

**EFFECT OF NAKED NECK GENE ON GROWTH AND
OTHER PRODUCTIVE TRAITS OF CHICKEN UNDER
HOT CLIMATIC CONDITIONS.**

63815
A.G

BY

AHMED GALAL EL-SAYED GAD

B. Sc. Agric. Sci. Poultry Production

Ain Shams Univ., 1990

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

MASTER OF SCIENCE

In

Agriculture
(Poultry Breeding)

Department of Poultry Production
Faculty of Agriculture
Ain Shams University

1995



APPROVAL SHEET

EFFECT OF NAKED NECK GENE ON GROWTH AND OTHER PRODUCTIVE
TRAITS OF CHICKEN UNDER HOT CLIMATIC CONDITIONS

BY

AHMED GALAL EL-SAYED GAD

B.Sc. Agric . Sci. Poultry Production

Ain Shams Univ., 1990

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

Prof. Dr. M. F. H. Amer

Professor Poultry Breeding Faculty of Agriculture,
Ain Shams University.

Prof. Dr. F. H. Abdou

Professor of Poultry Breeding and Head of Poultry Production
Department, Faculty of Agriculture, Menoufia University.

Prof. Dr. H. E. Ayoub

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

Date of examination : / / 1995

**EFFECT OF NAKED NECK GENE ON GROWTH AND
OTHER PRODUCTIVE TRAITS OF CHICKEN UNDER
HOT CLIMATIC CONDITIONS**

BY

AHMED GALAL EL-SAYED GAD

B. Sc. of Agric. Sci., Poultry Production, Ain Shams Univ., 1990

Under the supervision of :

Prof. Dr. HASSAN E. AYOUB

Professor of Poultry Breeding and

Department, Fac. of Agric., Ain
Shams University.

Dr. ALI ZEIN EL-DEIN

Breeding, Poultry Production Dept.,
Fac. of Agric., Ain Shams
University.

Dr A.H. EL-ATTAR

Breeding Poultry Production Dept.,
Fac. of Agric., Ain Shams University.

ABSTRACT

Ahmed Galal El-Sayed. Effect of Naked neck on growth and other productive traits of chicken under hot climatic conditions. Unpublished Master of Science, University of Ain Shams, Faculty of Agriculture, Department of Poultry Production, 1995.

The present study was carried out at Poultry Breeding Farm, Poultry Production Department, Faculty of Agriculture, Ain Shams University. The aim of this work was to study the effect of naked neck "Na" gene on growth and some productive traits under hot climatic conditions.

A total of 126 normally-feathered females (nana) from three developed strains, namely Mandara, Golden-Montazah and Gimmizah, were artificially inseminated by nine heterozygous naked neck males (Nana) (14 females/sire) to obtain two successive hatches.

The results obtained from this study indicated that the "Na" gene had a favorable effect on body weight and body measurements (keel length and body depth) during early growth period, especially in males rather than females when introduced it into these strains. These results may be due to genotype by sex interaction in some cases.

The results also showed that the "Na" gene had a favorable effect on comb and wattle lengths during early growth and at sexual maturity thus, the naked neck birds had a thermoregulative efficiency under heat stress circumstances by more radiate heat via comb, wattle and bare body surface.

The Nana birds attained sexual maturity earlier and produced more eggs number when compared with nana ones, especially in medium body weight layer (Golden-Montazah) under Egyptian environmental conditions.

The results showed that the Nana birds produced heavier eggs (46.81 g) when compared with that of nana ones (44.89 g).

The "Na" gene had a favorable effect on albumen percentage, especially in Mandara strain.

Key Words : Naked neck gene (Nana), body weight, body measurements, sexual maturity, egg production and egg quality.

ACKNOWLEDGMENTS

First of all, prayerful thanks to our merciful God who gives me every thing I have.

I wish to acknowledge the valuable help and supervision of Prof. Dr. Hassan E. Ayoub, Professor of Poultry Breeding and head of Poultry Production Department, Faculty of Agriculture, Ain Shams University for his interest valuable advise during this research, encouragement and unlimited help and supervision of all phases of this work.

I would also like to express my deepest gratitude to Dr. Ali Zein El-Dein, Associate Professor of Poultry Breeding, Poultry Production Department, Faculty of Agriculture, Ain Shams University for her help and encouragement in preparing this manuscript of great value.

I wish also to express my thanks and sincere appreciation to Dr. A. H. El-Attar, Associate Professor of Poultry Breeding, Poultry Production Department, Faculty of Agriculture, Ain Shams University, for continuos help and support me through the whole work.

I wish to express my gratitude to Dr. Moataz M. Fathi, Lecturer of poultry breeding, for helping me in statistical analysis of data and reviewing the dissertation. Many thanks to Dr. U. M. Ali for his help during the course of this study.

