

**SOME REPRODUCTIVE ASPECTS OF FEMALE
BUFFALOES**

BY

AHMED LUTFY EL-SAYED HASHEM

B.Sc. (Animal Production) Faculty of Agriculture,
Ain Shams University, 1985

A thesis submitted in partial fulfillment
of
the requirements for the degree of

MASTER OF SCIENCE

in
Agriculture
(Animal Physiology)

Department of Animal Production
Faculty of Agriculture
Ain Shams University

1996



بسم الله الرحمن الرحيم

﴿إنما أمره إذا أراد شيئاً أن يقول له كن فيكون﴾
فسبحان الذي بيده ملكوت كل شيء وإليه
ترجعون ﴿

الْعَلِيِّ

سورة يس آية (٨٣)

APPROVAL SHEET

**SOME REPRODUCTIVE ASPECTS OF FEMALE
BUFFALOES**

BY



AHMED LUTFY EL-SAYED HASHEM

B.Sc. (Animal Production) Faculty of Agriculture,
Ain Shams University, 1985

This thesis for M. Sc. degree has been approved by :

Prof. Dr. AHMED ABU EL-SUAD *72821*

Prof. Of Animal Physiology,
Animal Production Department,
Faculty of Agriculture (Moshtohor) ,
Banha University

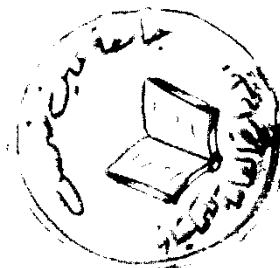
Dr. HANAFY EMBABY EL-SOBHY *H-E-EL-Sobhy*

Associate Prof. of Animal Physiology ,
Animal Production Department ,
Faculty of Agriculture
Ain Shams University

Prof. Dr. MOHAMED A, EL-FOULY *M. A. El-Fouly*

Prof. of Animal Physiology ,
Animal Production Department ,
Faculty of Agriculture
Ain Shams University

Date of examination : / / 1996



SOME REPRODUCTIVE ASPECTS OF FEMALE BUFFALOES

BY

AHAMED LUTFY EL-SAYED HASHEM

B.SC. (Animal Production) Faculty of Agriculture,
Ain Shams University, 1985

Under the supervision of

Prof. Dr. Mohamed A, El-Fouly

Prof. Of Animal Physiology .
Faculty of Agriculture , Ain Shams University.

Prof. Dr. Mohamed A, Al - Ashry

Prof. Of Animal Nutrition.
Faculty of Agriculture , Ain Shams University.

Prof. Dr. ZINAB SULTAN

late Prof. Dr. Of Animal physiology
ARC, Ministry of Agriculture.

ABSTRACT

Ahamed Lutfy El-Sayed Hashem, Some reproductive aspects of female buffaloes, Unpublished Master of Science, University of Ain Shams, Faculty of Agriculture, Department of Animal Production, 1996.

The purpose of the present study is to investigate cyclic and acyclic reproductive patterns of the Egyptian buffalo cows. Twelve healthy buffalo cows were used in the present study, The animal belong to project No. G-1-1 (Reproductive patterns of Egyptian buffaloes) . Two methods were used to study the ovarian cyclicity. There were blood plasma progesterone and data on estrus activity. Blood was collected three times weekly and heat was checked twice daily.

Results obtained show that The average milk produced from buffalo cows , which calved during hot season ($n = 8$) was 1527.63 ± 243.658 kg during lactation period of 343.25 ± 21.476 days, buffalo cows which calved during cold season ($n = 4$) produced 1593.73 ± 145.052 kg milk in average during 314.0 ± 29.218 days of lactation period.

The average duration of post partum anestrus was 66.1 ± 16.01 days. During this period the plasma progesterone concentration was basal. The average length of short low peak progesterone cycle was 10.02 ± 0.74 days and its P_4 peak was 1.04 ± 0.12 ng / ml. The average length of regular progesterone cycle was 23.78 ± 1.02 days and the mean peak of P_4 in the plasma was 4.50 ± 0.21 ng / ml. The post - partum interval to first ovulation was 121.3 ± 24.80 days. The average interval to first post partum ovulatory estrus was 177.75 ± 22.52 days. The ovulatory estrus was distributed around year . The mean ovulatory estrus per buffalo cow was 5.0.

The average number of ovulation per buffalo was 11.08. The number of quiet ovulation per buffalo was 6.08. The highest percentage of quiet ovulation was recorded during December.

May had the lowest percentage of ovulatory estrus, however, August had the highest percentage. The mean interval between recorded estruses was 50.9 ± 6.03 days. Hot calver buffaloes had an insignificant short interval between detected estrus's as compared with cold calvers ones. The percentage of buffalo cows showing long term anestrus was 41.66%. The average length of anestrus period was 109.6 days. From 60 estrous cycles, During estrus the buffalo cow show auto behaviour symptoms including bellowing , tail raising and restlessness. The number of bellowing showed by estrus buffalo was 32.42 ± 7.47 per hour , however the tail raising was 18.21 ± 2.84 time during one hour. The estrus buffalo cow urinated 0.48 ± 0.06 time per hour.

