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Research Article

REPRODUCTIVE DISORDERS AND LOW FERTILITY IN COWS

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ABSTRACT

At present, it is necessary to produce more milk per cow per year more efficiently, due to the undeniable improvements in the dairy industry; in nutrition and food, mainly in formulating rations for animals, according to production levels, as high, medium and low; as well as genetic herd. However, these improvements have resulted in problems, the results of which usually has been, the presence of reproductive problems, resulting in general terms, low reproductive and productive performance of the animals. Despite the advances that exist today on feasible technologies applied in breeding and animal production, few farmers or ranchers have shown concern for improving the general environmental conditions of their Units of Animal Production, without taking into account that these conditions are largely responsible for animal health, welfare altering them and impacting significantly in the presence of problems of reproductive and productive nature, significantly increasing production costs in the dairy industry. In this paper, some causes that may lead to low fertility in cows are described.

INTRODUCTION

During the last two decades, the advances in genetic improvement, the area of nutrition and in the improvement of animal management have made the average production of cows specialized in milk production increasing; However, such an increase in dairy production has negatively impacted the reproductive performance of these animals, such as low conception rates, which do not correspond to those achieved 20 to 30 years ago; So that before conception rates of 60% could be attained, at present and at best, can only be achieved, from 40 to 50%. From all this, we can say that at present, 15 to 16% of cows with stray repetition problems can be accepted, which means achieving at least 45% of conceptions (Cavazos, 2001, Cordova *et al*. 2002)

At present, the problem of repetitive cows is considered to be the second reproductive problem, after the problems of postpartum infants, mainly in Units of bovine production of tropical zones, which is considered as a problem of low fertility, that sometimes, Is below 30% of gestations. From the practical point of view, the problems of low fertility, is present, when the following characteristics are presented:

- Return to estrus from 19 to 23 days, after the third service or artificial insemination (AI), with no apparent cause.
- Exhibition of normal intervals between services.

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- No presence of abnormal genital discharges.
- Absence of abnormalities in the genital organs, detectable by rectal palpation (Cavazos, 2001).

It is known that fertility problems in Animal Production Units (PAUs) are multifactorial, including disorders in oogenesis, oocyte degeneration, ovulation disorders, failure of fertilization, inflammation of the ovary, Disorders of the oviducts, alterations in the uterus such as metritis and endometritis, early embryonic mortality, among others.

On the other hand, the low fertility of the animals in UPA, is directly related to metabolic disorders, whose result is that the high producing cows can usually present negative energy balance during the first 70-80 days postpartum. Here are some vital points related to the fertility problem in dairy cows.

Causes of Infertility Caused By Man

One can think that man does not have to do with the breeding faults of cattle, but if we analyze it carefully, we will see that it does have a lot to do; Because man is directly responsible for the management of livestock in general terms, so it is he who owes and has the responsibility to provide livestock with an absolute state of well-being, which has a direct impact on the reproductive performance of animals. Several authors (Azab *et al*., 1993; Howard *et al*., 1998, Studer, 1998, Correa, 2000, Fourichon *et al*., 2000) have shown that animal-related management Feeding and nutrition of these, can cause severe problems of infertility in the Animal Production Unit (UPA) in both females and males; Such as: irregular estrus, an ovulatory estrus, increase in open days and interval between deliveries; As well as a decrease in the reproductive performance of males, in terms of decreased sexual desire and seminal quality.

The performance of the inseminator (inseminator) is of vital importance, the results of which are directly related to their preparation, in terms of training and training in artificial insemination technique (Córdova *et al*., 2008). The work performed by the inseminator in the UPA, has to do with his motivation to carry out his work, the results of which depend on the goals and incentives he receives from it. The attitude of the inseminator to his work depends on the meaning he assigns to what he does; Workload and working hours are also aspects that must be taken into account for the good performance of the worker; As well as the mood you have at the time you do your job, in this case the AI.

The knowledge and skills of inseminators to perform AI are recognized as a significant influence factor in livestock fertility (Peters *et al*., 1984; Dalton *et al*., 2001). The recommended AI technique is to deposit the semen through the cervix into the body of the uterus; which is a problem for many inseminators. A successful way of AI is to deposit the semen into the body of the uterus; However, the determination of the correct anatomical region to deposit the semen represents one of the major problems (Peters *et al*., 1984), in the execution of the AI technique, whose success depends and requires considerable experience.

When AI is used as a method of service in the UPA, accurate detection of estrus is of vital importance in order to obtain better results in the percentage of pregnant females. It has been suggested that the best conception rates in dairy cows are obtained when they are inseminated mid-estrus and up to a few hours after finishing (Dalton *et al*., 2001; Nebel and Saacke, 2001).

AI is programmed considering the onset of estrus as this is a practical predictor of the time of ovulation. In bovine females, ovulation occurs on average 30 to 32 hours after the onset of estrus, it is desirable that before this event occurs there must be a population of sperm previously trained at the uterus-tubal junction for fertilization to occur Successful. During the last 50 years, an AI scheme in cattle, known as AM-PM, has been applied, whose practical application is that the cows that are observed in estrus during the morning are inseminated in the afternoon and those that present estrus through the Be inseminated on the following morning; As long as the method of detection of esters is accurate.

