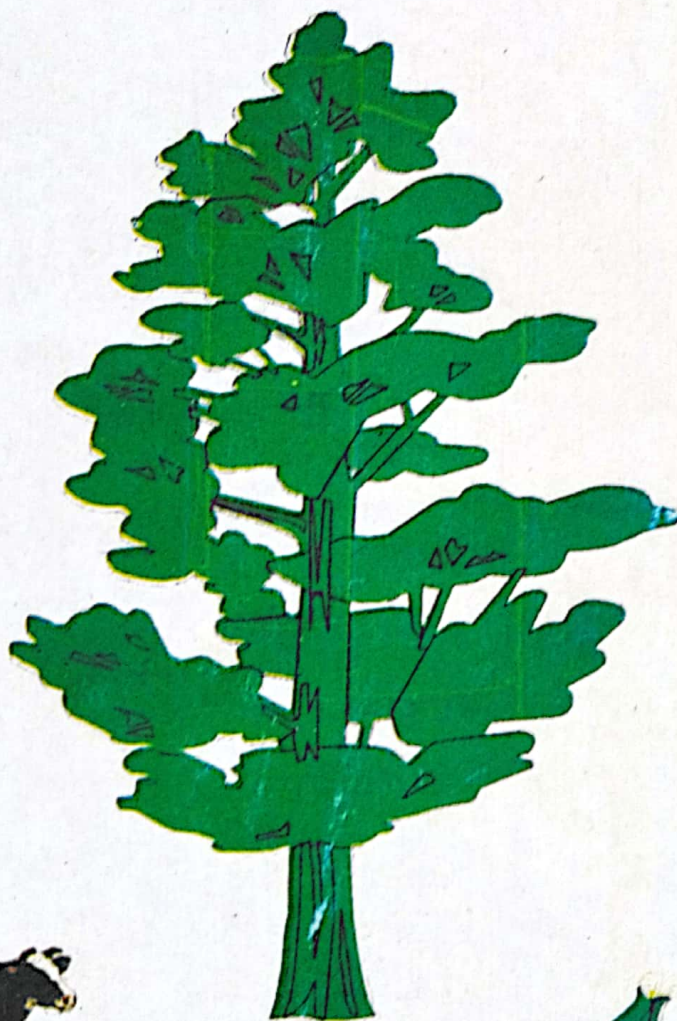


Agricultural Development in the 21st Century

Concepts and strategies.



*Edited by: Kushwaha, S.; Adegbola, T. A.; Oseni, T. O.;
Auwalu, B. M.; Dutswat, I. S.*

Agricultural Development in the 21st Century:
Concepts and strategies.

Mrs. Kemi Akande

Edited by

Dr. S .Kushwaha (Editor in Chief)

Prof. T.A. Adegbola

Prof. T.O.Oseni

Dr. B.M.Auwalu

Dr. I.S.Butswat

Price N1400:00

FAMAN

**Proceedings of the 14th Annual Conference of Farm Management
Association Of Nigeria (FAMAN) held at the Abubakar Tafawa Balewa
University , Bauchi, 20th - 23rd September, 1998.**

AGRICULTURAL PUBLISHERS

FARMERS

BAUCHI

Abubakar Tafawa Balewa University Press
(c) Farm Management Association of Nigeria
ISBN 978-2607-01-9
First Published 1999

All Rights Reserved. No part of this Publication may be reproduced, stored in a retrieval system or transmitted into any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the copyright owners.

Price N1100:00

ATBU PRINTING PRESS
P.M.B. 0248
BAUCHI, NIGERIA.

BAUCHI '98 FAMAN CONFERENCE LOC COMPOSITION

Dr. S. Kushwaha	-	Chairman
Chief D. O. Olopade	-	Member
Mal. Umar Doma Dass	-	"
Alahaji Nasiru Murtala	-	"
Alh. Bala Suleiman	-	"
Alh. Gidado Ahmed	-	"
Mr. P. Dabi	-	"
Mrs. M. Dikwal	-	"
Dr. Bala Usman	-	"
Mal.R. M. Sani	-	Secretary

(NATIONAL EXECUTIVE COUNCIL) FAMAN 1996 - '98

Emman A. Obinyan	-	President
Mr. E. Ukeje	-	1st Vice President
Chief (Mrs) R. A. Nege	-	2nd Vice President
Mr. P. Dabi	-	Secretary
Mr. S. Ogundipe	-	Asst. Secretary
Mr. S. Dogo	-	Financial Secretary
Mr. J. Layelmonson	-	Business Manager
Mr. L. Odey	-	Auditor
Mrs. M. Dikwal	-	Treasurer
Prof. A. C. Nwosu	-	Editor-in-Chief

