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RESEARCH ON FEEDING DAIRY COWS IN PUERPERAL PERIOD

Georgiana LIŢOI[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, 011464, Bucharest, Romania, Phone: +40 (21) 318 25 64, Fax: +40 (21) 318 25 67

Corresponding author email: georgiana.litoi@gmail.com

Abstract

This paper aims to study the effect of feed rations structures and other factors on the reproductive performance and the yield in dairy cattle. It follows a study conducted between January 2013 and January 2014 on 60 animals from Arges County, using the comparative method. The animals were analyzed by groups, in a commercial type A farm and in GP system (household population) and by the period of the sexual cycles.

Key words*:cow feeding, puerperal period, milk cows.*

INTRODUCTION

Diet is one of the most important external environmental factors that contribute to high milk yields, namely the development and reproduction of animals. Poor nutrition during pregnancy, lack of exercise and polluted microclimate are directly related to the frequency of puerperal disorders.

In case of undernourishment, animals become susceptible to diseases and reproduction is disturbed by lowering their fecundity and prolificacy. Milk production and weight gain will also be reduced, which ultimately leads to the cost price raise of the products obtained and hence lower profitability of livestock.

Normal and pathological reproduction problems in farm animals are of great interest because they are affecting the livestock increasing, the breed structure improvement and production increasing, too. Studies with dairy heifers and older cows have shown little effect of maternal nutrition during the last month of gestation on calf birth weight or dystocia (Tapaloaga P., 2002). Two-thirds of fetal birth weight is occurred during the last trimester of gestation. Severe nutritional restriction during the last trimester, to the extent that the dam loses body condition, leading to reduced placental and foetal weight and pelvic area, can result in dystocia and stillbirth due to uterine inertia and inadequate relaxation of the pelvic ligaments (Tapaloaga, 2002). Overfeeding during the last trimester, to the point that dam body condition score is increased can result in fetal oversize and excess adipose deposition in the birth canal in heifers with consequent dystocia and stillbirth (Stoica, 1994).

MATERIALS AND METHODS

Results from this paper have been incurred by a survey conducted during January 2013 - January 2014 on a batch of 60 animals using the comparative method.

In order to analyze the environmental factors, food and microclimate, the used methods were documenting from scientific literature and the interpretation and analysis of the results was made in terms of quality and quantity.

The study followed 60 lactating cows from the Brown cattle breed between January 2013 and January 2014 in Arges County, as follows: 30 animals from the PG (population household) system and 30 animals from a commercial type A farm. Postpartum uterine involution was monitored for each animal and animal examination was performed every 3 times/day. The presence of clinical signs of oestrus was recorded in the individual gynaecological sheets. The 30 animals in the commercial farms were fed with a complete balanced ration for middle milk yield.

The 30 animals in the population households were fed differently, depending on the possibilities of each household.
The 30 cows in commercial type A farm were divided into groups depending the moment of the heat appearance after calving:

- Group I consists of 11 cows, they had estrus at the first sexual cycle, at 21 days respectively;
- Group II consists of 10 cows, they had estrus at the second sexual cycle, at 42 days respectively;
- Group III consists of 3 cows, they had estrus at the third sexual cycle, at 62 days respectively;
- Group IV consists of 4 cows, they had estrus at the fourth sexual cycle, at 84 days respectively.

The 30 cows belonging to the P.G. system (population household) were also divided into groups depending the moment of the heat appearance after calving, too:

- Group I consists of 6 cows, they had estrus at the first sexual cycle, at 21 days respectively;
- Group II consists of 10 cows, they had estrus at the second sexual cycle, at 42 days respectively;
- Group III consists of 7 cows, they had estrus at the third sexual cycle, at 64 days respectively;
- Group IV consists of 4 cows, they had estrus at the fourth sexual cycle, at 84 days respectively;
- Group V consists of 3 cow, it had estrus at the fifth sexual cycle, at 105 days respectively.

RESULTS AND DISCUSSIONS

The concept of animal fertility was approached by various researchers, depending on diet and other factors.
During **winter time**, animals should be given food rations with voluminous and succulent fodder satisfying 60-100% of the required values plus concentrates depending on the milk production.
Hay is a basic component of the food ration and an important source of proteins, minerals, vitamins, and the recommended amount of 1.8-2 kg/100 kg live weight. For dairy cows are recommended alfalfa hay, clover, mash and cultivated grasslands. In hilly areas, hay arerepresented by the mixture of grasses with legume, specific to the area. **Roughage** is recommended depending on milk production, reaching to 9-12 kg / head / day. For lactating cows are recommended alfalfa hay, clover, mash and cultivated grasslands (Dinescu, 2005).
Fodder concentrates are recommended in amounts of 0.25-0.35 kg/l milk for the cows with milk yield higher than 8-10 l in winter and 13-15 l in summer. Due to the fact that animals are fed with natural hay, it is imperative that the ration contains both wheat bran (25-50%) and grist (10-15%). At the end of the winter period, the best hay of legume, silage and concentrate mixtures with vitamin and mineral well-structured premixes are used in daily rations (Dinescu, 2005).

