

## Comparison of Calving Rates with Two Oestrus Synchronization Protocols in Doro Ncanga Buffalo Cows Raised Extensively In Tambora Savannah

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### ABSTRACT

This study was undertaken to compare two estrus synchronization protocols in Doro Ncanga buffaloes. Twenty four cows were divided into two groups of 12 cows. Animals in Group 1 were treated with two injections of PGF<sub>2α</sub> (Estron; Dinoprost tromethamine) 25 mg each intramuscularly at 11 days apart. Animals in Group 2 received 100 µg GnRH (Fertagyl; Gonadorelin acetate) on Day 0 and PGF<sub>2α</sub> on Day 7. Each animal in the two groups received one timed artificial insemination 72 h after the last PGF<sub>2α</sub> administration. In Group 1 and Group 2, calving rates to the first service were 50% and 33%, respectively. Though the percentages of calving rate per synchronization were numerically higher in Group 1 than Group 2, the difference was not significant ( $p > 0.05$ ). The findings indicated that synchronization of estrus with PGF<sub>2α</sub> alone resulted in a higher calving rate compared with synchronization of estrus using a combination of PGF<sub>2α</sub> and GnRH.

**Keywords:** Buffalo, Oestrus Synchronization, Fixed-Time AI, Calving

### INTRODUCTION

Doro Ncanga swamp buffalo plays an important role in the agricultural economy of Dompu Regency. This local buffalo raised in primarily for meat, while milk being of secondary importance. The breed well adapted on the native savanna of mountainous Tambora in Sumbawa island, thus the areas become its permanent habitat for most of the year. Efforts to increase meat production of Doro Ncanga swamp buffalo might be achieved by producing live calves. This in turn can be obtained by increasing dam productivity through regular calving rate.

One of the most important constraints in improving the productivity of Doro Ncanga swamp buffalo is an inherent problem of improper detection of oestrus and improper time of insemination. Poor estrus expression and a prolonged intercalving interval compromise the reproductive efficiency of female buffaloes. These limitations are exacerbated during the hot season, when fertility decreases dramatically. Pregnancy rate decrease further because difficulties in detecting estrus (De Rensis and López-Gatius, 2007). Synchronization of oestrus is a technique by which most of the female population or herd can be brought into oestrus at a predetermined time. Synchronization of estrus have been developed to help farmers manage reproduction more efficiently (Larson and Ball, 1992). There are two basic types of treatments for oestrus synchronization: (1) shortening of the luteal phase of the cycle by the exogenous administration of luteolytic agent i.e. PGF<sub>2α</sub> and (2) prolongation of the luteal phase of the cycle by the administration of progestagen. PGF<sub>2α</sub> has been accepted as a luteolytic agent that ends the life span of the bovine cyclic corpus luteum at the end of

diestrus (Morrow, 1986). For increasing conception rate in PGF<sub>2α</sub> induced oestrus cow, gonadotrophin releasing hormone (GnRH) was administered (Tandle *et al.*, 2000).

This study was undertaken to compare calving rates following two estrus synchronization protocols, first PGF<sub>2α</sub>+PGF<sub>2α</sub> and second GnRH+PGF<sub>2α</sub> in Doro Ncanga swamp buffalo cows raised extensively in Tambora savannah.

## MATERIALS AND METHODS

Twenty four cows were divided into two groups of 12 cows. Animals in Group 1 were treated with two injections of PGF<sub>2α</sub> (Estron; Dinoprost tromethamine) 25 mg each intramuscularly at 11 days apart. Animals in Group 2 received 100 µg GnRH (Fertagyl; Gonadorelin acetate) on Day 0 and PGF<sub>2α</sub> on Day 7. Each animal in the two groups received one timed artificial insemination 72 h after the last PGF<sub>2α</sub> administration. The calving rates obtained in the experimental groups were compared using Chi square test.

## RESULTS AND DISCUSSION

In Group 1 and Group 2, calving rates to the first service were 50% (6/12) and 33% (4/12), respectively. The overall calving rate was found to be 41.67% (10/24) (Table 1). Though the percentages of calving rate per synchronization were numerically higher in Group 1 than Group 2, the difference was not significant ( $p>0.05$ ). The calving rate of Doro Ncanga swamp buffaloes following double intramuscular injection of prostaglandin PGF<sub>2α</sub> recorded in this study was higher than that of Perera *et al.* (1977) who reported fertility rate of 33% in swamp buffalo following single or double injection regimes, with natural service and fixed time inseminations at induced oestrus.

**Tabel 1.** Calving rates of Doro Ncanga swamp buffaloes following oestrus synchronization using two different protocols and single fixed-time artificial insemination (n=24)

Protocol of Oestrus Synchronization	Reproductive Status		Total
	Calving	Not Calving	
1. PGF <sub>2α</sub> + PGF <sub>2α</sub>	6	6	12
2. GnRH + PGF <sub>2α</sub>	4	8	12
Total	10	14	24

The lower calving rate observed with protocol 2 (GnRH on day 0 and PGF<sub>2α</sub> on day7) in Doro Ncanga swamp buffaloes warrant further investigation by implicating large numbers of cows in order to elucidate the constraints and to obtain high calving rates in this domestic species.

## CONCLUSIONS

The findings of this study indicated that synchronization of estrus with a double injection of PGF<sub>2α</sub> alone resulted in a higher calving rate compared with synchronization of estrus using a combination of PGF<sub>2α</sub> and GnRH.

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