Investigation of Effective Factors on Calving Interval of Cows in Faryab Province

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ABSTRACT
This research was conducted to investigate the effects of factors (Identification of female cows, timely insemination of identified begging cows, diseases related to the reproductive system and nutrition) on the calving interval of dairy cows in Faryab province. Whereas, the long interval between two deliveries due to the identification of female cows, the increase in the number of inseminations (due to the failure of previous insemination), poor nutritional management and genital infections cause a long interval between calving to retrieval of cows. In that case, it will significantly reduce milk production and livestock income, because calving interval is one of the most important indicators of reproduction and economic characteristics of dairy cows, which is the interval between two calving intervals. Under the best of circumstances, one cow gives birth to only one calf per year. Calves born are important from both the point of view of meat production and replacement of old and low-producing cows. Identifying the effective factors and their effects on the calving interval between dairy cows and preventing the economic losses of dairy farmers due to increasing the calving interval between calves are the general purpose of this research. In this research, Andkhoy, Qurghan and other Faryab districts were randomly selected from three villages in each district and 10 owners from each village, which included three districts, 9 villages and nine livestock, respectively. The results of the present research showed that the interval between calving of dairy cows in the research area was due to the untimely identification of female cows by herders, increasing the number of inseminations due to the failure of previous inseminations of diseases related to the reproductive system and inadequate nutrition. The average time after delivery for the uterus to return to its previous state was 465 days.

Keywords: Cattle, Calving interval, diseases of the reproductive system and nutrition, insemination.

I. INTRODUCTION
Calving interval is one of the economic characteristics of dairy cows, which is the interval between two calving intervals, can be measured in years or months. When the interval between two calves is more than one year, then milk production is significantly reduced, because calving (calf birth) is the starting point for milk production.

Prolonged calving interval is not a disease in itself and may be due to the effects of one or more factors, so I thought it necessary to discuss the effects of early Identification of female cows, frequency of insemination, genital infections and feeding over the interval. Do research between two calves. In order to achieve maximum reproductive efficiency, the calving interval should be one year. Therefore, the interval between calf birth and re-pregnancy should be short. If this interval is too short, the presence of the fetus reduces milk production at a time when production should be at a maximum. On the other hand, by the end of the lactation period, the cow will dry earlier than scheduled and while production is still high, and the length of the dry period will probably be shorter than the need for full breast repair, milk production will decrease in the next lactation. On the other hand, the effect of calving interval longer than one year will be more severe.

According to the findings of animal science, the amount of loss due to each day of increase in calving interval 12 to 13 months was between 0 to 0.13 $, and when the calving interval increases to 14 months, the amount of loss based on days apart calving up to 0.10to 0.17 $ shipping compared to 12 month intervals. In the United States, lengthening the interval between two consecutive deliveries in Holstein cows, on average, from 12 to 14 months, led to an 8.8% reduction in annual return on investment in food costs, in addition to prolonging the interval by an average loss. 144 kg of milk and 0.15% of calves for each cow (Rasouli, 2011).

Nutrition plays an important role in reproduction, but in most cases, acute food shortages cause reproductive problems. Inadequate amounts of protein, vitamins, and minerals in food units in the face of reproductive system disorders increase the interval from calving to the first begging of cows. Also, the return of the uterus to its original state after delivery at intervals of 60 to 90 days, the period of begging and re-pregnancy has a favorable effect [Chamirlin, 2003].

II. RESEARCH PROBLEM
In general, long-interval losses between calves, including losses related to the elimination of cows due to reduced production and losses due to the reduction of calves born for sale and replacement of low-yielding old cows in the United States for each cow per year Reaches
100 $ (Howards, 1373). But this problem is more prevalent in Afghanistan, especially in Faryab province, and farmers are still losing their productive cows due to the prolongation of this interval and are suffering huge losses, which is their interest in raising and keeping dairy cows. Have reduced. Therefore, this research was performed to obtain effective factors on the calving interval of the local generation of dairy cows.

III. THE IMPORTANCE OF RESEARCH

One of the important economic aspects in the livestock sector, especially in the form of dairy cows, is to maintain a standard calving interval (one year) in order to obtain more provisions. As it is clear to everyone, preventing the prolongation of calving interval not only leads to effective production and strengthens the economic strength of cattle owners, but also cattle owners lose one of the most valuable cows in their herd, the opportunity to eliminate a small cow it also loses production and low value. At the same time, the number of calves available to be replaced in the herd or sold will be less. Among the main reasons for the elimination of dairy cows from the herd due to the prolonged calving interval due to the delay in the time of female calving after calving, increase in the number of inseminations due to previous insufficiency failure, inadequate nutrition and diseases related to the reproductive system such as hard Specificity is metritis infections.

