

Maghreb authorities faced after independence with a growing demand for animal proteins from populations booming and that urbanisaient quickly. Given the symbolic value that the North Africans give milk (greeting guests and accompanying diets dominated by cereals), an imperious effort had to be conducted to secure its supply. livestock development policies were set up, and focalisèrent on cow milk [60].Moreover, Algeria was more concerned with this need, due to a larger population and a very high per capita consumption compared to neighboring countries. Indeed, in 2005, the Algerian consummated 117 liters of milk, Tunisia: 102 and Morocco: 42 [58].

The Algeria has become in a short time a strong consumer despite the economic climate of recent years [14]. To meet the challenge of developing livestock production, Algeria does not skimp on resources so that the intensification and specialization so strongly mark the landscape of animal production, especially for cattle, sheep and goats where milk, essential companion of a balanced diet, finds a prominent place.

Algerian milk production is achieved at 75% by the cattle. Officially, cow milk production would have reached 1.6 billion liters in 2007, 1.8 billion in 2009, 2 billion in 2011 and 2.2 billion in 2012 (and nearly 3 billion with sheep milk, goats, camel). Of this total, only 0.7 billion have been collected, which means that only 1/3 of cow's milk is collected and that other milks are practically not collected (and correspond to the feeding of calves and lambs , own consumption and raw milk sales). The specialized dairy herd has approximately 400,000 cows with an average yield of 4000 liters per year. It increases through imports heifers and artificial insemination.

The objective of Algeria is to develop local production to improve its self-sufficiency rate in general consumer goods. To get to decrease its dependence in the dairy sector for financial reasons (the import of powdered milk cost nearly a billion EUR in 2011), but also of national independence, territorial occupation and finally to give consumers products made from fresh milk and not from powder [64].

Livestock development is not an easy task because it is subject to a set of constraints that limit its development and include both the low technical level of farmers, climatic severities [4], the narrowness of the utilized agricultural area (0.27 Ha / Hab), fragmentation of land and farm [29] to name a few. Furthermore, this

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objective requires a prior diagnosis of the situation of holdings by immersing themselves in their reality, evaluate their practices and actual performance and start thinking about ways to improve them [63].

It is in this context that it is working. Moreover, it is desirable that the quantitative development of production is accompanied by a qualitative development to meet consumer requirements for health value of milk and those processors for its chemical quality. As the control, reproduction management in local conditions, are the guarantees of the promotion of livestock, especially because you can not manage what you measure is not, this present study has traced aims to identify and assess the reproductive parameters, cows by the global study of some farms and monitoring the dairy workshop operation of a sample of representative farms of the typology of farms up in the western region of Algeria to establish a diagnosis of farming conditions in the region. This assessment will evaluate the existing potential, and identify constraints, to come out with final recommendations that will contribute to improving the situation, and that can be applied to other regions of countries with conditions Similar breeding.

2. MATERIAL AND METHODS

The approach to the problem is inspired by the recommendations of Roeleveld et al, (1999) cited by. [59] [62], that distinguish two complementary streams of work for the collection of information on farming systems: the investigation, monitoring and farmed.

It focuses on two aspects of reproductive management: monitoring of reproduction on one hand and the other breeding stock. The methodology and terms of implementation of monitoring are evaluated by questionnaires distributed breeders across 04 wilayas in Algeria west. Similarly, the general and specific parameters for evaluating and interpreting fertility and bovine fertility. After this study concerns a sample taken firm as having been the subject of the investigation.

2.1 Sample Materials ac-choice

They are chosen randomly and according to the possibility of access, we take into consideration the number of dairy cows per herd should be more than 5 cows, farms selected cover different areas in 04 wilayas. The questions in quantitative and qualitative modality, have affected the structure and operation of farms.

2.2 Farmed follow

Despite the interest of long-term balance sheets to carry a reliable judgment on a rearing system, our monitoring is concerned only companion 2014/2015 agricultural, and was introduced. At the farm level, retained as sub sample of farms subject to the investigation.

2.3 The choice of the firm

The choice of the firm followed was based on:

- The stability of the activity of breeding dairy cattle.
- The availability of data relating to the operation of breeding.
- The presence of a staff cooperating with deep knowledge own breeding conditions at the facility.
- The number of livestock than 10 VL.

2.4 Operational position

The farm is located north -west of the headquarters of the wilaya of Oran and à2Km the common Gdyel, some ten meters of a road between the village of Gdyel and Florise (see figure1). UAS is 06 ha, which are reserved 04ha to forage production, operation practice intensive farming semi. Milking is performed at the stable is mechanical. The reproduction is based on natural insemination, artificial insemination trials were performed on some cows, but this technique was abandoned late in the campaign, because of the failures encountered during use.

The farm has 73vaches and 26 heifers, cows are purebred Holstein, Montbeliarde (see photo1).