(NATIONAL EXECUTIVE COULCIL) FAMAN 1998 - DATE

Chief (Mrs) R. A. Nege	-	President
Mal. Rabi'u Mohammed Sani	-	1st Vice President
Mr. G. Baklit	-	2nd Vice President
Dr. Jude A. Mbanasor	-	Secretary
Mal. S. A. Musa	-	Asst. Secretary
Mr. A. P. Kutus	-	Business manager
Mrs. M. M. Dikwal	-	Treasurer
Mr. S. M. Dogo	-	Financial Secretary
Alh. N. Murtala	-	Auditor
Dr. S. Kushwaha	-	Editor-in-Chief

CONTENTS

	PAGE
ACKNOWLEDGEMENTS	
LOC BAUCHI 1998	
NEC FAMAN 1996 TO 1998	
NEC FAMAN 1998 TO DATE	
FORWARD	
1. The Problems of Livestock Production and Management in Nigeria: The Way Forward by Abubakar, M. M.-----	7
2. Extension Services in Nigeria: Recent Trends And Implications For The Future by Moses, F. O.-----	14
3. Environmental Challenges And Small Farmer Response in North-Eastern Nigeria by Ibrahim, A. M.-----	17
4. The Fishery Sub-sector in Nigeria: an Analysis of The Output Performance And The Way Forward by Ukoha, O. O.-----	22
5. Socio-economic Factor Affecting Farm Machinery Utilization by Farmers: A Case Study of Buruku L.G.A. of Benue State by Okwu, O. J. And Okwoche, V. A. O.-----	28
7. Solving The Problems of Soil Erosion Through Good Farming Practices by Attah, E. S. And Ayuba, S. A.-----	32
8. Agricultural Insurance And Agricultural Development in Nigeria by Onyebinama, U. A. U.-----	35
9. Managing Social Conflicts in Irrigation Development in Nigeria by Aniekwe, D. C. And Lyam, A.-----	37
10. Agricultural Productivity in Harmonious Environment: The Way Out by Ewa, J. E.-----	40
11. Deregulation of Fertilizer Pricing And Distribution in Nigeria: Implications For Agricultural Development in The 21st Century by Mbanasor, J. A.-----	43
12. Economic Profitability of Cowpea Production in Adamawa State: A Case Study of Small Holder Farmers in Yola North And South Local Government Areas by Mshelia, S. I., Jongur, A. A. U. And Polycarp, M. I.-----	47
13. Meeting On-farm Energy Needs From Agro-wastes by Yusuf A. O.-----	50
14. Farm Management Systems in The Kano Region, Nigeria: Intensification Trend And Constraint by Kafiru, A.-----	52
15. An Overview of Vegetable Production Trend in Bauchi State From 1993 - 1997 by Nasiru, M., Sani, R. M. Zailani O. And Yahaya H. M.-----	56
16. Effect of National Fadama Development Project on Income of Beneficiary Farmers in Bauchi And Gombe States, Nigeria by Abdurrahman, S., Sani, R. M., Nweze, N. J., Nasiru, M. And Chibiyayi, M.-----	59
17. An Overview of The Fadama Farming System In Bauchi And Gombe States, Nigeria by Sani, R. M., Abdurrahman, S., Nweze, N.J. And Nasiru, M.-----	61
18. Economic And Comparative Analyses of Joint Cocoa Seedling Nursery Establishment And Procurement: A Case Study of Ijemo-fadipe, UNAAB Model Village by Adegbite, D. A.-----	63
19. Socio-economic Implications of Attaining Sustainable Health Standard in The Rural Areas by Adégbite, D. A.-----	68
20. Water Management And Its Effect on The Performance of Farmer-managed Irrigation Project-the Kano River Irrigation Project (KRIP) Experience by Gamaliel, A. G.-----	71
21. The Productivity of Cattle in Gombe State, Nigeria by Sir, S. M., Kalla, D. J. U. Mbap, S. T. And Ado, K. N. K.-----	77
22. The Clock of The Woman -Gender And Development by Abdu, B. L.-----	83
23. Improvement in The Productivity of Indigenous Chickens Managed Under Extensive System: Challenges For Agricultural Extension Service by Ifise, B. I. And Ojiogu, G. E.-----	87
24. Participation of Women in Rural Development in Imo State by Okoro, F. U.-----	91
25. Women in Animal Science and Related Careers: A Case by Umeh, A. P., Kushi, H. D. and Fabiyi, K. E.-----	96
26. Economics of Rice-based Cropping Systems For Inland Valleys in Nigeria: A Case of Niger State by Liman, A. N.-----	100
27. Status of Cassava Marketing in Rural Nigeria by Asumugha, G. N.-----	104
28. Strategies For Vegetable Production in The 21st Century: The Scenario of	

