

**EFFECT OF NURSING SYSTEM AND
BIOSTIMULATION ON RABBIT DOES
PRODUCTIVITY UNDER EGYPTIAN
ENVIRONMENTAL CONDITIONS**

By

Nagah Mohamed El-Sayed Hawash

B.Sc. Agric. Cooperative Sci., Higher Institute for Agric.
Cooperation, 2003

A thesis submitted in partial fulfillment
of
the requirement for the Master Degree

in

Environmental Science
Department of Environmental Agricultural Sciences
Institute of Environmental Studies and Research
Ain Shams University

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تأثير نظام الرضاعة والتغذية الحيوي على إنتاجية أمهات الأرانب تحت الظروف البيئية المصرية

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ABSTRACT

To study the effect of nursing system and bio-stimulation on rabbit does productivity under Egyptian environmental conditions, a total of 199 mother does and 20 bucks were used. Two different groups of does (G2 and G4) in comparison with the other two groups (G1 and G3) were used in this study. Primiparous New Zealand White (NZW) rabbit does were distributed among four experimental groups, containing 50, 50, 0 and 49 does, respectively. In control group (G1) mothers were free nursing from kindling till weaning (30days); (G2) mothers were free nursing for 9 days, then separated from their litters for 48 hours(bio-stimulation) then artificially inseminated (AI), after insemination, mothers were controlled nursing (i.e. nursing their litters only one time daily) till day 16 and free nursing till day 30; (G3) mothers were controlled nursing from kindling to day 9, then left free nursing till day 30; (G4) mothers were controlled nursing from kindling to day 16, then free nursing till day 30, mother litter separation was applied in this group as mentioned before in the second group. All groups were artificially inseminated on day 11 post- kindling.

The results of this study concerning the receptivity percentage were 25.5, 69, 36.5 and 73.3 and for the fertility percentage were 21.8, 59.3, 30.2 and 66.9 in G1, G2, G3 and G4 respectively. This indicates that G2 and G4 were higher than G1 and G3 in receptivity and fertility. Present results also showed that fertility rate in does was not clearly related with parity, however the higher value was detected in the sixth parity in G1 and G3 and the second parity in G2 and G4 groups.

It is concluded that mother-litter separation preceded and followed by controlled nursing can improve rabbit doe fertility.

Regarding litter size, still birth and mortality rate during lactation period, no significant differences were detected among

different treatments except mortality rate at the second week of lactation which recorded significant ($P < 0.05$) differences among groups. In all treatments, mortality rate of litter decreased with the advancement of lactation period, especially at the third and fourth week of lactation. Litter birth weight was not significantly influenced by treatments, while litter weights at 2 weeks of age and at weaning were significantly ($P < 0.05$) influenced by treatments being lower in G2 and G4 than G1 and G3. Similar trend was observed in the milk production, parity may have had no significant effect on litter birth and weaning weights while had significant effect ($P < 0.05$) on the milk yield at the first week of lactation.

CONTENTS

	Page
1-INTRODUCTION	1
2- REVIEW OF LITERATURE	3
2-1 Effect of doe-litter separation	3
2-2 Fertility and receptivity	4
2-3 Litter size and the weight from kindling to weaning and mortality rate.	7
2-4 Milk production.	9
3- MATERIAL AND METHODS	12
3-1 Experimental rabbits	12
3-2 Management and feeding	12
3-2-1 Housing	12
3-2-2- Rabbitry environment	12
3-2-3 Feeding and watering	13
3-3 Experimental design	14
3-4 Semen collection and insemination	16
3-5 Determination of rabbits performance	16
3-5-1 does' performance	16
3-5-1-1 Sexual receptivity rate	16
3-5-1-2 Fertility rate	16
3-5-1-3 Milk production	16
3-5-2 Litter performance	17
3-5-2-1 Litter size	17
3-5-2-2 Litter weight	17
3-5-2-3 Still birth	17
3.5.2.4. Mortality rate	17
3-5-3 Buck's performance	17
3-5-3-1 Ejaculation volume	17
3-5-3-2 Sperm concentration	17

II

	Page
3-5-3-3 Sperm motility	17
3-6 Statistical analysis	18
4- RESULTS AND DISCUSSION	19
4-1- Does performance	19
4-1-1 Sexual receptivity rate	19
4-1-2 Fertility rate	22
4-2. Litter performance	25
4-2-1. Litter size	25
4-2-1.1. Litter size at birth	25
4-2-1.2 Still birth	27
4-2-1.3 Litters size at weaning	28
4-2-2 Mortality rate of litter during lactation period	28
4-2-3- Litter weight	30
4-2-3-1. Litter weight at birth	30
4-2-3-2. Litter weight at 2 nd week	30
4-2-3-3 Litter weight at weaning	30
4-3. Milk production	33
5- SUMMARY	39
6- CONCLUSION	43
7- REFERENCES	44
8- ARABIC SUMMARY	

LIST OF TABLES

	Page
1- Composition and chemical analysis of the experimental ration.	13
2- Receptivity rate (%) of NZW rabbit does as affected by nursing and bio-stimulation method at different parities	20
3- Fertility rate (%) of NZW rabbit does as affected by nursing and bio stimulation method at different parities	23
4- Litter size and mortality rate as affected by treatment at different parities in rabbit does	26
5- Average litter weight at birth, 2 nd week and at weaning weights (g) as affected by treatment or parity in rabbit does.	31
6- Milk production (g) as affected by treatment at different parities in rabbit does	34

