# Induction of estrus in buffalo by luteolysis management (single PGF and dual administration)

**Liliana GHINEȚ (CIORNEI), Dan DRUGOCIU, Petru ROŞCA, Ştefan CIORNEI**
University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, Department of Reproduction, Aleea Sadoveanu 8, 700489-Iași, Romania
l.ciornei@yahoo.com

***Abstract***
*Induction of estrus in buffaloes is more difficult to obtain compared to that in bulls. There are many hormonal protocols, applied through reproductive biotechnologies, which can generate favorable results, if optimal conditions are used, managing cyclicity, seasonality, nutrition and health. Regarding the induction of estrus in cattle and buffaloes using prostaglandins was used. These PGF2α have a luteolytic effect on the luteal body and will induce increased pituitary gonadotrophin secretion within 2-3 days of application. Buffaloes that respond to PGF treatment are those that have a regular cycle and have a luteal activity within 11 days. In the case of our study, a single dose of PGF therapy was initiated, following the occurrence of estrus after 2-3 days. After the first administration of PGF, 6/24 females were diagnosed in the estrous phase, representing 25%. Thus RC for the induction of estrous with PGF in single and repeated dose at 11 days was 41.6%*
***Keywords****: buffalo, estrus, PGF, gestation*

## Introduction

For the stimulation of the estrous phase, the protocol described in the specialized literature (Ardelean V. 2002,) regarding the induction of estrus in cattle and buffaloes using prostaglandins was used. These PGF2α have a luteolytic effect on the luteal body and will induce increased pituitary gonadotrophin secretion within 2-3 days of application.

The reproductive seasonality of the dairy buffalo is the physiological factor that exerts the greatest impact on this economic activity.

One of the limiting factors in the application of artificial insemination (AI) in buffaloes is the difficulty in the estrus detection. A small number of females exhibit homosexual behavior, the signs of estrus are discrete, and it occurs mainly at night. Therefore, the use of hormonal protocols associated with FTAI makes reproduction in these animals more advantageous and practical, especially during the seasonal anestrus.

The estrous cycle is characterized by a series of follicular waves. The numbers of waves differ between species and within species. In majority of cattle (~75%) 3 waves have been observed whereas 63.3% of buffalo exhibit 2 waves of follicular growth at an interval of about 11 days during the estrous cycle (Gasspari B. 2007).

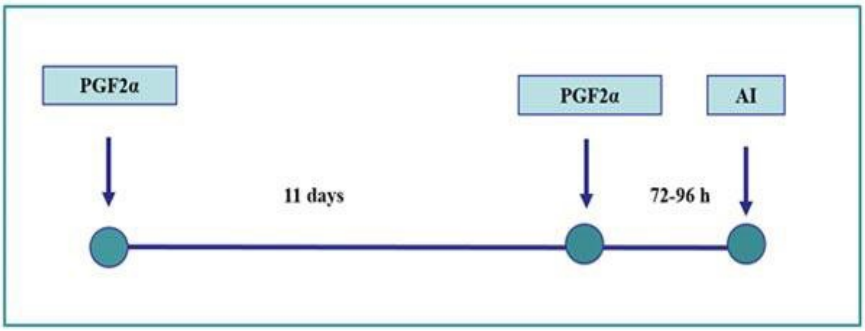

Fig 1. Protocol for induction of estrus in buffaloes based on PGF administration

**Material and methods**

This experiment was performed on a number of 24 multiparous buffaloes (***Terra de Bufalo*** farm Razboieni, Iasi) over 60 days postpartum and after the lactation period. From the point of view of seasonality, the buffaloes were at the beginning of the breeding season, represented by February.

After gynecological and general examination, a dose of Estrumate in a dose of 2 ml i.m was administered to all buffaloes (24). Thus after the first dose of PG if there is active CL and secretory of P4, its luteolysis will occur, the decrease of P4 secretion and the induction of FSH and adenohypophyseal LH synthesis under the influence of hypothalamic GN-RH. If the FSH titer is sufficiently large and constant, a follicular wave will induce which speeds up the maturation of a follicle with the onset of clinical estrus.

**Rezult and discutions**

If within 2-3 days of prostaglandin administration, no clinical symptoms of estrus are observed, after 11 days the second dose of PGF is administered. The booster dose of prostaglandin is based on the fact that in the previous period (2-11 days) there were no luteal structures to respond to treatment in the ovary. After this interval, which also includes the phase of organization and proliferation of a possible luteal body, this will become sensitive to PGF and the second dose administered at 11 days will have luteolytic effect leading to the appearance of estrus.

Buffaloes that respond to PGF treatment are those that have a regular cycle and have a luteal activity within 11 days. In the case of our study, a single dose of PGF therapy was initiated, following the occurrence of estrus after 2-3 days. After the first administration of PGF, 6/24 females were diagnosed in the estrous phase, representing 25%.

The second dose of PGF was administered to 75% of the buffaloes, which induced estrus on days 13-14, at 8/24 buffaloes, represented by 33.3%. Taking into account the induction of estrus by the administration of luteolytic factor (PGF) in bivolites in February, we find a value of 58.3% (14/24) induced estrus (25% after single shot, respectively 33.3% after tow shot PGF).

The rate of occurrence of estrus was also monitored by the acceptance of the male, and following the hormonal treatment the mount was conducted with a selected bull bull.

Diagnosis of pregnancy was determined by ultrasound 60 days after estrus. The conception rate (RC) was calculated as the number of pregnant animals diagnosed in the total number of animals entering PGF treatment (one with two administrations). Thus RC for the induction of estrous with PGF in single and repeated dose at 11 days was 41.6% (10/24).

Table 1. Appearance of estrus and conception rate (RC) in buffaloes following the protocol, *PGF one și two shot*

| **Buffalo's first dose of PGF** | | **Estrus + Natural mating (2- 3 days)** | | **The second dose PG (day 11)** | | **Estrus + Natural mating (13-14 th day)** | | **Rate of conception (60 days gestation)** | |
|---|---|---|---|---|---|---|---|---|---|
| No | % | Nr | % | Nr | % | Nr | % | Nr | % |
| 24 | 100 | 6 | 25% | 18 | 75% | 8 | 33,3 | 10 | 41,6 |
| | | 14/24 (58,3%) | | | | | | 10/24 (41,6%) | |

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