Photo 1 : Prim'Holstein herd of cows Montbéliard (Oran) Photos: author, 2016

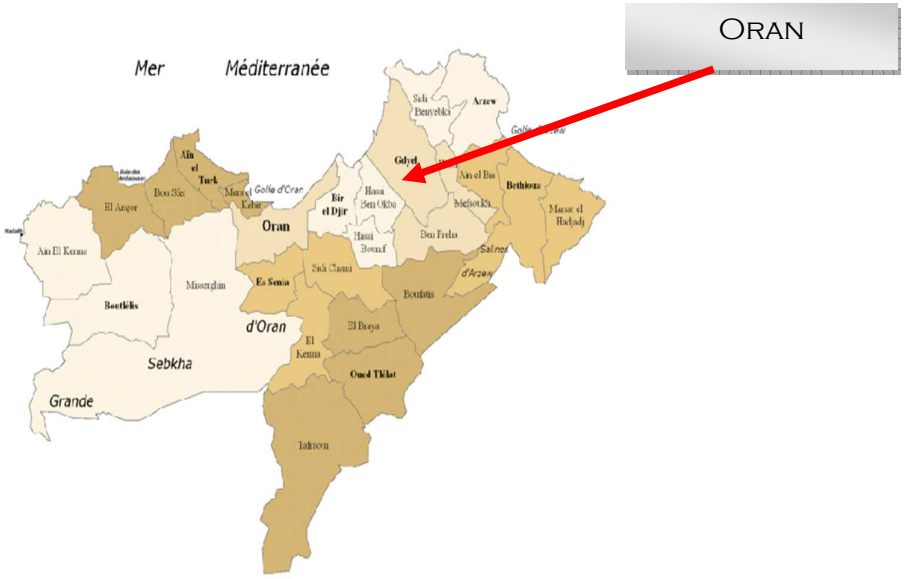

Figure1 : geographical location of the study areas (ANDL.2004)

4.1 Reproductive performance of the studied farm

The breeding stock is compiled from data collected individual sheets of each cow, barn and planning. The basic data are: calving dates, inseminations dates and dates of birth. The reproduction of balance is calculated on a limited partner to 12 months, in which a female is recorded from a calving; all events related to inseminations which follow it are considered. The intervals calving - calving were calculated using historical data concerning the calving last previous companion. Reproductive parameters studied concern the fertility performance and fertility, cows and heifers (Table 01).

Table 01: The reproductive parameters studied

cows	**fecundity**	**IVV calving intervals -vêlage**
		IVS calving intervals Fertility - first projection
		IVF calving intervals - fertilizing projection
	Fertility	Rate of cows requiring 03 inseminations and more
		First insemination success rate
Heifers	Fertility	Age at first calving
		First insemination success rate

3. Statistical analysis

The design and the collection to give questionnaire were to realize has the assistance of software sphinx more V5.

All data is collected in Excel tables were then treated for elementary descriptive static analysis (sum, average, variance)

Fertility parameters including: age at first calving, calving interval, gestation length and the fertility rate were calculated using the following formulas:

- Age at first calving (A1V) = date of first calving - date of birth;
- Interval calving interval or calving (IVV) = date of the last calving - date of the previous calving;
- Calving interval - fertilizing projection (IVSF) = date projection fertilizing - calving date

Subsequently, the study of the influence of IV-IA1 on RIA1 was analyzed by a test Khi2 and the relationship between IV and IV-IA 1-IAF by Pearson correlation. were analyzed using "IBM SPSS statistics 20"software.

4. RESULTS

4.1 Characterization of farms

The results of the investigation show that 74% ofexploitations have useful agricultural surfaces(UAS) lower than 20 ha. (Fig02).

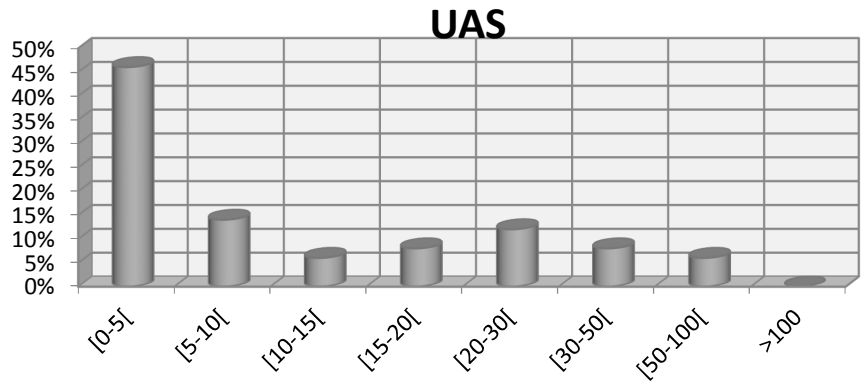

Figure 02: Distribution of the exploitations by importance of the exploited UAS (ha).
(useful agricultural surfaces)

The genetic structure of herds is dominated by 88.65% of modern breeds (Fig. 03), including 47.86% and 18.48 Holstein Friesian% the Pie Noire. Local and mixed breeds, respectively 2.52 and 8.82%. Moreover, 66.66% of herds operate effective under 10 dairy cows due to unavailability of operating and forage areas (Fig. 04), and 56.09% are predominated by the feed monoculture (Fig. 05).

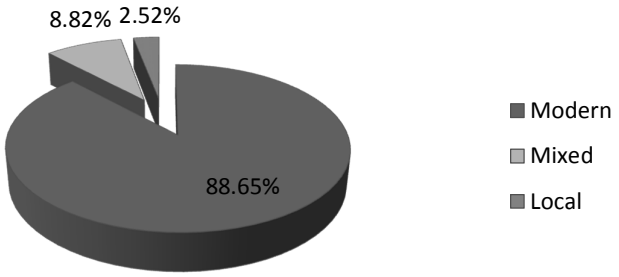

Figure 03: Cattle breeds exploited.

