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Impact of calving interval on milk production in lactation, cows Holstein breed.

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Abstract

Reproduction is the main factor in determining the efficiency of animal production. Reproductive efficiency can be described as a measure of the ability of cows to conceive and produce calves. Fertility economic level is usually assessed by the calving interval, the period between 2 successive calving. Management factors conditions the improve reproductive performance to optimize, in herds of cows with high genetic capacity. For the study is analyzing the information collected in three regions of the country (Fier, Durrës, Shkodër) to (n = 1200) cows of Holstein breeds included in the Book of Breed which serves as a basis for evaluating performance production and reproductive of herds milk production. This cattle population is extended (n = 90) dairy farms. The total of (n = 1505) complete lactations and estimates, about (n = 987) met the criteria lactations for further processing for performance evaluation and ranking of cattle production by level of production. The data cover the period from 01.01.2012 - 31.12.2015. The processing of data, resulting an average milk production of 5618 kg / 305 day lactation with a variation of 3176-8128 kg / 305 days lactation and an average age of 4.89 years with a variation from 3.2 to 7.81 years. The survey data show that significant differences are found between herds regarding the production of milk. Also observed differences regard to the average age between herds. 25% of the populations of cows have extended lactations (390-540 days) and therefore long calving intervals across from optimal, which occur primarily in first lactation cows. The interval between calving is the most important indicator of herd reproduction. In the study undertaken this indicator is (431 ± 113) days (n = 621). Reproduction efficiency of cattle with higher production capacity remains one of the challenges facing today's big and medium farms level. In this context, the study aims to optimize reproductive performance through improved breeding conditions influencing the interval calving - calving in cows with high production capacity.

Keywords : Performances, efficiency, reproduction, lactation, calving interval, cow, breed.

Introduction

Implementation of the Herd Book for the bovine species in the country made it possible to undertake studies related to the breeding of cows in dairy farms. Reproduction is a key factor in determining production efficiency in herds of dairy cattle. Reproductive efficiency can be described as a measure of cow's ability to conceive and produce calves. Fertility usually estimated economic level of calving interval - the period between two successive calving.The interval between calving is the most important indicator on the reproduction of the herds. It is generally accepted that the production of a calf per cow, per 365 days is fertility technical objective. This requires an average of cows should be concived within 85 days after calving, which is difficult to achieve in practice due to the growth in milk production and reduced fertility in cows. [4]. Length of calving interval is one of non genetic factors affecting milk yield in cattle. It is known that length of calving interval depends on length of days open, whose variance is conditioned by different environmental factors such as: feeding, production system, AI technician's skills, management skills of farmer etc. In fact, non-genetic factors such as management practices and herd-related factors are likely to be substantially involved, meaning that it might be possible for herd managers to have a direct impact on getting high producing cows pregnant. The management factors conditions the improve reproductive performance of the population towards their optimization in herds of cows with high genetic capacity. Reducing milk production is related to the length of calving interval. Cows with long

lactations reduce average daily production of milk per lactation. [4]. Reproduction efficient of cattle herds with high production genetic capacity remains one of the challenges facing today's farms middle scale. In this context, the study aims at optimizing reproductive performance by studying the relationships and influence with milk production in lactating and improving breeding conditions influencing on calving interval in cows with high production capacities.

Material and Methods

Actually are included currently in recorded system of about 2,000 cows and heifer Holstein breed of pedigree, mainly in the areas of Durres, Lushnje, Fier, Elbasan and Shkodër. The study analyzed (Data Base) information collected in three regions of the country (Fier, Durrës, Shkodër) to (n = 1200) cows to Holstein breed, included on the Herd Book that serves as a basis for evaluating the productive and reproductive performance of dairy herds.

This population is spread (n = 90) dairy farms. A total of (n = 1505) full and partial lactations records, about (n = 987) lactations records met the criteria for further processing for evaluating the production performance of cows rankings by level of productivity. The data cover the period from 01.01.2012 - 31.12.2015. To study the interrelationships between calving interval and total milk production in lactation, milk production 305 days/ lactation were included (n = 598) cow's milk Holstein breed. To study the interrelationships between calving interval and production performances is using correlative analysis of performance and statistically validate the assumptions used methods F-Test Two-Sample for variance.

Results and Discussion

By processing the data, it turns out an average production of milk in 305 days of lactation 5618 ± 1581 kg / with a variation from 3176-10500 kg / 305 day lactation (Table 1). The total milk production at average 5255 ± 2014 liters. Profile of the cow's lactation curve varies depending on milk production. In cows with high production capacities of the lactation curve is flatter than in cows with low productivity as shown in Table 2. Milk production reduce weekly on basis in % it is lower in cows with high production capacity (1.60 < 2.5). The cow's population had taken the survey results with an average age of 4.89 years with a variation from 3.2 to 7.81 years.

Table 1 : Production and reproduction performances of Holstein Cattle (n = 598).

Item	*Calving interval (months)*	*Calving interval (days)*	*Age calving*	*Number of lactation*	*Extension lactation / days*	*Lactation yield/ liters*	*305 – day yield (liters)*
Average	14.2	431	5.0	3.5	288.5	5255	5618
SD	± 3.5	±113	±2.2	±1.9	±96.3	±2014	±1581

Table 2 : Lactation curves and milk production.

