THE EFFECT OF CROSSBREEDING BETWEEN GABALI AND BAUSCAT RABBIT BREEDS ON PRODUCTIVE PERFORMANCE OF THEIR CROSSES

By

AHMED IBRAHIM ABDELMABOUD ELDOMYITY

B. Sc. Agric. Sc. (Poultry Production), Menofiya Univ. (2009)

A Thesis Submitted in Partial Fulfillment
Of
The Requirements for the Degree of

in
Agricultural Sciences
(Poultry Breeding)

Department of Poultry Production Faculty of Agriculture Ain Shams University

2018

Approval Sheet

THE EFFECT OF CROSSBREEDING BETWEEN GABALI AND BAUSCAT RABBIT BREEDS ON PRODUCTIVE PERFORMANCE OF THEIR CROSSES

By

AHMED IBRAHIM ABDELMABOUD ELDOMYITY

B. Sc. Agric. Sc. (Poultry Production), Menofiya University, 2009

This thesis for M.Sc. degree has been approved by:	
Prof. Emeritus of Poultry Breeding, Faculty of Agric University	ulture, Menofiya
Dr. Salah-Eldin Abdelrahman El-Safty	•••••
Prof. of Poultry Breeding, Faculty of Agricultu University.	re, Ain Shams
Dr. Mahmoud Yousef Mahrous	•••••
Associate Prof. of Poultry Breeding, Faculty of A Shams University.	Agriculture, Ain
Dr. Ahmed Galal EL-Sayed Gad	•••••
Prof. of Poultry Breeding, Faculty of Agricultu University	re, Ain Shams

Date of Examination: 11/8/2018

THE EFFECT OF CROSSBREEDING BETWEEN GABALI AND BAUSCAT RABBIT BREEDS ON PRODUCTIVE PERFORMANCE OF THEIR CROSSES

By

AHMED IBRAHIM ABDELMABOUD ELDOMYITY

B. Sc. Agric. Sc. (poultry production), Menofua University, 2009

Under the supervision of:

Dr. Ahmed Galal EL-Sayed Gad

Prof. of Poultry Breeding, Department of Poultry Production, Faculty of Agriculture, Ain Sham University (Principal Supervision).

Dr. Mahmoud Yousef Mahrous

Associate Professor of Poultry Breeding, Department of Poultry Production, Faculty of Agriculture, Ain Shams University.

Dr. Hesham Abdelatty Mahmoud

Researcher of Poultry Breeding, Department of Animal and Poultry Breeding, Desert Research Center

CONTENTS

	Page
LIST OF TABLES	IV
LIST OF FIGURES	VI
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. Doe Litter Traits	3
2.1.1.Litter size:	3
2.1.2. Litter weight	6
2.1.3. Mortality	11
2.1.4. Crossbreeding effects	13
2.1.4.1. Crossbreeding and heterotic effect	13
2.1.4.2. Maternal additive effect	14
2.1.4.3. Direct additive effect	15
2.2. Milk production traits	16
2.2.1. Means and variation	17
2.3. Progeny Traits	18
2.3.1. Means	19
2.3.2. Daily weight gain.	20
2.3.3. Sex	21
2.3.4. Crossbreeding effects	23
2.3.4.1. Direct heterosis effect	23
2.3.4.2. Maternal additive effect	24
2.3.4.3. Direct additive effect	25
2.4. Carcass traits	28
2.4.1. Means	29
2.4.2. Sex	30
2.4.3. Crossbreeding effects	30
2.4.3.1. Direct heterosis effect	30
2.4.3.2 . Maternal additive effect	32
2.4.3.3. Direct additive effect	34
3. MATERIALS AND METHODS	36

3.1. Location and period	36
3.1. Animals	36
3.4. Breeding plan	36
3.5. Housing	36
3.6. Management	37
3.7. Feeding and rations	37
3.8. Milk production traits	38
3.9. Carcass test	39
3.10. Data	40
3.11. Statistical analysis	40
4. RESULTS AND DISCUSSION	42
4.1. Doe Litter Traits	42
4.1.1. Litter size	42
4.1.2. Litter weight	45
4.1.3. Crossbreeding effects	46
4.1.3.1. Direct heterosis effect	46
4.1.3.2.Direct additive effect	47
4.1.3.3.Maternal additive effect	49
4.2. Milk production traits	50
4.2.1. Means	50
4.3. Progeny Traits	53
4.3.1. Means	53
4.3.2. Sex	57
4.3.3. Crossbreeding effects	57
4.3.3.1.Direct heterosis effect	57
4.3.3.2. Maternal additive effect	58
4.3.3.3. Direct additive effect	60
4.4. Carcass traits	62
4.4.1. Means	62
4.4.2. Sex	65
4.4.3. Crossbreeding effects	66
4.4.3.1. Direct heterosis effect	66

