

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





بعض الوثائق الأصلية تالفة





بالرسالة صفحات لم ترد بالأصل



**NUTRITIVE VALUE OF POULTRY LITTER AS A PROTEIN
SUBSTITUTE IN SHEEP RATIONS**

BY

NASSER ATTIA MAHDI SOLIMAN

B. Sc. Agric., Ain Shams University, 1988.

THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

MASTER OF SCIENCE

IN

AGRICULTURE

(Animal Production)

Department of Animal Production

Faculty of Agriculture

AL - Azhar University

1416 AH

1996 AD

B

11250

APPROVAL SHEET

NAME : NASSER ATTIA MAHDI SOLIMAN
**TITLE : NUTRITIVE VALUE OF POULTRY LITTER AS A PROTEIN
SUBSTITUTE IN SHEEP RATIONS.**

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE

IN

AGRICULTURE

(Animal Production)

Department of Animal Production

Faculty of Agriculture

AL - Azhar University

1416 A.H.

1996 A.D.

Suprvisory Committee :

1. Prof. Dr. M. A. SAFWAT

Professor of Animal Nutrition. Anim. Prod. Dept. Al-Azhar Univ., Cairo.

2. Prof. Dr. H. A. SALLAMA

Professor of Animal Management. Anim. Prod. Dept. Al-Azhar Univ., Cairo.

3. Dr. R. S. MOHAMED

Associate Professor of Animal Nutrition. Al-Azhar Univ.

This Thesis for Degree of M.Sc. had been Approved By :

1. Prof. Dr. A.Z. Meherz

A. Z. Meherz

Professor of Animal Nutrition. Anim. Prod. Dept. Mansoura Univ.

2. Prof. Dr. H.T. Abd El Bary

H. T. Abd el-Bary

Prof. of Animal Physiology, Animal Production Department, Faculty of Agriculture,

Al-Azhar University.

3. Dr. R.S. Mohamed

R. S. Mohamed

Associate Professor of Animal Nutrition Al-Azhar Univ.

Date / / 1996

ACKNOWLEDGEMENT

Sincere appreciation is expressed to Prof. Dr. M.A. Safwat, Professor of Animal Nutrition, for his encouragement, interest in this work and for reading the manuscript of this thesis.

My gratitude is also extended to Prof. Dr. H.A. Sallama Professor of Animal Management for his advice and help.

I would further like to express my sincere gratitude and great indebtedness to Dr. R.S. Mohamed, Associate Professor of Animal Nutrition for his direct supervision throughout the field experiments. His efforts in revising the thesis are extremely appreciated and his comments are of great value, deepest thanks and gratitude are extended to him.

I am indebted also to Dr. Yacout, M.H.M., Research Officer, By-products Department, Animal Production Research Institute, Ministry of Agriculture. His efforts in revising the thesis and his close supervision through the laboratory analysis are greatly appreciated.

I also wish to express my acknowledgement and my debt to all the sincere colleagues, staff members of experimental station of sheep and goat who helped me to complete this work.

CONTENTS

	PAGE
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. Nutritive value of poultry litter	3
2.2. Chemical composition	3
2.2.1. Broiler litter	3
2.2.2. Poultry manure	5
2.2.3. Effect of storage period on the chemical composition of poultry manure	7
2.2.4. Nutritive quality of poultry manure as affected by storage conditions and physicochemical treatment	9
2.3. Energy value for ruminants	11
2.3.1. Dried poultry waste (DPW)	11
2.3.2. Broiler litter	11
2.4. Protein value	11
2.5. Performance of ruminants fed rations containing poultry excreta	13
2.6. Effect of feeding animal wastes on animal health	16
2.6.1. Pathogenic bacteria and moulds	16
2.6.2. Hormonal activity	17
2.6.3. Medical drugs	18
2.6.4. Minerals	18
2.7. Waste feeding	19
2.8. Economic approaches on using animal wastes	19
2.9. Effect of feeding poultry manure on rumen activity by sheep	20
2.9.1. Rumen pH	20
2.9.2. Ammonia-N concentration	21