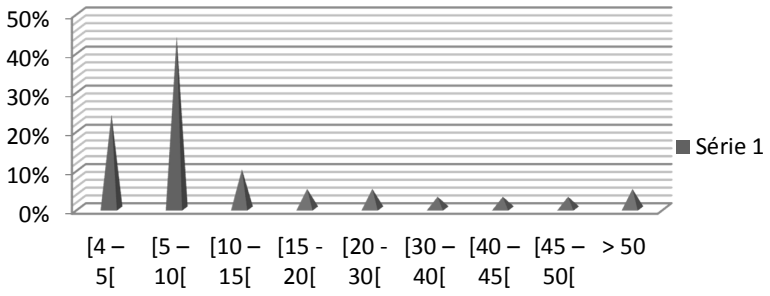

Figure 04: Distribution of the exploitations by number of dairy cows

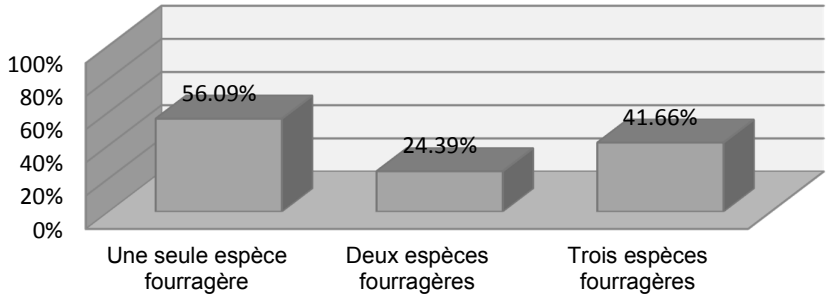

Figure 05: Importance of the diversification of the fodder cultures.

Our results show that the control of the reproduction, it is characterized by a weak development of artificial insemination (11%) (Fig. 06) and a yelling lack (78%) of follow reproductive state of the animals (Fig . 07).

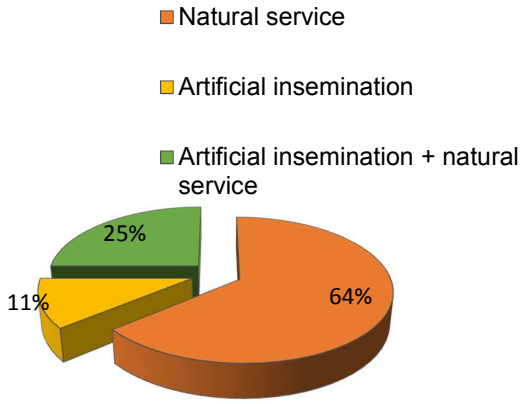

Figure 06: Mode insemination

Figure 07: Rate of recording

4.2 Results reproductive parameters studied herds fecundity parameters

4.2.1.1 Age at first calving

The average in our study (Table 02) are very high relative to the target entered by [35] and [70], which is 24 months; and of [25], which is 27 months. Mean values for age at first calving through the 2014/2015 campaign vary from 26 to 28 months. The minimum and maximum values are 19 and 39 months respectively. The best average is about 28 months.

The percentage distribution of the age at first calving (Table 03) reflects the poor performance in heifers. there is more student percentages lower first calving of over 28 months of about 41.17%. Against by the percentage of recommended calving does not exceed one-third (32%).

Table 02: Breakdown of the average of the last Age of the reproduction

Settings / year	Average	Standard deviation	Min.	Max.
2014/2015	868.736842	367.07461	567.00	1186.00

Table 03: Distribution of the percentages of different ages at first calving

Settings / year	Early <24	Recommended 24≤ ≤28	Late> 28
2014/2015	14.70	35.29	41.17

4.2.1.2 The calving-first insemination interval (IVS1)

The IV-IA 1 is 113.6 ± 65 days. The median is 94 days; the minimum is 36 days and the maximum is 315 days. Figure 07 shows the distribution of animals according to their V-IA1 interval. 9.58% of the animals are breeding for the first time before 70 days. 53.42% of the total population receive their first service after 90 days, whereas the maximum target for breeding is 15% reported by [56].

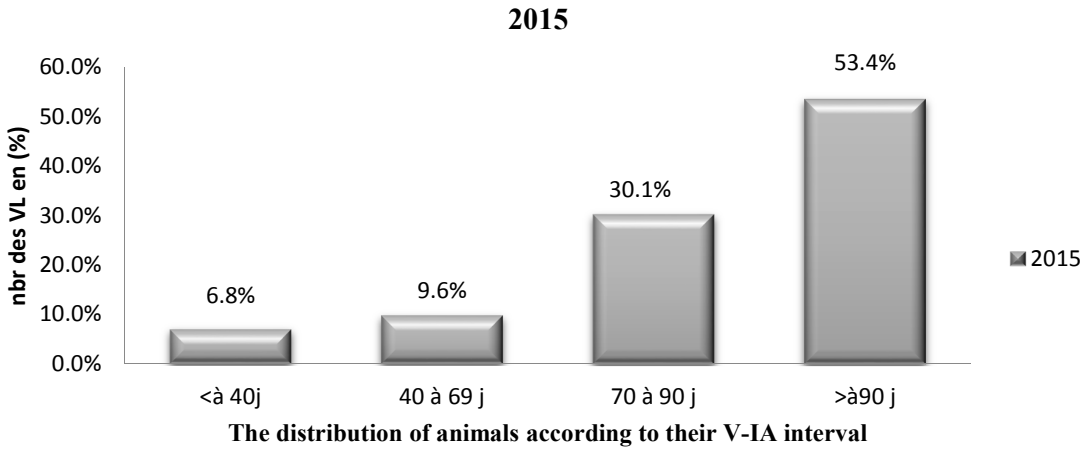

Figure 08: Distribution of animals (%) depending on the interval V- IA1 (days)

