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*Tropical and
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**IMPACT OF AGRICULTURAL EXTENSION PRACTICES ON THE
NIGERIAN POULTRY FARMERS' STANDARD OF LIVING: A
PERCEPTIONAL ANALYSIS**

**[IMPACTO DE LAS PRÁCTICAS EXTENSIÓN EN LOS ESTÁNDARES DE
VIDA DE LOS AVICULTORES NIGERIANOS: UN ANÁLISIS DE
PERCEPCIÓN]**

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SUMMARY

This study assessed the impact of agricultural extension practices on the standard of living of poultry farmers in Ogun State, Nigeria. Specifically, it identified the practices extended to poultry farmers by the extension outfit in the state, adoption of the extended practices and its impact. It also identified the constraints of poultry farmers in the study area. A structured interview schedule was used to obtain information from one hundred and twenty (120) poultry farmers who were selected using a multi-stage random sampling technique from Remo division of the State. The results show that farmers adopted most of the practices and there was a considerable improvement in the living standard of the poultry farmers. Majority of the farmers had positive perception of the impact of the adopted poultry practices on increased income, improved household food security and nutrition and acquisition of more poultry equipment. Major constraints militating against poultry business as indicated by farmers include unavailability of loans for poultry farm, problem of manure disposal, pilfering, transportation, lack of quality feed ingredients and unavailability of local drugs and vaccines. There was a significant association between adoption of improved practices and the impact on standard of living of farmers ($P < 0.05$). Farm size and knowledge of improved practices score were also significantly and positively related to the adoption of improved practices.

Key words: Perception; poultry; standard of living; constraints; extension outfit.

RESUMEN

Se evaluó el impacto de las prácticas de extensionismo sobre los estándares de vida de los avicultores del estado de Ogun, Nigeria. Específicamente, se identificaron las prácticas transferidas a los avicultores por los servicios de extensión, la adopción y su impacto. Se identificó las limitantes para los avicultores del área. Se empleó una entrevista estructurada para obtener la información de 120 avicultores seleccionados mediante una técnica de muestreo aleatorizada de multi-etapa. Los resultados muestran que los avicultores adaptaron la mayoría de las prácticas y que existió un incremento considerable en sus estándares de vida. La mayoría de los avicultores tenían una visión positiva del impacto de las prácticas adoptadas y su efecto sobre el incremento en su ingreso, mejora de su seguridad alimentaria y nutrición, así como la adquisición de un mayor número de animales. Las principales limitantes para la industria avícola, señaladas por los avicultores incluyen: falta de créditos, reducida disponibilidad de medicamentos y vacunas, disposición de excretas, transporte, robo y escasez de alimentos de calidad. Se encontró asociación entre adopción de prácticas y la mejora en la calidad de vida ($P < 0.05$). El tamaño de la granja y el conocimiento de las prácticas tuvieron también un impacto positivo y significativo con la adopción de las prácticas.

Palabras clave: Percepción del productor; avicultura; estilo de vida; limitantes; extensionismo.

INTRODUCTION

Livestock production constitutes an important component of the agricultural economy in developing

countries and it is an instrument to socio-economic change, improved income and quality of rural life in Nigeria (Okumadewa, 1999). It is an important source of protein presently producing about 36.5% of total

intake of Nigerians. In livestock production, poultry occupies a prominent position in providing animal protein as it accounts for 25% of local meat production in Nigeria (Okunlola and Olofinsawe, 2007).

In Nigeria, poultry represents an appropriate system to feed the fast growing population and to provide income for small-scale farmers. The development of the poultry industry in Nigeria has been described as the fastest means of bridging the protein deficiency gap prevailing in the country. It has been reported that most Nigerian diets are deficient in animal protein, which results in poor and stunted growth as well as increase in spread of diseases and consequently death (Federal Government Nigeria/UNICEF, 1994; Apantaku *et al.*, 1998; Maziya-Dixon *et al.*, 2004). Poultry production has become a fulltime job for many Nigerians and it significantly contributes to the Gross National Product (GNP) (Umeh and Odo, 2002). Poultry products mainly meat and eggs represent important food for improving the nutritional status particularly of the most vulnerable populations – children and pregnant women.