	Women Pumpkin Farmers in Benue State by Abu, I. K. And Obinne, C. P. O.....	108
29	Socio-economic Determinants of Poultry Production in Kebbi State by Likita, T.....	112
30.	The Effects of Early Feed Restriction on The Nutrient Retention of Broilers by Fabiyi, K. E. Atteh, J. O. And Oyedeji, J. O.....	117
31.	Marketing of Agricultural Products: Concepts And Strategies For The Next Century by Chikwendu, D. O.....	119
32.	Performances of Broiler Finishers Fed Diets Compounded With By-products Dominated Ingredients by Osuwah, C. C.....	123
33.	Studies of The Fecundity And Fertility of Goldfish (<i>Carassias auratus</i>) by Nayaya, A. J., Ofojekwu, P.C. And Sanusi, M.....	126
34	Stimulating Agricultural Investment in Nigeria: Concepts And Strategies For The 21st Century by Ephraim N. M. And Oludayo, K. O.....	129
35.	Agricultural Sustainability in India, a Case Study of Bihar by C. Sen, S. Kushwaha And Suleiman, B. O.....	132
36.	Development Efforts in Agriculture as it Affects Home Economics in Nigeria by Nege, R. A.....	141
37	Impact of Financial Institutions on Livestock Production in Plateau State: A Case of NACB by Whyte, E. P., Ogbonna, A. A., Ahmed, Y., Beki, O. R.....	144
38	Review on the Impact of Computer on Poultry Production: A Case of the Layer Industry by Ahmad, M. L.....	147
39	The Management of <i>Dermestes maculatus</i> Degeer Population in Fish, Using Some Biological Parameters by Adamu, S. U., Yusuf, S. R. And Majeed, Q.....	149
40	A Study on Socio-economic Background of Farmers and Livestock Management Practices in a Sudan Savanna Zone of Nigeria by Muhammad, B. F. And Abubakar M. M.....	151
41	Strategies for Energy Efficiency for Farm Managers by Yusuf A. O.....	155
42	Investment and Private Sector Participation in Agricultural Development: Strategies for the 21st Century by Nwosu, A. C.....	158
43	Towards for all by The Year 2000 and Beyond in Nigeria by Danwanka, H And Ladan, A. A.....	161
44	An Analysis of Communication Behaviour of Farmers in Relation to Storage Chemicals of Cowpea (<i>Vigna unguiculata (Walp) L</i>) in Akko L.G.A of Gombe State by Kutus, A.P., Macaver, O. J., Bivan, G. M., Hamidu, B. M. And Mohammed, I. M.....	163
45	Concepts and Strategies of Agricultural Development in Nigeria: A Study of Hectrage Response of Sorghum to Selected Economic Parameters in Bauchi State by Haruna, U. And Kushwaha, S. 166	166
46	The Role of Private Sector in Establishment and Operation of Commodity Exchange in Nigeria by Okwu, O. J., Tyoor, F. M. T. And Orbura, J.....	170
47	Alternatives to the Use of Chemical Pesticides in Nigerian Agriculture Practice by Dachir, S. H. And Baklit, G.....	172
48	The Structure of the Cotton Market in Adamawa State of Nigeria by Onu, J. I.....	176
49	Crop Residues Management and its Role in Maint Aining Soil Organic Matter and Soil Fertility by Saidu, M. S.....	180
50	The Use of Conductivity Measurement in Determining the Seed Coat Permeability of Cowpea Seeds for Pest Resistance by Boryo, D. E. A, Nwachukwu, C. B., And Bappa A. M.....	182
51	Effect of Varying Concentration of Garlic (<i>Allium Sativum L.</i>) Bulb on Cowpea Scab Disease by Gurama A. U., Adebitan S. A., Jalo I. I. And Musa S. A.....	185
52	Factors Affecting Demand for Fadama Land: A Case Study of National Fadama Development's Loan Beneficiaries in Bauchi and Gombe States, Nigeria by Nweze, J. N. And Abdurrahman, S.....	187
53	Evaluation of Residual Toxicity of Some Selected Insecticides and Three Plant Products for the Control of <i>Podagrica</i> Spp. (Coleoptera: Chrysomelidae) on Okra (<i>Abelmoschus esculentus</i> (L.) Moench) By Ahmed, B. I., Mbu, A. E. And Yusuf, S. R.....	191
54	Alley Farming: A Promising Farming System in The 21st Century by Jalo, I. I., Singh, L. And Gurama, A. U.....	194
55	An Effective Structure for Storing Root and Tuber Crops in the 21st Century by Okafor E. C--	196
56	Gut and Carcass Characteristics of Broiler Chickens Fed Maize Milling Waste Based Diets Mohammed A. D. And Doma, U. D.....	199
57	Agro-forestry and Agricultural Development: A Case Study of non Timber Forest Products in Ikwuano Area by Ekumankama, O. O.....	201