4.2.1.3 The interval calving-fecund projection (IVSF)

The IV-IAF average is 125.84 ± 66 days. The median is 102 days the minimum is 23 days and the maximum is 315 days.). This average is above the standards reported by [46], [26] and [35], which are respectively 85 days, 100 days and between 85 and 110 days Figure 08 shows the distribution of pregnant cows according to their calving interval - fecund insemination. animals (26.92%) are fertilized before 90 days (46.15%) are fertilized after 110 days. Our breeding is characterized by infertility since the proportion of cows with calving fertilizing-projection interval greater than 110 days reached where exceeds 46% [35].

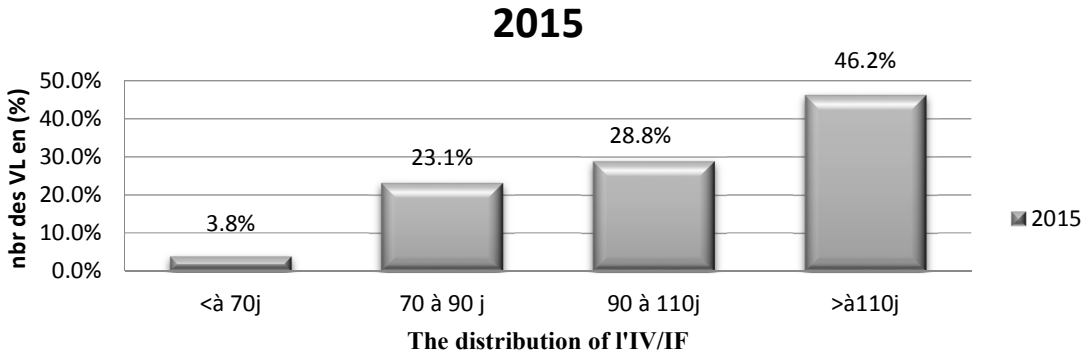

Figure 09: Distribution of the animals (%) in function of the interval V IF (days).

4.2.1.4 The interval calving calving **(IVV)**

The IV-V dependent IV-IF this e means of 408.94 ± 76 days. The median is 384 days the minimum value is 314 days and the value maximum of 584 days. This range is below the accepted standard (one calf per cow per year). This is probably related to the failure of the artificial insemination and also early and late embryonic mortality [36].

4.2.2 Fertility parameter

4.2.2.1 The success rate at the first projecting

The results of the first project success rates are very heterogeneous, they vary according to the rank of calving (.cow, heifers). Cow this success rate is noted that about 45.8% unlike the heifer is finding a rate that exceeds 61.6%. On the basis of the assessment of success rate in first projection, we can say that in heifers as in cows, fertility is average according to the standard informed by [69] and [35] (Fig 10).

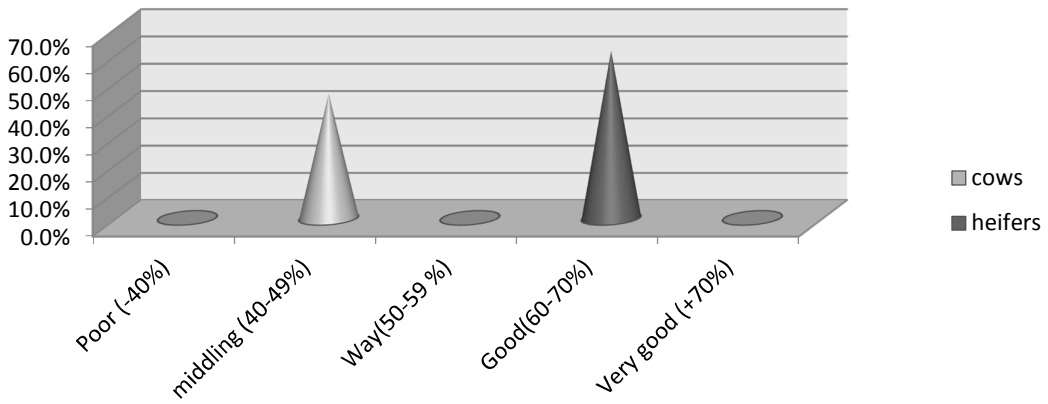

Figure 10: Breakdown success rate of first insemination (%) rank function (cow, heifers)

4.2.2.2 Percentage of cows require at least 3 IA

This number reflects the cows that were not fertilized with the second insemination. Of 73 cows, 15, suffered a failure at the second insemination, so will need a third insemination. 3IA% = 20.54% (Fig. 11).