LIST OF FIGURS

	Page
1- A schema for experimental treatments	15
2- Over all means of receptivity rate (RR) of NZW rabbit does as affected by nursing and doe-litter separation methods.	21
3- Over all means of receptivity rate (RR) of NZW rabbit does during the successive parities	21
4- Over all means of fertility rate (FR) of NZW rabbit does as affected by nursing and doe-litter separation methods.	24
5- Over all means of fertihity rate (FR) of NZW rabbit does during the successive partities.	24
6- Litter size at birth (LSB) and at weaning (LSW) of NZW rabbit does during the successive parities	25
7- Still birth (SB) in NZW rabbit does as affected by nursing and doe-Litter separation method	27
8- Still birth (SB) in NZW rabbits during the successive parities	28
9- Total mortality rates (TMR) of NZW rabbit as affected by nursing and doe litter separation methods	29
10- Total mortality rates (TMR) of NZW rabbit does' litter as affected by parity orders	29
11- Total litters' weight at birth (LWB), at the 2 nd week (Lw-2week) and at weaning (Lww) during the successive parties	32
12- Endividual litters' weight at birth (LWB), at the 2 nd week (LW-2 week) and at weaning (LWW) during the successive parities	32
13- Over all means of individual litters weight at birth	33

	Page
(LWB) and at 2 nd week (LW- 2 week) and at weaning (LWW).	
14- Daily milk production (DMP) of NZW rabbit does during the successive partities at the first week of lactation	35
15- Daily milk production (DMP) of Nzw rabbit does during the successive parities at the second week of lactation	35
16- Daily milk production (DMP) of NZW rabbit does during the successive partities at the third week of lactation	36
17- Daily milk production (DMP) of NZW rabbit does during the successive parities at the fourth week of lactation	36
18- Daily milk production (DMP) of NZW rabbit does as affected by nursing system and doe-litter separation during the successive week of lactation period.	37
19- Over all means of milk production (MP) of NZW rabbit does at the successive weeks of lactation period.	37
20- Pattern of milk production (MP) of NZW rabbit does at the successive weeks of lactation period.	38

LIST OF ABBREVIATION

AI	Artificial insemination
CF	Crude fiber
Con	Control
CR	Conception rate
DAI	Delayed artificial insemination
DE	Digestible energy
DLS	doe-litter separation
EE	Ether extract
FSH	Follicle stimulating hormone
G1	Free nursing from kindling to weaning
G2	Free nursing from kindling to the 9 th day and from day 16 to 30 and separated from day 9 to day 11
G3	control nursing from kindling till the 9 th day then separation for 48h, then free nursing till weaning age
G4	Control nursing for 48h, then free nursing till weaning age
GnRH	Gonadotropin Releasing hormone
H-P-A	Hypothalamo-pituitary axis
HPG	Hypothalamus- pituitary gonad
LH	Luteinizing hormone
LSW	Litter size at weaning
LSB	Litter size at birth
NZW	New Zealand White
NLD	Non lactating does
P.P	post-partum
PMSG	Pregenat mare serum gonadotropin
R-DLS	Regular doe-litter separation for 48h
(R-)	Non receptive does
S-DLS	Split doe-litter separation for 48h

VII

TMR	Total mortality rate
MR	Mortality rate
RR	Receptivity rate (%)
FR	Fertility rate (%)
SB	Still births
E₂	Estradiol hormone
P₄	Progesterone hormone
DMP	Daily milk production
TMP	Total milk production

INTRODUCTION

As result of increasing people in the world especially in the developing countries, there is an increasing demand on animal protein. Rabbit production has potential importance in developing countries as a mean of supplying cheap and high quality animal protein within the shortest possible time. Moreover, the average production of one female is about 35 kg of meat (comes from 60 kg live body weight of her off spring) each year (**Wiittouk *et al.*, 1992**), which is more than one ewe production. Furthermore, rabbit meat is poor in calories and rich in protein. Moreover, the lipid fraction of rabbit meat is high in polyunsaturated fatty acids and especially in linoleic and linolenic acids (**Wittouk *et al.*, 1992**). Also, rabbit meat is the lower energy (160 k cal), the lower fat (8%), the lower in sodium rate (40 mg/100 gm of meat) and the highest in protein (21%), the highest in calcium (20 mg/100 gm) in comparison with other animals. These properties of rabbit meat create an interesting dietic function in human alimentation.

Recently, research has been focused to improve rabbit doe production of litter per year through the definition of optimal time for insemination after kindling. Moreover, studying and evaluating the different mother doe nursing systems and the success of doe-Litter separation (DIs) in relation to artificial insemination (AI) and the using method of controlled nursing (**Eibin *et al.*, 2004**). Bio-stimulation technique is performed through complete separation between nursing mothers and their litters for 48h before AI, which consequently decreases the hormones responsible for lactation and increases the hormones responsible for ovarian follicular growth and reproductivity. Finally, this method is easy to be applied, inexpensive, consistent with animal welfare and adapts with cycled production. So, the objective of this study was