Research purposes
1. Obtaining effective factors and its effects on the calving interval of cows.

Research questions
1. What is the interval between calving and the first begging after childbirth?
2. What percentage of female cattle are identified and fertilized by herders in a timely manner?
3. Do proper nutrition and diseases of the reproductive system affect the calving interval or not?

IV. LITERATURE REVIEW

The average calving interval in the generation of Iranian Holstein dairy cows is 389.4 days and the interval from calving to the first begging is 80.9 days. While the average calving interval of European Holstein dairy cows was 396 days, in Guernsey 414 or about 13 to 13.5 months [Abbas pour, 2011].

Also, the average interval between two calves in the generation of lactating cows is 380 days and the average milk yield is 2343 kg. There are many reasons that prolong the interval between two calves in cows, one of the most important reasons is the interval from calving to the first begging and timely diagnosis. Most dairy cows release eggs 20-30 days after calving, which are asymptomatic; which are called silent spawning. Cows with silent spawning release eggs 40 to 50 days after calving, and the majority have symptoms of begging. Inadequate nutrition during pregnancy delays the return of the uterus to the first stage after delivery. In addition, uterine infections also affect this interval [Sabah, 2015].

The best calving interval to the first begging after calving is usually between 60 and 90 days. If the calving interval is less than 13 months, the majority of cattle should be inseminated 60 days after calving and half of the flock should be 100 to 110 be pregnant the day after birth.

The period of begging is a complex neural process that causes significant changes in the reproductive system and the whole organism of female cows from one stage of begging to another stage that lasts 24-28 days. The length of the egg-laying period and the time the egg is released from the ovary include the four stages of estrus pro, estrus, met estrus, and di estrus. Pro estrus or the initial stage is an emotional stage that lasts 3-5 days. This stage lasts an average of 98 hours in summer and 84 hours in winter, the symptoms of which are restlessness, crying, insomnia. Anorexia, low milk supply and high body temperature are from 0.8 to 1.2 degrees [Hotak, 2008].

Postpartum symptoms disappear in the inner wall of the uterus after 60-90 days after delivery. Therefore, it has been suggested that the animal be fertilized after two to three months [Zamiri, 2006]. For cows that have had an abnormal birth, an interval of 60 days may not be enough; in general, a suitable interval of 90 days is the same as for cows.

Diagnosis or timely identification of hedgehog cows to maintain a calving interval of one year is important and necessary, especially in the absence of male cattle breeders should be careful not to spend the proper mating time of unknown hedgehog cows. Lack of timely Identification of goat cows is one of the factors limiting the effectiveness of calving interval in dairy cows in the United States [Souls, 2016]. Most cows are sought after by the night owl, so by increasing the number of sightings at night, the female owl is more recognizable. Experienced experts recommend 4-5 times observation. An effective and reliable inspection is the observation of animals up close, which must be performed four times in 24 hours.

The most important factor influencing the long interval between calves is infertility in artificial insemination or natural mating programs. Fertility rates are not the same at different times. The highest fertility is achieved when mating takes place in the last 10 hours of begging or in the first 6 hours after the end of begging. They should be inseminated the next morning. According to research, the best time to inseminate cows is between 4 and 12 hours after the first cows are observed. After 12 hours, especially in 16 hours after observing the first begging, sperm fertility decreases significantly [Zamiri, 2006].
The female fertility rate of cows inseminated in the last 32 hours of the begging period was lower than that of cows inseminated at 8, 16 and 24 hours. The lowest fertility is at 0 and 32 hours after begging, but the highest fertility is seen at 16:00 during begging. (Parsley, 1998).