THE EFFECTS OF EARLY FEED RESTRICTION ON THE NUTRIENT RETENTION OF BROILERS

BY

K. E. Fabiyi¹, J. O. Atteh² and J. O. Oyedeji²

¹Animal Production Programme

Abubakar Tafawa Balewa University, Bauchi.

²Animal Production Department, University of Ilorin, Ilorin.

ABSTRACT

The study was conducted to determine the nutrient retention of broilers subject to early feed restriction in varying regiments. One hundred and twenty six (Ross) broiler chicks were used in this experiments. At 7 days of age, chicks were weighed and randomly allocated to 6 treatment were fed *ad-libitum* on a standard starter (18%), low energy (ME 2,800k cal/kg) diet for 16 days in varying regiments, alternated by feeding the standard diet during the starter phase. Whereas, during the finishing phase, all birds irrespective of the treatment groups were fed a standard finisher diet *ad-libitum* to market weight. Nutrient retention trial were conducted during the restriction and post restriction periods. Weighed quantities of the feed were supplied and excreta samples collected over 72 hours using total collection method. The excreta samples collected were oven dried at 70°C for 24 hours. Weighed and grounded prior to chemical analysis. The results showed no significant ($P > 0.05$) effect of varying regiments of early feed restriction on protein, fat and crude fibre retention of broilers during and after feed restriction. It was concluded that a mild form of feed restriction can be initiated as early as 7 days of age without adverse effect on nutrient retention and utilization.

INTRODUCTION

The world population is increasing at an alarming rate particularly in the developing countries of the world especially Nigeria. Increased animal protein intake can be achieved by reducing the cost of feed and consequently reducing the cost of producing poultry. The objective of this study was examine the effect of early feed restriction on the nutrient retention and utilization of broilers.

MATERIALS AND METHODS

Feeding trial

One hundred and twenty six day old Ross broiler chicks were used in this experiment. All birds were fed *ad-libitum* to 7 days of age on the control starter diet, (diet 1 (table 1)). The chicks were allocated randomly to one of the six treatments, each with 3 replicate cages of 7 chicks. Control birds were then fed diet 1 *ad-libitum* throughout the starter period. Also during the starter period, birds in treatments 2 to 6 were fed a low protein (18%), low energy (ME 2,800 kcal/kg) diet, diet 2 (table 1) for 16 days in varying regiments, all starting at 7 days of age, alternated by feeding the standard starter diet (diet 1). In treatment 2, birds received diet 2 for 16 days followed by diet 1 to 35 days of age. In treatment 3, birds, were fed diet 2 for 8 days, then diet 2 for a further 8 days followed by diet 1 to 35 days of age. Birds in treatment 4 received diet 2, 1 and 2 for 8, 4 and 8 days respectively then diet 1 to 35 days of age for birds in treatment 5, diet 2 and 1 were alterative every 4 days such that birds had 16 days of diet 2 while birds in treatment 6, were fed diets 2, 1 and 2 for 4, 2 and 4 days respectively, such that birds had 16 days of diet 2. All birds were then offered a standard finisher diet, diet 3 (table 1) from day 35 to the end of the experiment. Feed intake body weight of the birds were measured weekly throughout the experimental period. Weight gain and feed: gain ratio were also calculated.

Nutrient retention trial

Nutrient retention trial were conducted during the restriction and post restriction periods. Weighed quantities of the feed were supplied and excreta sample collected over 72 hours using total collection method. the excreta samples collected were oven dried at 70°C for 24 hours weighed and grounded prior to chemical analysis.

Chemical analysis

The proximate analysis of the feed and excreta samples were carried out according to the method of A.O.A.