However, limitations confronting the industry are numerous. The problems confronting the poultry industry in Nigeria include low egg production, poor chick quality, poor and low performing breeds, poor weight gain, feed conversion, feeding and management problems and lack of capital (Van Eekeren *et al.*, 1995; Apantaku *et al.*, 1998; Ojo 2003). Other problems include high cost of drugs and equipment such as battery cages, de-beakers and incubators, high cost of feeding ingredients, diseases, increasing cost of medications, marketing and lack of storage facilities as well as unfriendly government policy and finance. Key inputs in poultry industry such as synthetic amino acids and vaccines are still being imported. Where the inputs are available locally, their supply is bedeviled by seasonal fluctuations in quantity available which leads to sharp increase in the cost of these inputs. Sources of economic losses in poultry business include lack of technical know-how, poor quality feed, poor housing, mismanagement and diseases outbreak, which had received and continue to receive tremendous attention (Adekunmisi *et al.*, 1996; Torimiro *et al.*, 2002).

The rural area is the predominant food and fibre producing sector of the Nigerian society and all natural resources which constitute the wealth of a nation are obtained from the rural areas. The importance of the rural areas in Nigeria also lies in the mere fact that over 70% of the people live and derive their livelihood from there. The state of the rural areas in Nigeria is determined by a combination of methods which include available social, physical and institutional infrastructures as well as the people's level of living including their levels of perceived deprivation and

satisfaction with current level of living. The rural areas in Nigeria is characterized by lack of public infrastructure, sub-standard education, poor health services and low agricultural productivity leading to poor standard of living for the majority.

In order to sustain the interest of poultry farmers in poultry production, effective research and extension are necessary to ensure meaningful impact on poultry productivity and farmers' standard of living. The aspirations of the farmers must be met to a reasonable extent by the income accruing from the business. Proper care and management of the birds are necessary to ensure increase in egg production and/or increased weight gain.

The agricultural extension service in recent years has however played a significant role in improving poultry production in Nigeria through advisory services and adequate access to information on improved techniques of production. Agricultural extension plays a pivotal role in ensuring the awareness and subsequent adoption of the contemporary methods of poultry management. Various extension – teaching methods have been employed to make sure that the technologies get to the end – users. Prominent among these is the Training and Visit system of the Agricultural Development Programme. The central principle or idea of the extension strategy is to produce competent and well-informed Extension Agents who will frequently and regularly visit farmers with relevant technical messages and bring farmers problems to research. The system of extension entails that each extension agent is required to regularly visit the farmers/farmers' group with relevant messages that are specific to the farm practices taking place in the field at that point in time. Feedback is also taken by the extension agents from farmers to the Research stations. The extension service operates from the back drop belief that increased agricultural productivity depends primarily upon acceptance of improved cultural and technological change at the rural farm level and that peasant farmers can achieve improved production only if they adopt recommended agricultural practices in place of traditional ones. Successful adoption of improved agricultural practices is predicated upon rural farmers acquiring the required knowledge and understanding of these technologies. This will improve productivity and raise the living standards of the farmers who are the beneficiaries of the service (Benor and Harrison, 1983). The efficiency of technologies generated and disseminated however, depends on effective adoption of the technologies by the end-users.

Against this background, the study aims at investigating the impact of agricultural extension services on the standard of living of poultry farmers. This is to find out the extent to which the adoption of

innovative practices has positively impacted on the standard of living of farmers in the study area. Specifically, the study described the socio-economic characteristics of poultry farmers; identified the extension practices adopted by poultry farmers; determined farmers' perception of the impact of adopted practices on their standard of living and identified constraints militating against adoption of improved practices and effective poultry production in the study area. It determined the association between level of adoption of improved practices and perception of impact of the adopted practices on the standard of living of poultry farmers. It also determined the relationship between adoption and some selected characteristics of farmers.