Semen management is elementary in any AI program, since success will depend on the fertility of the semen used. Genetic companies that distribute frozen semen all over the world ensure fertility and also guarantee a dose of insemination with a sufficient number of spermatozoa whose success depends on the fertility potential of the breeding male; In cattle, is generally between 20 and 30 million viable spermatozoa before freezing and with a motility of not more than 40% after thawing; However, true success will depend on some other factors such as the general health of the female, proper detection of estrus and the skill of the inseminator to perform AI. From the above, we can indicate that man plays a vital role in the fertility of cattle of any species in the Animal Production Units, anywhere in the world.

Nutritional Causes That May Cause Infertility

Most of the chronic nutritional deficiencies determine, first, a decrease in the rate of growth; In adult animals, loss of muscle status, weakness and death. Nutrition infertility can be present in cases such as: if the amount of food available is limited during the stages of growth of heifers, from weaning to puberty, at the end of gestation and during the first few days which follow calving, when pastures or forage crops occur on lands that have insufficient amounts of minerals considered essential for reproduction. The most common minerals are: cobalt, copper, manganese, phosphorus and selenium (Mc Clure, 1995).

The effect of the metabolic changes caused by the negative energy balance (BEN), caused by the energy-poor diet, provided to high producing cows, causes low fertility; which is caused when high-protein diets are administered in relation to energy consumption. Diets with crude protein content of 17 to 19% may cause decreased fertility; Cows fed this way have high concentrations of urea and ammonia in blood and uterine fluids, which affects the viability of sperm, oocytes and embryos (Butler, 2000).

Blood urea concentrations greater than 20 mg / dl are associated with low fertility. In invitro conditions, it has been observed that concentrations equivalent to those that would have the cows consuming diets high in protein, affect the embryonic development, which is reflected in a reduction of the proportion of embryos that arrive at the state of blastocyst. In order to supply all the nutrients to the high producing cows, it obliges to offer high energy diets based on high proportions of grains, whose effect is reflected in subclinical alterations in

Function of micronutrients in animal reproduction

Micronutrient	Function	Consequence-deficiency
Vitamin A	They maintain the integrity of the reproductive tract and favor the reproductive process in females and males.	It stops puberty, both in females and males; Predisposes to low rates of fertilization and embryonic mortality, as well as to placental retention and in males reduces sexual desire.
Vitamin E	It promotes and maintains reproductive life.	It predisposes to placental retention and in males to malformations and low sperm concentration in the ejaculate.
Selenium	It acts as cofactor of the enzymatic system glutathione peroxidase, responsible for the intra and extra cellular oxidation of the cell membrane of the cells that integrate the reproductive tract.	Predisposes to low fertility; Predisposition to placental retention and to ovarian cysts; In males, reduces sperm motility and concentration.
Copper	It promotes hormonal physiology and prostaglandin synthesis.	Predisposition to low fertility; Disorders in the estrous cycle, embryonic and fetal death; Abortion and placental retention.
Zinc	It favors the function of several metabolic enzymes and hormonal function in females and males.	Predisposition to low fertility, prolificity and placental retention; In males, impairs spermatogenesis and the development of secondary sex organs.

Butler, 2000; Smith y Akinbamijo, 2000.

ruminal pH, being associated to problems of low fertility, due to loss of Gestations caused by ruminal acidosis. A proposed hypothesis of the mechanism of this phenomenon is that the diet high in grain content, causes acidosis and an elevation of free endotoxins, causing release of prostaglandin F2α and regression of the corpus luteum. We can say that poor nutrition is one of the major causes of reduced fertility in cattle in tropical / subtropical areas. Reproductive research in the postpartum period indicates that body condition estimation (CC) is a useful indicator of the energy status and reproductive performance of dairy cows (Córdova, 2002).

The following are the most important components to be taken into account for the good nutritional and nutritional management of dairy cows:

Energy

A negative energy balance is the main source of the problem, the origin of which is low consumption of energy-rich food (Veepro, 2002). In addition, other postpartum reproductive disorders may occur, such as delayed ovulation, prolonged open days, and periods of infertility, which may be temporary or permanent.

Vitamins

The absence or deficiency of vitamin A and beta-carotene in the feeding and nutrition of farm domestic females results in reproductive disorders, including placental retention. Another of the vitamins involved in the problem is the E, whose consideration is diet is fundamental, as well as vitamin C. These vitamins are natural antioxidants and their presence in nutrition is critical for the prevention of placental retention and other disorders (Smith and Akinbamijo, 2000).

Minerals

The presence of micronutrients, like minerals in the feeding of reproductive animals, both females and males, is of fundamental importance. Many reproductive failures, including placental retention, could be avoided by including small amounts of the following minerals in the diet: Selenium, copper, molybdenum and zinc (Smith and Akinbamijo, 2000).
The following table shows the role of some micronutrients in the reproductive performance of dairy cows and in the reproduction of animals in general.

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