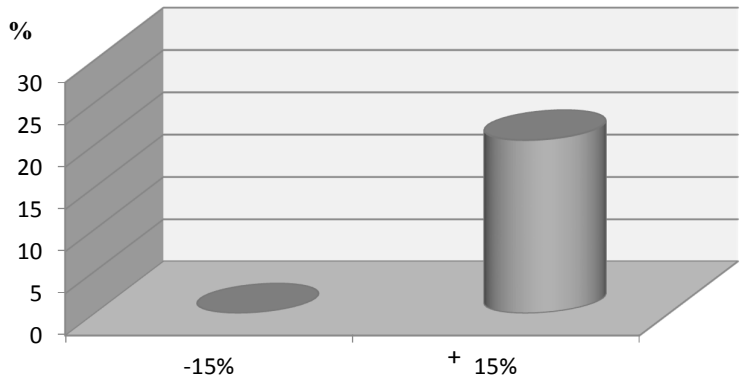

Figure 11: Rate cows need 3 IA and more.

4.2.3 Relations between the livestock reproductive parameters

The analysis of the relationship between the breeding of reproduction parameters is shown in Table 04. Four of them are relatively strong, it is the influence of the average IV- IV IA1 on the medium-IAF (correlation coefficient Pearson (CCP) = 0.86) and the IAF-IV%> 110 days (CCP = 0.58) and the influence of IV-IA 1%> 90 days on average IV-IAF (CCP = 0.56) and the IAF-IV%> 110 days (CCP = 0.45). Thus, as expected, the time-breeding strongly influences the time between calving and fertilizing insemination.

Table 04: Correlation coefficients between the livestock reproductive parameters

Reproductive parameters	IV-IAF average	%IV-IAF>110 Days	%RIA1	%3 IA and more
IV-IA1 average	0.86	0.58	0.01	-0.21
%IV-IA1>90 days	0.56	0.45	-0.02	-0.22

At the individual level (see Table 05), IV-IA 1 is fairly correlated with IV-IAF (CCP = 0.41). Success in IA1 significantly reduces the interval V-IAF (Khi2, P <0.0001). In contrast, the test KHI2 does not show any effect significant of the IV-IA1 on RIA1 (Khi2, NS).

Table 05: Relation to the individual level between the IV-IA 1, the RIA-1 and IV-IV IA1 and IAF.

Reproductive parameters	RIA1	IV-IAF
IV-IA1	0.34(Khi2, NS).	0,41 (CCP)
IV-IAF	P<0,0001 (Khi2)	

Index coital

In the flock of our study, the AI was concerned 99 females. The heifers presented a coital index of 1.4 while multiparous cows presented an index of 1.9. So coital The overall index is 1.65 (see Fig. 12).

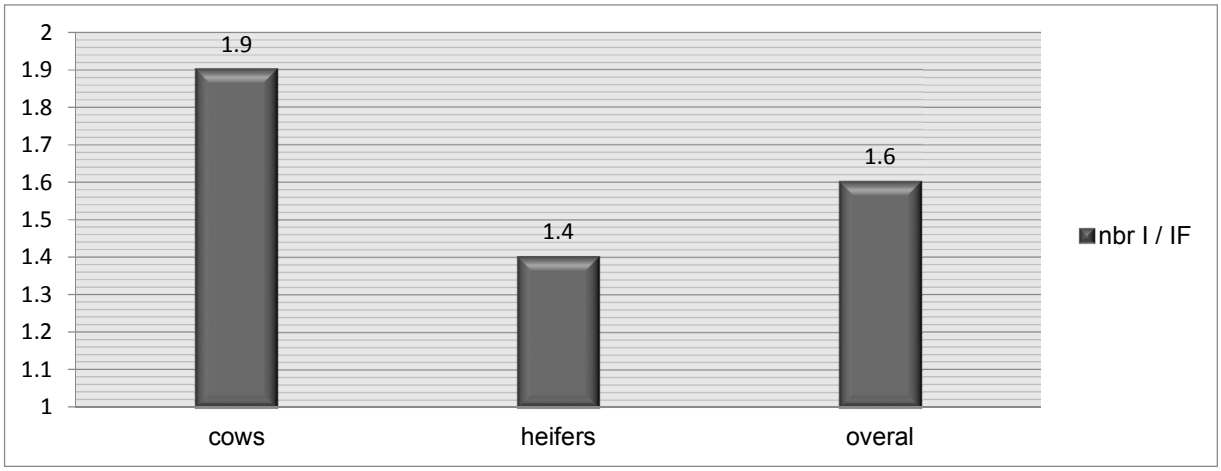

Figure 12: Distribution of total number of inseminations and fertilizing of inseminations

5. DISCUSSION

5.1 Characterization of farms

The results of the study of the distribution of the breedings by importance of the exploited UAS obtained at the time of our investigation, gives a clearer impression of the situation of the UAS in these exploitations. It shows that 74% of the exploitations have UAS lower than 20 ha, with 46% of the stockbreeders exploiting of the UAS lower than 05 ha; it thus results from it, that the UAS which conditions the agricultural growth is weak for the majority of the breedings. The values obtained, approach those pays by [36] quoted by [44]., 73% of the exploitations on the level of Algeria, have surfaces varying between 0 and 20 ha. This exiguity of surfaces is a prevalent character of the Algerian agricultural landscape. Indeed, according to [1]. Algeria is the Maghreb country, where the surface of the exploitations is the least strong.

This situation is the combined result, of the successive land policies [34], and of the successional divisions which all the areas of the country know.