### Table 1: Fertility rate each time of artificial insemination during the period of begging.

| Breeding Times | 0 h  | 8 h  | 16 h | 24 h | 32 h | Total |
|----------------|------|------|------|------|------|-------|
| Cows no        | 149  | 149  | 149  | 143  | 143  | 732   |
| PR/A1 %        | 37   | 41   | 45   | 41   | 32   | 39    |
| Pregnancy Loss % | 9  | 21   | 21   | 21   | 32   | 22    |
| Calving rate % | 31   | 31   | 33   | 29   | 20   | 29    |
| Iwinning rate % | 0   | 6.5  | 0    | 2.5  | 3.5  | 12.5  |

Feeding dairy cows before mating is also an important factor. Experienced cattle breeders usually prepare pasture forage in the spring to feed the cows before mating in order to obtain as many healthy calves as possible, as feeding the cows before mating increases sperm production, sperm production and spawning rate. Feeding cows with a very poor diet and also feeding too much food to cows that were previously obese, disrupts the practice of insemination [Naderi, 2013].

Deficiency of vitamins, minerals and various diseases of the reproductive system such as brucellosis, vibriosis, trichomonas, etc. cause cows not to crave for food. Standard feeding during the mating season at mating and re-pregnancy has a favorable effect on the reproductive rate and growth rate of calves [Chamberlin 2003] and [Withes, 2007].

In Afghanistan, one of the main problems is the lack of quality feed that ensures the health and good production of dairy cows. The common and common food of dairy cows is white straw, especially in winter. Lack of feed causes slow development of low milk production, decreased reproductive capacity, pregnancy problems and infant feeding. Inadequate nutrition also leads to the inability of the immune system and susceptibility to disease to continue to cause the animal to lose weight [Committees Land for Afghanistan, 2007].

Infection of the reproductive system of female cows during calving and immediately after calving increases the interval between calving, the period of unexpected begging and harms cattle owners. Uterine infections are one of the most important causes of postpartum infertility in female cows, which is associated with a decrease in pregnancy rate, an increase in the calving interval to the first insemination, and an increase in female removal of cows due to loss of carrying capacity.

Comparison of cows with uterine infection with normal cows in Iran shows that the pregnancy rate in cows with uterine infection is 20% less and the average calving interval to pregnancy is 30 days longer [Yedi, 2013].

Plasenta has a fluid called amniotic fluid, which protects the fetus from physical damage and infection. At the end of pregnancy, this concentrated fluid causes the baby to leave normally. The plasenta leaves on average about 6 to 12 hours after delivery [Donald, 1978].

The cause of placenta Previa is not well understood. Sometimes placental abruption occurs following abnormal births such as dual births, dystocia or premature births. If the miscarriage occurs before 120 days, the plasenta is completely removed. Malnutrition, short dry period in dairy cows (less than 5 weeks), transportation excitement, vitamin and mineral deficiencies such as carotene, selenium, and vitamin E are also factors in placental abruption.

Hardening is another reproductive disorder. The consequences of hardening are very important and may be associated with the following. Calf death, cow anorexia, fertility decline, cow infertility and cow death. Other problems that may occur to the animal after delivery. This condition can be caused by obesity, overfeeding, or genetic causes in cows. In this case, one of the violations is to cover the protruding part of the uterus with a clean bag to prevent contamination [Naderi, 2013].

### V. MATERIALS AND METHODS

The research of factors affecting the calving interval of cows is the main subject of this research, which is from the nature of a field research (Descriptive). In the present research, the research areas and livestock farmers were selected by random sampling. Faryab provincial capital, Andkhoy and Qurghan districts were selected as the research areas. Three villages from each district and 10 cattle breeders from each village, which included a total of three districts, 9 villages and 90 cattle breeders, were randomly selected. Necessary information was collected using questionnaire distribution methods, interviews and observations with ranchers, officials of the Department of Agriculture and Livestock and the director.
of animal clinics. Basic information was analyzed using SPSS program. Qualitative statistics of high, good and weak points were shown in tables and graphs.

VI. RESULT

The results of this research on the interval between calving and the interval between calving to the first cow-begging based on interviews with 90 ranchers in Table (2) it is showed that the maximum interval between two calves of dairy cows under research is 540 days. The minimum limit is 390 days and the average limit is 465 days (15.5 months).

Table 2: The average interval between calving and the interval between calving to the first begging of cows in the research area

| The greatest limit | Asghari limit | Standard deviation | Average | Number of ranchers | Adjective                  |
|-------------------|----------------|-------------------|---------|--------------------|----------------------------|
| 105               | 75             | 21.2              | 90      | 90                 | Interval from birth to the first begging to (day) |
| 540               | 390            | 106               | 465     | 90                 | Interval between calving to (days)               |

In addition, 76% of cowboys were identified by farmers on time and 24% of them were not identified in time due to the low level of awareness of cow owners about the return of the uterus to normal and the emergence of symptoms of cowboys after calving.