Summer feeding
During summertime, basic fodder is the grassland, from cultivated grasslands to alpine pastures. Additional concentrates (wheat bran) were added. Green fodder given to dairy cows averages 10-12 kg/100 kg live weight. Alfalfa and clover are recommended to be administered in withered form (Dinescu, 2007).
Following observations made on commercial type A farm, was found that:
Group I, consisting of 11 animals, received a balanced food ration, ensuring the necessary proteins, minerals and vitamins, microclimate was appropriate, postpartum uterine involution was monitored by clinical transrectal examination and was found that after 21 days, full morphological uterine involution was complete.
Group II, consisting of 10 cows, consists in animals with a medium milk yield with good reproduction results, even very well at artificial insemination.
Group III, consisting of the 3 cows, which had estrus at the third sexual cycle experienced unfortunately retention of the foetal covering. They have a much higher milk yield in comparison with the animals of groups I and II, and had a prolonged cold period to the group I and II cows.

Foetal coverings were removed; pessaries and antibiotics were administered for 3 consecutive days. Leakage and the general condition of the animal were also monitored.

Group IV consists in animals are primiparous, they accidently mated during grazing.

All these animals reared in commercial farms received balanced rations in vitamins, minerals, energy and proteins.

Animals that are part of the **population household (PG)** presented poor living conditions, they were fed with poor quality hay, without fodder concentrates and without ad libitum watering, while the animals from the commercial type A farm benefited during summertime from ad libitum cultivated pasture, combined fodder concentrates, combined semi silage perennial grasses, winter brewers draff in wintertime. At the 6 cows from **group I**, uterine involution was complete, animals were primiparous. Animals were monitored and examined daily and the changes that occurred were noted in individual gynaecological sheets.

Cows in **group II** presented poor living conditions and are at the third gestation and presented dystocia for two consecutive years and following placental retention. Lack of balanced rations and lack of appropriate microclimate led to consecutive dystocia, subsequently delaying the onset of sexual cycle.

Group III with an average of the sexual cycle of 60 days, are at the fifth gestation, two of them had twin births. At three of the animals mastitis and embryo death occurred, subsequently found due to the lack of microelements.

Group IV, the four cows had hoof conditions, consequence of hard floors.

Group V, 3 cows had retention of fetal covering for three consecutive years, and the last gestation was not carried to term because of a late miscarriage. Purulent discharge occurred and was administered Metrosept antibiotics. Uterine involution and leakage characteristics were monitored.

Table 1. Details about animal groups numbers and sexual cycle period

	Type A farm animals / group	Estrus in I, II, III, IV and V sexual cycles	Actual physiological sexual cycle period for type A farm animals group	Population Household (PG) animals / group	Estrus in I, II, III, IV and V sexual cycles	Actual physiological sexual cycle period for GP animals group
Group I	11	I	21 days	6	I	21 days
Group II	10	II	42 days	10	II	42 days
Group III	3	III	62 days	7	III	64 days
Group IV	4	IV	84 days	4	IV	84 days
Group V	-	-	-	3	V	105 days

CONCLUSIONS

It is clear that fodder rations are strictly related to reproductive performance, especially for dairy cows.

It was found that for the animals that received balanced rations and had a suitable microclimate, the health status has not been affected as much as those who received unbalanced rations.

Unqualified interventions in dystocia, unsanitary conditions, food without vitamins, minerals and proteins have led to delayed sexual cycles.

Cattle's breeding is harder than other species because deviations in fodder rations and living conditions have direct effects on the reproduction function (Tapaloaga, 2008).

The effects of uncontrolled puerperium that degenerate into pathological disorders are serious and with repercussions on reproduction and yield. The increased capability for milk production has been associated with a decline in fertility of lactating cows. Nutritional requirements increase rapidly with milk production after calving and result in negative energy balance (Stoica, 1994).

The negative energy balance delays the time of first ovulation through inhibition of LH pulse frequency

and low levels of blood glucose and insulin that collectively restrain oestrogen production by dominant follicles. It reduces serum progesterone concentrations and fertility. Diets high in crude protein support high milk yield, but are also associated with lower reproductive performance. High protein can result in elevated plasma urea concentrations that affect the uterine environment and fertility. Nutritional interactions resulting in poor fertility of high producing dairy cows include the antecedent effects of negative energy balance and effects of high dietary protein.

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