The got results show that the genetic structure of the herds is marked by the prevalence of the improved races, in particular Prim' holstein and Montbéliarde. Manpower of local population and mixed remain weak. According to [3]., these two races are practically only reserves for the dairy improvement in the Maghreb countries, although there never were comparison tests with other races especially modern Montbéliarde. This races kept since their introduction of the low levels of production ([9]; [28]; [23]). Indeed, not very rustic, and thus more sensitive [61]., the ecology and the control of the medium of life represent brakes with the evolution of these genetically powerful races [68]. Thus, various environmental limitations (food and medical in particular) are opposed to an optimal productivity of these animals; situation which does not make it possible to benefit from the economic sacrifice agreed at the time of their purchases, in particular for the small stockbreeders [59]. The latter are directed towards the local and mixed races more accessible.

The analysis of the results shows that, 66.66% of the exploitations have less than 10 cows; the percentage of exploitations having less than 05 cows, reached the 23.07% then, that the breedings having more than 20 cows, account for only 5.12% of the sample, and those having more than 40 cows 2.56% only.

These results, show on the one hand, the low size of the cattle shed of dairy cows for the majority of the stockbreeders, and on the other hand, a variability in the importance of manpower between the various exploitations. The low size of the cattle shed of dairy cows, is a observation raised in the majority of the Algerian bovine exploitations. According to [12]. quoted by [52]., in Algeria, the distribution of the bovine farms by importance of their manpower, shows that, 93.3% of the breedings have less than 10 cows, whereas the farms having a manpower higher than 50 cows, do not exceed 0.3%.

The reading of the results relating to the diversification of the fodder cultures, show a weak diversification of the fodder cultures at the majority of the breedings, this situation is the combined result, of the predominance of fodder monoculture and the selective recourse to certain species compared to others.

In our investigation fodder monoculture, is practiced by 56.09% of the exploitations use primarily the barley. According to [13], this culture occupies the second place after that of wheat (hard and tender). Significance attached to the barley, is justified by its rusticity, because the barley, can be cultivated in the marginal zones with more or less poor grounds. Moreover, this species is rather interesting, taking into account its tolerance with salt and the drought [9].

The use of green fodder is limited; thus, put except for the weak contribution (seasonal) of the fallow and other surfaces of pasture, the green fodder supply is reduced, it is summarized primarily with the first barley

cuts and or of sorghum, before maturation of the grains and the alfalfa in spite of its low level of 22% on the level of breeding inquires (great requirement of irrigation).

The lack of green according to [54], not only results, of the absence partial or total of the water resources but, also of the inexistence of suitable seeds. According to [28], the majority of the feeding systems of our exploitations, are characterized by an excessive use of the hays, and consequently of concentrated food, to the detriment of green fodder and ensilage.

Natural service remains the dominant mode of insemination; met at all the breedings, it is carried out by using the bull of the farm (31.91%), or a bull rented or lent of others firm, situation met at (63.82%) of the stockbreeders who do not have a reproducer within their breedings (loads of its maintenance being important).

This kind of practices supports the propagation of the diseases, and disturbs the control of the reproduction, by the time wasted in search of males.

The use of the artificial insemination, considered normally as a tool impossible to circumvent with the development of the breeding ([34]; [19]), remain weak, it is met only at 8% of the surveyed breedings but, always in partnership with goes up natural. This weak recourse to artificial insemination is justified by: the reduced number of the inseminators, distance and the dispersion of the structures of breeding, and repetitive failures met during its use. These constraints reduced the attraction of artificial insemination to the stockbreeders, who make him prefer assembles it natural. Indeed, 28% of the surveyed breedings, stated to have practised it then given up, because of the little of success met during its use.

The recourse to the recording mediums and the identification of the animals, to the level of the surveyed farms, are very limited (only 22% of the breedings). Whereas the use of techniques of identification, and the installation of a reliable system of recording, are an essential precondition to any evaluation of the activity of reproduction [6].

5.2 fecundity parameters

The fecundity can be defined as the aptitude of a female to carry out in the long term a gestation in a necessary time. This concept of time makes that them parameters of fertility are determined by the time intervals or the ages.

5.2.1 Age at first calving

In the light of the results got for the age with the first calving, one can deduce that in our breedings, the heifers are characterized by a infertility. These results are very similar to those carried out in the area of El-Taref [32], or 3 farms out of 4 have averages of more than 30 months. The average ages to the first calving obtained in this study are very close to the value recorded by [12] in Morocco which is 29.5 months. They primarily announce the weakness of the performances of these animals apart from their countries of origin due to the difficulties of adaptation and the conditions of control of the breedings.

[66] in its study on heifers of Holtsein race and Ayrschire gives ages to the first insemination ranging between 13 and 15 month , for an age with the first share understood enters 22 and 24 months, [47], for of the same animals race give a median age to first share, respectively 28 months for the heifers of race Ayrshire and 27 month, for animals of Holstein race, against an age with the first covered understood between 18 and 19 month for the latter , [67] in its investigation in breedings of the Loire Regions (France), composed of race Prim Holstein and Montbéliarde notes settings low in 28.4 months

[37], observe in breedings in Morocco, median ages of setting to there production in heifers, of Holstein race of 573,4±35,6 days, that is to say approximately19.11 months, against an age of first share of 853,80±103,5 days, representative 28,46mois, against some 30.2 months ages for [61] for animals of Holstein races and Friesian.