Beekeeping cows are identified in a timely manner and fertilized for mating, but 54 percent of them due to reasons such as low level of knowledge of cow owners about the appropriate mating time.

Graph 1: The rate of identification and non-identification of cattle's greed by cattle breeders and their timely mating for transport.

The results of the present research show the nutrition of cows in the research area, where 72% of livestock farmers graze their cows in open pastures depending on the seasons or use pasture fodder in dry form (28) and 28%. Due to their remoteness from natural grazing, they feed their cows in the form of stalls in the stable using white straw and wheat bran, and rarely from the dense feed they buy. The results of the present research on infections of the reproductive system based on observations, showed that 39% of infertility, 26% of placental abruption (10% of placenta) and 10% of abortions are the main reasons for the long interval between calves of two cows. Is in addition, 25% of the cows were in the place of calving after birth due to the carelessness of the cowboys and their calves and calving sites were infected with metritis and endometritis infections. Most cases are related to infertility problems and abortion has low incidence. On the other hand, there was a significant difference in the views of the mentioned problems between the research areas, as Qurghan district in the first degree, Andkhoy district in the second degree and Faryab center in the third degree have experienced the most cases.
VII. DISCUSSION

From the findings of the present study, it is inferred that the interval between calves of cows in the research area compared to calves of rabbits in the field of rabbits that was done by Sahab in 1394 and also with the results of Abbas pour research in 1390 Holstein milk cows made in Iran are different. That is, the calving interval of local cows is 85 days longer than the calving interval of rabbits cows and 75.6 days longer than that of Iranian Holstein.

The interval from calving to the first begging of the generation of local dairy cows under research is consistent with the statement (Rang, 2010), while the interval of 90 days between calving and the first begging is quite true in cows that have abnormal calving. Because the results of the research revealed the large number of cows in the research area due to the lack of attention of cow owners in feeding and caring for pregnant cows during childbirth, they have delayed the return of the uterus to its previous state. In addition, observing beggar cows to identify and mate them in a timely manner does not fully correspond to the text (Zia, 2011). This is while the observation of begging cows is mating from about 90% of cows identified in time.

The findings of this research on the rate of pregnancy in the first and second mating are slightly different from the statements of Peters (2002), which are described in the background section. The author reported that the number of Holstein breeds in the first mating was higher than the number of local dairy cows in the first mating, but the number of local dairy cows in the second mating was higher than in the second mating. That is, the uptake rate of local dairy cows in the first mating was 23% lower than that of the Holstein generation, but in the second mating it was 24% higher.

The reason for the low carrying rate of local dairy cows in the first mating may be the low level of awareness of dairy farmers about the appropriate mating time, insufficient artificial insemination agents. Most artificial insemination services are performed by unprofessional and even illiterate people. This situation has caused the level of animal deaths to be high, especially in Andkhoy and Qurghan districts. In this respect, the findings of the present research are slightly different from those of (Salam, 1976). According to this author, the best time to mate is 6-16 hours after the onset of mating. But the findings of the present research in this case are more than the report of this author.

VIII. CONCLUSION

Research on the factors affecting the calving interval has shown that the calving interval of local cows averages 465 days. And the interval from birth to the first begging is an average of 75 days. Now, the standard interval between calf birth and the first begging is less than the results of this research.

Recognition of female cattle by cattle breeders in Faryab province is not a new problem. If 76% of females are not identified in time and 25% of females are not identified in time.

The uptake rate of cattle in the first mating is 38% and in the third mating is 89%. That is, in the first mating, they carry less due to problems with the reproductive system.

The results of this research showed that the cases of dystocia, placenta previa and uterine infection are 39, 26 and 25 percent of the problems of the reproductive system of cows in the research area, respectively.

**Suggestion**

To reduce the long interval between calving of local cows, the level of awareness of dairy farmers about timely Identification of female cows, appropriate mating time for pregnant cows and encouragement of dairy farmers to artificial insemination services through regular long-term development programs to be taken.

So, that local cows can show their production capacity. In the field of nutrition and their diseases, taking into account the different stages of production. Raise the awareness of farmers through regular and expanding programs on nutrition and disease control so that farmers can better care for their livestock affairs and increase the level of production of their animal products and change from self-consumption to national consumption.

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