III

4.4.3.2. Maternal additive effect	67
4.4.3.3. Direct additive effect	68
5. SUMMARY	69
5.1. Doe litter traits	69
5.2. Progeny Traits	69
5.3. Carcass traits	70
6. REFERENCES	71
ARABIC SUMMARY	1

LIST OF TABLES

Гable No.		Page
1	Distribution of mating groups, number of sire, dam	
	and litters used in different genetic groups study	36
2	Composition and calculated chemical analysis of	
	the ration.	38
3	Actual means and standard errors (SE), for litter	
	size and litter weight in Gabali, Bauscat rabbits	
	and their crosses of the study.	44
4	Estimates of heterosis (Hi), maternal additive	
	effect (Gm) and direct additive effect (Gi) on litter	
	size traits.	48
5	Estimates of heterosis (Hi), maternal additive	
	effect (Gm) and direct additive effect (Gi) on litter	
	weight traits.	49
6	Presents actual means and standard errors (SE) for	
	milk yield traits.	51
7	Presents actual means and standard errors (SE) for	
	milk production traits.	52
8	Presents actual means and standard errors (SE) for	
	body weight traits.	54
9	Presents actual means and standard errors (SE) for	
	body weight gain traits.	55
10	Estimates of heterosis (Hi), maternal additive	
	effect (Gm) and direct additive effect (Gi) on body	
	weight traits.	56
11	Actual means and standard error for carcass traits	
	in Bauscat and Gabali rabbits	63
12	Presents actual means and standard errors (SE) for	
	Carcass traits.	64
13	Estimates of heterosis (Hi), maternal additive	65

effect $(_{\mbox{$G$}}{}^{\mbox{\scriptsize m}})$ and direct additive effect $(_{\mbox{$G$}}{}^{\mbox{\scriptsize i}})$ on Carcass traits.

LIST OF FIGURE

Fig. No.		Page
1	Actual means for litter size in Gabali, Bauscat	44
	rabbits and their crosses of the study.	
2	Actual means for litter weight in Gabali , Bauscat	46
	rabbits and their crosses of the study.	
3	Presents actual means for milk production traits.	52
4	Presents actual means for body weight traits.	53
5	Presents actual means for body weight gain traits.	56

ABSTRACT

Ahmed Ibrahim Abdelmaboud Eldomyati: The Effect of crossbreeding Between Gabali and Bauscat Rabbit Breeds on Productive Performance of their Crosses. Unpublished M.Sc. Thesis, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, 2018.

Data of 518 litter traits (litter size at birth, LSB, and at weaning, LSW, and litter weight at birth, LWB, and at weaning, LWW) produced from 4 genetic groups (2 purebreds and 2 crossbreds) were used. Data were analyzed using crossbreeding effect program to estimate crossbreeding components (additive, heterosis and maternal effect).

Generally the experiment was conducted on Bauscat (B) and Gabali (GAB). The rabbits were fed pellets *adlibitum*, and slaughtered at 12 weeks of age. The following traits were recorded: body weight and average daily gain at birth to slaughter, average feed consumption from weaning to slaughter, slaughter age, carcass weight, meat, bone and fat content of carcass, prime cuts weight (fore part, loin and hind part), and dressing percentage. The results indicated that reciprocal crossbred B × GAB and GAB \times B rabbits were heavier than purebred animals. B \times GAB crosses attained the slaughter body weight earlier, and had lower feed consumption. The dressing percentage in B × GAB crosses was highest, while the lowest was observed in Gab rabbits. For other slaughter traits, except the fat content of carcass, effects of crossing rabbits were small. The magnitude of the crossbreeding effects depended on the direction of crossbreeding. Maximum effects in crosses for slaughter age, body weight and dressing percentage were obtained when the Bauscat breed was used as a maternal component.

Results showed that differences between Bauscat and Gabali breeds were significant for all the studied litter traits. The differences among some crossbred groups and purebreds were significant (P<0.05). Estimates of dominance (direct heterosis) effect were of moderate importance on LSB as these were negative (decreased the general mean