The major causes of delay of calving in the heifers understand, the low level of growth, delay of puberty and errors of management to recognize the adequate size for the setting with the reproduction [70] The objectives for the breeding of the animals of replacement in the Holstein heifers for a calving at the 24 months age are a weight approximately 520 kg and a size of 142 cm to the croup [20].

This delay of the first calvings makes following a setting with the late reproduction of heifers which itself is the political consequence absence of management of the herd of replacement. This defect of management can be of two types, that is to say related to a bad control reproduction, mainly the weakness or the absence of detection of heats, is with a defective food which is at the origin of a sexual immaturity, or combination of these two factors.

5.2.2 The interval calving first insemination

The averages recorded in our study approach those obtained (116 days) by [34] of a survey conducted in 8 wilayas of the north of the country. On the other hand, our averages are definitely higher than those of the study in Tunisia (68 to 79 days) by [48].

The completed works, by [33], indeed, these authors give average intervals for this criterion ranging between 65.5 days and 75.5 days; in addition [16] observed of the intervals close to these authors is times ranging between 59 days and 88 days. [5], note on 10 dairy breedings in France of 76 days the average intervals.

[61], observe for this same criterion, in breedings Morrocans of the average scores of 104.3 ± 32 days, [55], gives for it even criterion, a median value of 79± 35 days.

[47], in a study carried out in France, on 3326 cows (91 breedings), observed on the whole of the herds, the average intervals of 81,8±8,5 days, is 81.6 days a median interval, approximately 8 day old inferior compared to our values, our results confronted with those of the consulted authors express completely correct values.

According to [34], that is with a setting with the late reproduction or problems of detection of heatswhich is based primarily on the overlapping.

[8] suspects under food at the origin of the lengthening of the interval calving 1ere insemination. According to [24], when 15% of a dairy herd are in anoestrus 40 to 50 days after calving, it has reasons there to suspect a food origin.

Performances resulting from the measurement of the interval calving first-insemination reflect the policy of insemination adopted during the postpartum. They show the little of interest granted to the voluntary period of waiting before carrying out the first insemination, and the absence of examinations postpartum before the setting with the reproduction. Indeed, during this period, it is imperative to control the uterine involution and the renewal of activity ovarian. Moreover, the observation of heats is essential to improve this index.

5.2.3 The interval fertilizing calving-projection

The results recorded for the interval fertilizing calving-projection let us bring closer to that described by [34] (102 to 193 days) In the same way, the averages of a study carried out in 2000 [32]are definitely higher (115, 146.179 and 186 days). Averages observed in Tunisia (99 to 110 days) by [48] are weaker than those which we recorded. In Morocco, the average exceeds the desired objective, it is 139 days [12]. In spite of a trend with improvement, the survey conducted by [16] revealed very high median values (174, 156 and 151 days).

These resulted are close to [22] which observed on 3500 breedings in the Loire Regions (France) of the intervals calvings insemination fertilizing of 111 days For their part, [61] note in Moroccan breedings of the average intervals about 136,3±24,8 days [50], in their investigation in the area of Sétif, [22] in the Loire Regions, and [5] in Chateau-Thierry (France), give in the order, for this parameter of the values answering the usually recommended standards, 110 days, 111jours and 115,1jours.

[55] in its survey conducted in the Island of Réunion observes average intervals de136±77 days, in addition it is to be announced that the percentage means of the cows expressing an interval calving covered fertilizing higher than 110 days between 49.89% (firm Benhamada Ahmed varies) and 64.76% (firm Sedraya), are a total average of 57.54%, this percentage is rather close to that noted by [15], indeed these authors advance scores about 59.44%, moreover these values are relatively distant from those observed by [55] (52%) in its study on breedings of Réunion.

The lengthening of the interval calving covered fertilizing can be the consequence of one setting with the late reproduction but also with success rates in weak 1ères inséminations. This last can be related to a bad detection of heats, or under food. percentage of cows which are not fertilized beyond 150 days gives an outline on the failure of the reproduction. These cows could be classified like functionally unfertile [69].

5.2.4 The interval calving – calving

The interval calving – calving for the two campaigns was also largely higher than the generally desired norms set at 365 days (to obtain a calving a year). This can be explained mainly by the delays of setting to the reproduction after calving. These values approached et al. those found by [15] in the farms of the Algerian East (El Tarf) where this interval varied between 422 and 464 days.

The values obtained, approach those observed by [11] who gives some 440 days and 476 days median values , in addition [51 gives some 472 days and 411 days averages observed in breedings located in the wilaya of Guelma. [16] , in an exploitation located in the same area of Is Algerian note average intervals ranging between 422 days and 464 days, that is to say an average on all three campaign considered 449 days, in a similar study, [17], median values in two breedings of the area note about 434.66 days and 461jours, moreover it was noted that 60.39% of the animals intervals of more than 400 days express. [31] , admits in its study carried out in two farms (over two years) and in the same area one 427 days and 442.50 days average intervals thus representing one average percentage of 40.50% and 57% of the whole of the animals.