(1980). Crude protein was determined by Kjeldal procedure. Fat determination was determined by subjecting samples to petroleum ether (b.p 60 - 80 degree) extraction, using the method of Cullison (1982). Ash content was determined by combustion of sample at a temperature of 600 degrees over 3 hours in a muffle furnace. The data collected were subjected to statistical analysis using The model for completely randomized design Steel and Torrie, (1980)

RESULTS AND DISCUSSION

The results of the nutrient retention trial during and after restriction no significant effect ($P>0.05$) of feed restriction on protein retention of broilers however protein was efficiently utilized. Fat retention shows an improvement during the restriction period compared to the protein retention during the feeding of the nutrient restricted diet (diet 2). High fat retention was also observed after the restriction period with no significant difference among treatments ($P>0.05$).

Utilization of fat in the diet was maximal due largely to the fact that birds were able to restore loss in energy during the restriction period. Crude fibre retention were low during and after restriction. This is due to the fact that monogastrics are unable to digest and utilize high dietary fibre (Moran, 1982).

CONCLUSION

It is therefore concluded that a mild form of feed restriction can be embarked upon as early as 7 days of age without negatively affecting nutrient retention and utilization.

REFERENCES

- A. O. A. C., 1980. Official methods of analysis of A. O. A. C. 14th Washington, D. C.
 Cullison, A. E. 1982. Feeds and feeding 3rd Edition Reston publishing Company Inc. Virginia pp. 14-24.
 Moran, E. I. Jr., 1982. Comparative nutrition of fowl and Swine. The Gastrointestinal System. Published by E.T. Moran (Jr) Canada pp. 79 - 82.
 Steel, R. G. D. and J. H. Torrie, 1980. Principles and procedures of Statistics. Biometrical approach. McGraw Hill Book Co. Inc. New York, Toronto, London pp. 101 - 123.

TABLE 1: PERCENTAGE COMPOSITION OF THE EXPERIMENTAL DIETS

Ingredients	Starter%		Finisher%
	Diet 1	Diet 2	
Maize	42.03	42.00	60.00
Soyabean meal	29.81	15.47	17.47
Brewers dried grain	10.00	16.22	6.27
Maize milling waste	8.00	12.45	10.45
Blood meal	3.03	3.00	2.94
Palm oil	3.58	3.44	-
Bone meal	2.69	2.95	1.94
Cyster shell	0.26	0.15	0.33
Salt	0.25	0.25	0.25
Mineral/Vitamin Premix*	0.25	0.25	0.25
DL-methionine	0.10	0.10	0.10
Grit	-	3.72	-
Total	100	100	100
<u>Calculated analysis</u>			
Crude protein	23.0	18.4	18.3

ME (Kcal/kg) 3081.2 2.800 3.024

Chemical analysis

	Diet 1	Diet 2	
Moisture %	5.87	4.96	6.86
Dry matter %	94.13	95.04	93.14
Crude protein %	22.51	17.49	17.30
Crude fat	5.3	4.8	1.7
Crude fibre %	3.85	4.75	4.42

*Supply per kg of diet = Vitamin A (8000IU), Vitamin D₃ (1,200IU); Vitamin E (3IU) Vitamin K₃ - KSTAB (2mg); Vitamin B₂ - riboflavin (3mg); Vitamin B₃ - Nicotinic acid (10mg); Vitamin B₅ - Pantothenic acid (150mg); Manganese (Mn) (80mg), zinc (Zn) 50mg; Copper (cu) (2mg), Iodine (I), (1.2mg), cobalt (0.2mg), Selenium (Se) 0.1mg.

Table 3: Effect of varying regiments of early nutrient contribution on nutrient retention of broilers

Protein	Fat%						Crude Fibre		
	Starter-finisher		Finisher-starter				Starter-finisher		
	Day 7 to 35		Day 35-63	Day 7-35		Day 35 - 63	Day 7 to 35		Day 35 - 63
Treatment	Diet 1	Diet2	Diet3	Diet1	Diet2	Diet3	Diet1	Diet2	Diet3
1	66.73	-	71.82	77.22	-	82.65	62.07	-	42.53
2	62.04	71.39	74.1	74.47	83.83	79.34	422.19	44.62	43.34
3	61.67	68.1	78.88	78.08	83.65	81.95	42.29	43.15	5.51
4	66.82	69.11	76.10	79.11	84.85	80.46	44.14	44.49	42.34
5	71.14	66.01	77.87	79.78	83.84	80.81	42.61	42.31	42.44
6.	66.61	70.9	77.80	75.45	85.87	82.53	42.89	43.72	43.64
Sig.	NS	NS	NS	NS	NS	NS	NS	NS	NS
EMS	1.02	1.07	0.81	0.67	0.43	0.86	0.25	0.40	0.45

NS = Not significant

EMS = Error mean square.