Finally it gives me a great pleasure to have the opportunity of acknowledging every member of my family especially my parents for their encouragement and support me during my study.

CONTENTS

	Page
-LIST OF TABLES	
-INTRODUCTION	1
-REVIEW OF LITERATURE	2
1-Fertility and hatchability	2
2- Mortality rate	3
3- Body weight and growth rate	3
4- Feed consumption	8
4-1- During early growth period	8
4-2- During laying period	9
5- Feed conversion	10
6-Age at sexual maturity	12
7- Egg number	13
8- Egg weight	14
9-Clutch cycle	15
10-Egg quality measurements	16
11- Body measurements	17
11-1- Comb and wattle length	17
11-2- Shank length	18
11-3- Keel length	19
11-4- Body depth	20
- MATERIALS AND METHODS	21
1- Parent stock	21
2- Offspring flocks	22
3- The studied traits	23
3-1- Fertility and hatchability	23
3-2- Body weight and growth rate	23
3-2-1- Parent stock	23
3-2-2- Offspring flock	23
3-3- Mortality rate	23
3-4- Feed consumption and feed conversion during early growth period.	24
3-5-Age at sexual maturity	24
3-6- Body measurements	24
3-6-1- Parent stock	24
3-6-2- Offspring flock	24

3-7- Egg production characteristics	25
3-7-1- Egg number	25
3-7-2- Egg weight	25
3-7-3- Egg quality	25
3-7-4- Measurements of egg quality	25
4- Statistical analysis	25
- RESULTS AND DISCUSSION	27
1- Mortality rate	27
1-1- Parent stock	27
1-2- Offspring flocks	27
2- Fertility percentage	27
3- Hatchability percentage	30
4- Body weight and growth rate	38
4-1- Parent stock	38
4-2- Offspring flocks	38
4-2-1- Mandara strain	41
4-2-2- Golden-Montazah strain	41
4-2-3- Gimmizah strain	42
5- Body measurements	52
5-1- Parent stock	52
5-1-1- Keel length	52
5-1-2- Shank length	52
5-1-3- Body depth	53
5-1-4- Comb and wattle length	53
5-2- Offspring flocks	56
5-2-1- Keel length	56
5-2-1-1- Mandara strain	56
5-2-1-2 Golden-Montazah strain	56
5-2-1-3 Gimmizah strain	57
5-2-2- Shank length.	58
5-2-2-1- Mandara strain	58
5-2-2-2 Golden-Montazah strain	58
5-2-2-3 Gimmizah strain	58
5-2-3- Body depth	59
5-2-3-1- Mandara strain	59
5-2-3-2 Golden-Montazah strain	59
5-2-3-3 Gimmizah strain	59
5-2-4- Comb length	60

5-2-4-1- Mandara strain	60
5-2-4-2 Golden-Montazah strain	60
5-2-4-3 Gimmizah strain	60
5-2-5- Wattle length	61
5-2-5-1- Mandara strain	61
5-2-5-2 Golden-Montazah strain	61
5-2-5-3 Gimmizah strain	73
6- Feed consumption and feed conversion ratio	73
7- Different measurements taken at sexual maturity	74
7-1- Parent stock	74
7-1-1- Body weight	79
7-1-2- Shank length	79
7-1-3- Keel length	79
7-1-4- Body depth	79
7-1-5- Comb and wattle length	80
7-1-6- Age at sexual maturity	80
7-2- Offspring flocks	80
7-2-1- Body weight	83
7-2-2- Keel length, shank length and body depth	83
7-2-3- Comb and wattle length	84
7-2-4- Age at sexual maturity	84
8- Egg production traits	89
8-1- Parent stock	89
8-1-1- Egg number	89
8-1-2- Egg weight	89
8-1-3- Duration needed to produce the first 10 eggs	92
8-1-4- Number of egg laid during the first 10 days	92
8-1-5- Clutch cycle	92
8-2- Offspring flocks	92
8-2-1- Egg number	92
8-2-2- Egg weight	93
8-2-3- Duration needed to produce the first 10 eggs	94
8-2-4- Number of egg laid during the first 10 days	95

8-2-5- Clutch cycle	95
9- Measurements egg quality	100
9-1- Egg weight	100
9-2- Egg shape index	100
9-3- Yolk quality characters	101
9-3-1- Yolk weight and yolk percentage	101
9-3-2- Yolk index	101
9-4- Albumen quality character	101
9-4-1- Albumen weight and albumen percentage	101
9-4-2- Albumen height	102
9-5- Shell quality character	102
- SUMMARY AND CONCLUSION	107
- REFERENCES	112
- ARABIC SUMMARY	