In studies, the first made by [57] in the area of Annaba and the second by [50] , in the area of Sétif observe average intervals between 384.68 days calvings for the first, against intervals ranging between 375 days and 397 days for the second authors; all in all, completely correct values compared to the allowed standards, moreover, [30], in a critical study carried out in the area of El-Tarf, observes intervals between calvings of about 387.88 days ± 62.76 days, these results, are in on this side results got at the time of our investigation, [39] note in the same locality of the average intervals on two campaigns of the 439.93 days and 436 days order accounting for 48.88% and 44% respectively of cows put at the reproduction

In addition, [57], observes that 32.57% of the cows express one interval graft put low higher than 400 days and this for 3 campaigns successive, the average percentage of cows expressing of the intervals enters calvings beyond 400 days observed, in our investigation varies according to exploitations from 44.29% to 61.29% (average of farms 53.23%), which largely superior with that announced by [57], but lower than that observed by [16], plus we observed, a percentage of cows expressing an interval between settings low lower than 330jours ranging between 7.28% and20.17% According to [36], in Wallonia, 67% of breedings intervals ranging between 380 days and 420 days express, against only 19%, where the interval falls under the allowed standards, it are in addition observed that 14% of the Walloon breedings express intervals beyond 400 days, which is very frankly in on this side our results.

It should be noted that the interval calving-calving was very strongly depend on the interval calving – fertilizing insemination and this lasting the countryside studied (r=1).

5.3 Fertility parameter

5.3.1 The success rate for the first projection

The reading of the results relative to the various levels of fertility show that our results are far from those recorded (78%) by [34], and are higher than those obtained by [15] and [32] which lie respectively between 4 to 11% and 20 to 24%. The rates obtained remain close that those (40%) paid by [48]. Results compared with those [55] which observes an average percentage of 12.50%, [47] which notes 28.60%, [5]which notes 29%.

The results of success rate in first projection showed that the fertility of the cows is poor and remains in on this side objectives recommended. The evaluation of this parameter enabled us to deduce that, these rates of design explain the bad fertility partly.

This level of performance can indicate a bad precision and frequency of detection of heats, a bad moment of insemination, an incompetence of the inseminator or an incorrect storage of the seed [46]. The rate of design is the result of a multiplicity of factors which interact in a complex way. Fertility of female, fertility of the male, factors environmental, the medical condition and nutritional, the state of plumpness, the age, the race and moment of insemination compared to heats. [35]. The bad technique of artificial insemination, contributes to weak rate of design in the herds ([53]; [70]). Sites of deposit inadequate decrease the fertility rates [53]. The choice of the moment of insemination compared to the detection of heats influences the rates of design [43]. The setting with the early reproduction of heifers involves a low level of design with the first projection [29]

5.3.2 Percentage of cows require at least 3 IA

Indeed, the average rate of cows requiring 3 inseminations and recorded and that was 20% which exceeds the recommended standards (<15%). The poor results of the last parameter of the cows that require 3 inseminations and in are the result of inadequate supply and poor heat detection. Furthermore, there is a significant percentage of inseminations before 40 days which causes according [40] nearly embryonic mortality. This is on the technical staff that controls reproduction.

5.3.3 Index coital

It defines the total number of inseminations reduced the number of pregnant cows. It reflects the number of services it takes to get pregnant. Indeed, one of the result registers that varies between 1.4 and 1.9 for heifer with a total for the index exceeds the accepted standard according [38] who reported that in cattle that the number of services required to fertilization must be less than 1.6.

The studies realized pays by [33] give average indices recorded in two breedings of 4.33 and 4.41, [16], note indices on three successive campaigns ranging between 2.05 and 2.12 [17], observe average indices ranging between 1.86 and 2.64 [30] observes indices in an exploitation located in the same one area of study an index of 2.17 ±1,46; finally, [39] in their studies made in the same locality give an average respectively of 2.10 and 2.19 and this out of three and two successive campaigns [55] notes in breedings of the Island of Réunion an index of 2.37, [5] in breedings in France records indices of 2.06, [50], in breedings located in the area of Sétif enter an index of 1.8 [21] observes an average index of 1.78 and this out of four campaigns in breeding in France, [47] as for them give, an index coïtal 2; it is to be noticed that the observations made in 2005 by [33] A and this in the same area are very distant of our results, indeed these authors advance an average index on two successive campaigns of 4,37. [61] observe in dairy exploitations in Morocco of average indices of 2.41 The lessons which we can learn, by comparing our results with those of consulted authors, show results at least acceptable in some breedings taking into account the conditions of breeding, even goods for others , in particular breedings of the exploitations Mekhancha (1.52) and Haouchette (1.64)

5.4 Relations between the livestock reproductive parameters

The analysis of correlations between the variables revealed that reproductive parameters were interrelated ($p < 0.001$) but has an individual scale showed medium correlation with fecundity parameters. The coefficients were to IV-I1, IV-IF and IV-V respectively of $r = + 0.86$, $r = + 0.56$.

The analysis of different results concerning reproductive parameters indicated that infertility problems among the studied herds, expressed by lengthening lead times for breeding have impacted directly on the time of fertilization and the interval between two successive calving.

6. CONCLUSION

These results show that the performance level is still below the potential production and that major efforts are still deployed to secure these farms and make the most competitive dairy production. The livestock development requires a comprehensive view of the current situation by establishing a multi-disciplinary program, which must pass through intensified on all levels, the reproductive efficiency of a herd is related to Action of two categories: those which aim to maximize the ability of cows to be fertilized and those designed to achieve this within an optimal timeframe for the objectives of the herd. However, it should make inquiries at a wider scale to identify all the existing problems, to act on them.

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