	PAGE
2.9.3. V.F.A. concentration	22
3. MATERIALS AND METHODS	24
3.1. Preperation of poultry litter	24
3.2. Experimental diets	26
3.3. Growth performance parameters	27
3.4. Digestibility and N-balance trials	27
3.4.1. Collection of fecal and urine samples	27
3.5. Rumen fluid samples	28
3.5.1. Rumen pH	28
3.5.2. Ammonia-N concentration	28
3.5.3. V.F.A.	29
3.6. Blood samples	29
3.6.1. Blood Parameters	29
3.6.1.1. Total protein determination	29
3.6.1.2. Urea determination	29
3.6.1.3. GPT and GOT determination	30
3.6.1.4. Albumin determination	30
3.6.1.5. Globulin determination	30
3.6.1.6. Creatinine determination	30
3.7. Chemical analysis	30
3.8. Statistical analysis	30
4. RESULTS AND DESCUSSION	31
4.1. Chemical analysis of layer and broiler litter	31
4.2. Chemical composition of diets	32
4.3. Feed utilization	32
4.3.1. Digestibility coefficeinces and nutritive value	32
4.3.2. Nitrogen utilization	36
4.4. Rumen fermentation characteristics	38

	PAGE
4.4.1. pH value	38
4.4.2. Ammonia-N concentration	41
4.4.3. Total VFA's	44
4.5. Blood parameters	44
4.6. Feeding trial	50
4.6.1. Average daily gain	50
4.6.2. Feed conversion	53
4.7. Economic efficiency	53
5. SUMMARY	55
6. REFERENCES	58
7. ARABIC SUMMARY	

LIST OF TABLES

No.	PAGE
1. Nutrient composition of broiler litter	4
2. Chemical composition of artificially dried poultry manure	5
3. Nutrient composition of dehydrated poultry excreta	6
4. Chemical composition of layer dropping obtained from two different farms	7
5. Effect of storage period of fresh hen dropping on crude protein content of dried poultry waste	8
6. Chemical analysis of the ingredients used	25
7. Diets formulation	26
8. Chemical composition of the experimental diets	33
9. Apparent digestibility coefficients and nutritive value (%) of the experimental diets containing poultry litter	35
10. Nitrogen utilization by sheep fed diets containing poultry litter	37
11. Effect of feeding experimental diets on ruminal pH	39
12. Ruminal ammonia-N concentration (mg/100 ml) in the rumen of sheep fed the experimental diets	42
13. Ruminal VFA's concentration (mg/100 ml) in the rumen of sheep fed the experimental diets	45
14. Effect of poultry manure sources on blood parameters of sheep fed the experimental diets	48
15. Performance of lambs fed diets containing poultry litter	51

LIST OF FIGURES

No.	PAGE
1. Rumen pH values of the experimental groups at different sampling times	40
2. Ammonia concentration in the rumen liquor of the experimental groups at different times	43
3. Total VFA's concentration in the rumen of the experimental groups liquor at different times	46
4. A verage live body weight changes for Ossimi male lambs during the experimental period (24 weeks)	52

LIST OF ABBREVIATIONS

APW	:	Autoclaved poultry waste
ARC	:	Agricultural Research Council
BL	:	Broiler litter
CF	:	Crude fiber
CP	:	Crude protein
CPW	:	Cooked poultry waste
DCP	:	Digestible Crude Protein
DM	:	Dry Matter
DMI	:	Dry Matter Intake
DN	:	Digestible Nitrogen
DPE	:	Dehydrated Poultry Excreta
DPM	:	Dropping Poultry Manure
DPW	:	Dehydrated Poultry Waste
EE	:	Ether Extract
GOT	:	Glutamic Oxaloacetic Transaminase
GPT	:	Glutamic Pyruvic Transaminase
IVDMD	:	IN Vitro Dry Matter Disappearance.
IVOMD	:	In Vitro Organic Matter Disappearance.
LL	:	Layer litter
N	:	Nitrogen
NFE	:	Nitrogen Free Extract
NPN	:	Non Protein Nitrogen
NRC	:	National Research Council
OM	:	Organic Matter
PL	:	Poultry litter
PM	:	Poultry manure
SE	:	Starch Equivalent
TDN	:	Total Digestible Nutrients
VFA	:	Volatile fatty acids

INTRODUCTION