MATERIAL AND METHODS

The study was carried out in Ogun state, Nigeria. Ogun state is one of the thirty-six states in Nigeria and was created out of the former Western state of Nigeria on the 3rd of February, 1976. It lies within latitudes 6° 30' and 8° 10' North of the equator and Longitudes 2° 15' and 4° 15' East (Bartholomew, 1990). The state is bounded in the west by the Republic of Benin, on the South by Lagos state, on its eastern flank by Ondo state and on its Northern flank by Oyo and Osun state. It has a population of 3,728,098 (Federal Republic of Nigeria, 2007). The state is divided into four division based on the sub-ethnic and dialectic group. These include the Egbas, the Yewas, Remos and Ijebus.

The economy of the state is mainly agrarian as agriculture is the occupation of the people. Food crops such as cassava, yam, maize, rice, vegetable are grown in the area. Livestock produced include sheep, goat, poultry and fish. The state is divided into twenty Local Government Areas. The Ogun state Agricultural Development Programme (OGADEP) is the government agency responsible for agricultural development and extension service in the state.

Population, sampling method and sample size

The study population comprises poultry farmers in Ogun State. A multi-stage random sampling technique was used for the selection. The Remo division of Ogun State was randomly selected out of the four divisions of the state. Three Local Government Areas (LGAs) were selected in the Remo division based on the popularity of poultry farming in the area. These include the Ikenne, Sagamu and Remo LGAs. Two blocks were randomly selected from each of the LGAs. Each of the block has an average population of about forty poultry farmers from which twenty (50%) were selected for the study from the list of registered poultry farmers in each of the six blocks in the study area. Random sampling technique was used for the

selection, making a total of one hundred and twenty poultry farmers selected for the study.

Data collection and analysis

A structured interview guide was used to collect primary information from the poultry farmers. The structured interview guide was divided into four sections. The first section was on the socio-economic characteristics of farmers while the second was on the improved practices disseminated and adopted by farmers. The third section attempted to determine the impact of adopted practices on farmers' standard of living- the impact was measured on a 3 rating scale of 'strong/positive impact', 'negative impact' and 'no impact'. Twelve items which addressed poultry production and management were used for the impact. The fourth section sought information on the constraints militating against the adoption of improved practices and effective poultry production in the area. The data was analyzed using SPSS computer software. Descriptive statistics such as frequency distribution and percentages were used to describe the data. Chi-square (X^2) was used to determine the relationship between level of adoption of improved practices and perception of impact of the adopted practices on the standard of living of poultry farmers while Pearson Product Moment Correlation Analysis was used to determine the relationship between adoption and some selected characteristics of farmers.

The drafted interview guide was subjected to review by one expert in poultry research and two agricultural extension experts. Their inputs and suggestions were incorporated into the final draft. The interview guide was pre-tested using test-retest method, at an interval of five weeks. A reliability coefficient of 0.72 was obtained.

Measurement of variables

Adoption of improved poultry practices by farmers was measured by requesting farmers to indicate whether or not they have adopted the technical knowledge and practices related to poultry production and management. The technical knowledge and practices are 14 items in number and addressed preparation of houses for birds, method of brooding chicks, poultry rearing, vaccination of birds, timing of operations related to poultry management, debeaking methods, proper management of laying birds, delousing methods, type and proper use of drugs, recognition of infections and ectoparasite infestation, control measures for infection, marketing of products, feed milling and mixing and deworming. The maximum score per respondent was fourteen while the minimum was zero. The adoption score was later grouped into three levels of adoption (low, medium

and high) using the mean score and standard deviation (Torimiro *et al.*, 1999; Odeyinka *et al.*, 2007).