305- day / lactation (Liters)	*Peak yield factor*	*Weekly yield decline (%)*	*Concentrate yield (kg/liter)*
6.000	206	2.50	0.25
8.000	219	2.05	0.30
10.000	233	1.60	0.35

Source : Adapted from University of Reading (UK)

The survey data show that significant differences are found between herds in relation to milk production. Differences are also observed in relation to the average age among the herds. 25% of the cattle populations have extended lactations (390-540 days) and long calving intervals across fromoptimal point, which occur primarily in the first lactation cows.

The interval between calving is the most important indicator in the cow reproduction of the herds. [2] reported that high producing cows were bred later, took longer to conceive, and required more services per conception than low-producing cows. In a study undertaken this indicator is (431 ± 113) or days (14.2 ± 3.5) (n = 598). Extension of calving interval leads to an extension of the drying period. Cow with long lactations have a significant time in late lactation daily production of milk is lower as shown in Table 3. The data presented in table 3 clearly shows the impact of calving interval length on milk production. Extension of calving intervals of 12, 15, 18 months, milk production in 305 days lactation reduced. The observed differences statistically were significantly verified to level P <0:05:

Table 3: Calving interval, lactation yield, and 305 –day yield.

Item	***Calving Interval (months)***		
	12	***15***	***18***
Average milk lactation yield (litres)	**5634±1736****	**6176±1808****	**6715±1920****
Average 305 – day yield (liters)	**6125±1622***	**5553±1350***	**5534±1291***
Average daily yield (liters)	**20±5.3***	**18.2±4.4***	**18.1±4.2***

*P<0.05, **P<0.05

Table 4 : Phenotypic correlations of cows populations Holstein breed

No.	***Item***	***Calving interval (days)***	***Age calving***	***Number lactation***	***Extension lactation / days***	***Lactation yield/ liters***	***305 – day yield (liters)***
1.	**Calving interval (days)**		-0.159	-0.179	0.262	0.096	-0.07
2.	**Age calving**			0.941	0.028	-0.022	-0.051
3.	**Number lactation**				0.033	-0.030	-0.067
4.	**Extension lactation / days**					0.636	0.031
5.	**Lactation yield/ liters**						0.761
6.	**305 – day yield (liters)**						

Phenotypic correlations in the population of cattle Holstein study are presented in Table 4. As seen calving interval positively correlated to the length of lactation and negatively with the production of milk 305 - day yield However, if a herd was expanding, the correlation between 305-d milk and calving interval increased and the relationship became more unfavorable. This could be partially explained by expanding farms holding on to open late lactation cows that would otherwise be culled from the herd, thus artificially inflating calving interval. In addition, expansion usually puts a considerable amount of pressure on cows and people. As a result, intensive management may suffer and careful attention to detail may temporarily slip away during herd expansion. We suggest a perfect relationship in the opposite direction; that is, more milk would lead to consistently shorter calving intervals and thus, improved reproductive performance.

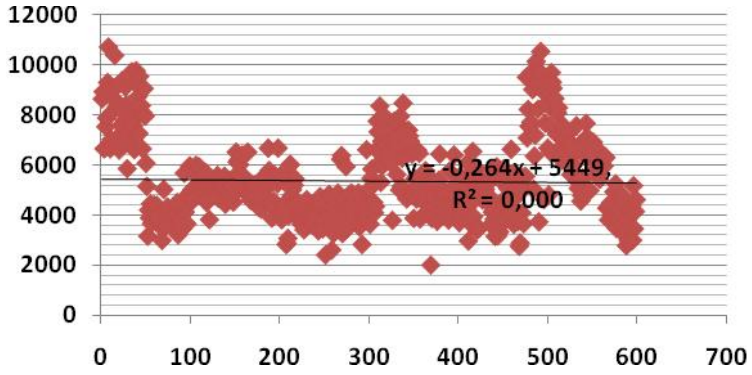

Figure 1 :The distribution of milk 305 days yield.

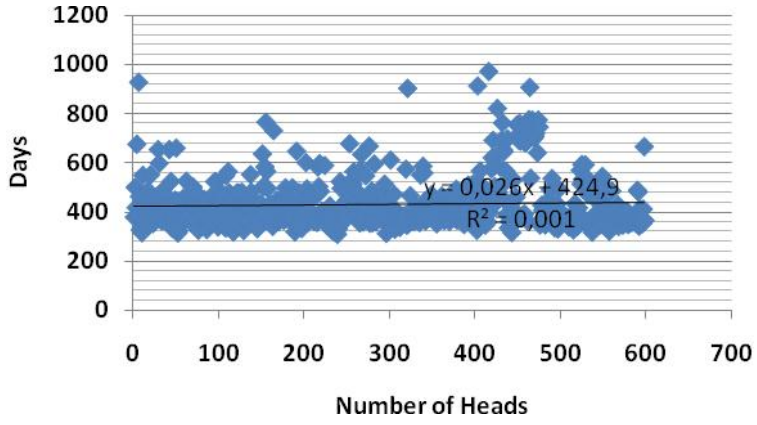

Figure 2 :The distribution of calving interval

Conclusion

With the extension of calving interval, milk production in 305 days lactation and average daily milk production decrease.

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