Keywords : Buffaloes , heat, oestruos behavior.

ACKNOWLEDGMENT

I thank Allah ,, the most gracious , most beneficent for the help and guidance to achieve goals and make them possible .

The author wishes to express his great indebtedness and sincere appreciation to Prof.Dr.M.A.El-Fouly , professor of Animal physiology , Department of Animal Production , Faculty of Agriculture , Ain Shams University , for suggesting the problem , supervision and guidance throughout the course of this study . Without his help and support the completion of this work would have been quite impossible.

Thanks is due to Prof.Dr.M.A.Al-Ashry , professor of Animal Nutrition and Head of Animal Production Department , Faculty of Agriculture , Ain Shame University for supervision the work.

I am greatly indebted and grateful to late Prof.Dr.Zainab Sultan was on the board of advisors of this thesis and chaired the suggestion of the proposal of the work done here . Her early was indeed very sad and a great loss to me , I will always remember her.

Sincere gratatude and thanks to Dr.H.M.Farghally of the Atomic Energy Authority Egypt for his invaluable help and advice on assaying progesterone hormone . His good spirit in cooperating is greatly appreciated.

Deep thanks is due to Dr.E.E.Tharwat , Lecturer of Animal physiology , Faculty of Agriculture , Ain Shame University , for providing most facilities and his help in preparing the manuscript .

I wish to thank Dr.Enaam M. Mokhless , Senior Research Officer of Animal physiology , Animal Production Research Institute , Ministry of Agriculture , for providing facilities of the experiment .

Thanks to the staff members and colleagues of buffalo Research Department.

I would like to express my sincere gratitude and thanks to all staff member of Animal Production Department , Faculty of Agriculture , Ain Shams University , for their good spirit of cooperation as well.

The author is greatly indebted and grateful to his father , mother , wife , brother , sisters and their husbands , for their love , patience , advice and continuous help throughout the course of the study.

My sincere gratitude and thanks to all members of my family and for their good spirit and love which made the completion of this work possible.

CONTENTS

	Page
- List of Tables	IV
- List of Figures	VIII
 . INTRODUCTION	 1
 . REVIEW OF LITERATURE	 3
A- Post-partum reproductive performance.	3
A.1 . Uterine involution period (UIP).	3
A.1.1 . Factors affecting UIP.	4
A.1.1.1 . Effect of parity.	4
A.1.1.2 . Effect of season.	4
A.1.1.3 . Effect of suckling.	4
A.1.1.4 . Effect of nutrition.	5
A.2 . Post-partum interval to first ovulation in buffalo (PPOI).	 8
A.2.1 . Factors affecting PPOI	10
A.2.1.1 . Effect of parity.	10
A.2.1.2 . Effect of season	13
A.2.1.3 . Effect of suckling.	14
A.2.1.4 . Effect of nutrition.	14
A.3 . Post-partum interval to first estrus (PPEI).	15
A.3.1 . Factors affecting PPEI.	20
A.3.1.1 . Effect of parity and age.	20
A.3.1.2 . Effect of season.	20
A.3.1.3 . Effect of suckling.	22
A.3.1.4 . Effect of milk yield.	22
A.3.1.5 . Effect of nutrition	23
A.3.1.6 . Effect the type of calving.	23
A. 4. Number of service per conception.. . . .	23

B - The estrous cycle.	24
B.1 . Estrous cycle length in buffaloes.	25
B.1.1. Factors affecting estrous cycle length in buffaloes.	28
B.1.1.1 . Effect of season.	28
B.1.1.1 . Effect of nutrition.	29
B.2 . Estrous cycle phases.	30
B.2.1 . Oestrus.	30
B.2.1.1. Symptoms and intensity of symptoms of oestrus in buffaloes.	30
B.2.1.2 . Heat detection.	38
B.2.1.3 . Timing of oestrus.	42
B.2.1.4 . Duration of estrus.	43
B.2.2 . Metoestrus.	43
B.2.3 . Dioestrus.	43
B.2.4 . Proestrus.	43
C- Progesterone profile during post-partum	44
C.1 . Progesterone concentration during post-partum anestrus period.	44
C.2 . Progesterone concentration during ovarian activity	48
C.3 . Progesterone levels throughout estrus cycle	49
C.4 . Progesterone concentration during pregnancy	50
D- Milk production.	54
- MATERIAL AND METHODS.	56
1. Animal and housing.	56
2. Feeding and watering.	57
3. Reproductive management	57
4. Blood sampling.	58
5. Progesterone assay.	58
6. Rational for studying reproductive patters.	59
6-a) Ovulation.	59