The dependent variable of the study was farmers' perception of the impact of the adopted practices on the standard of living of farmers before and after being exposed to improved poultry practices. Twelve items were used to measure the impact. The items addressed increased egg production, increased weight of broilers, decreased mortality, better feed milled, increased stock level, increased income, more labourers employed, improved household food security and nutrition, purchase of articles of convenience, purchase of more poultry equipment, improved housing conditions and improved educational status. The items were measured on a five-point Likert Summated Rating scale. The numeric values for the impact were assigned as 5 for strongly agree, 4 for Agree, 3 for undecided, 2 for disagree and 1 for strongly disagree. On the basis of the scale value for each of the statements, using mean score and standard deviation, farmers' perception of the impact on the standard of living was later categorized as:

- Strong (positive) impact for those with positive perception
- Negative impact for those with negative impact, and
- No impact for those with indifferent/neutral perception.

RESULTS AND DISCUSSION

Personal and socio-economic characteristics of poultry farmers

Poultry farmers' personal and socio-economic characteristics are presented in Table 1. More than half (52%) of the poultry farmers were between 21 and 40 years of age. Only 13% were above sixty years of age. Majority (83.3%) of the respondents was male and married (70%). This is an indication that modern poultry farming is still predominantly a male occupation. Women are, however, more involved in local poultry production. About 37% of the respondents had tertiary education while 28.3% had secondary education. However, 13.3% had no formal education. The result shows that the educational level of poultry farmers was fairly high in the study area. Similar findings were reported by Mafimisebi *et al.*, (2006) among livestock farmers in South-western Nigeria. This is expected as modern poultry rearing requires people who understand and can apply technical information in the production and management of poultry farming. The data on years of

experience of poultry farmers show that 20% had spent between 11 and 15 years in the business while those who have spent between 6 and 10 years constitute 33.3% of the respondents. Poultry farming was the unique occupation of most (53.4%) of the respondents while 46.6% had other professions such as trading, teaching and nursing. Sixty-five percent of the respondents claimed to own the land they were using for poultry farm. However, 21.7% and 13.3% rented and leased the land they were using for poultry farm respectively. Thirty-five percent of the poultry farmers interviewed had less than 1,000 birds. The real big timers, that is, those with more than 5,000 birds constitute 11.7 percent of the farmers. Less than half (48.3%) of the respondents kept layers while 23.3 percent reared broilers/ cockerels. Ten percent reared pullet chicks up to point-of-lay while 23.3 percent reared all types of birds. Those who reared all types of birds have cockerels, layers, broilers and point-of-lay pullets. More than half (68.3%) of the respondents rely on hired labour. In-depth interview with respondents revealed that 41.7% of the respondents hired between 1-4 workers while 26.7% employed more than four workers. A larger percentage of the respondents had at least one person working for them for salaries or wages.

Adoption of extended poultry practices

The data in Table 2 show the adoption of extended practices by poultry farmers. Majority of the respondents adopted most of the extended practices. For instance, 95.8 percent of the farmers adopted birds rearing techniques, 93.3 percent adopted vaccination while 91.7 percent of the respondents adopted recognition of infections and ectoparasite infestations. The least adopted of the practices were delousing methods (49.2%) and feed milling/mixing (41.7%). This implies that most of the poultry farmers did not delouse birds and most farmers also purchase feeds and do not mill feed themselves probably because of lack of adequate knowledge of the techniques involve in feed mixing.

Delousing is avoided probably because it is a tedious operation that involves dipping or spraying of birds. Low production was however recorded by farmers who indicated that they purchased feeds for their birds.

The adoption level of farmers of the poultry practices show that majority (67.5%) of the respondents were within the medium adoption level, 16.7% were within high adoption level and 16.7% were within the low level of adoption of the poultry practices.

Table 1. Distribution of respondents by personal and socio-economic characteristics (N=120).

Personal and Socio-economic characteristics			Personal and Socio-economic characteristics		
Age	Frequency	Percentage	Experience in poultry (in years)	Frequency	%
<21	12	10.0	<5	40	33.3
21-40	62	52.0	6-10	40	33.3
41-60	30	25.0	11-15	24	20.0
>60	16	13.0	>15	16	13.3
Sex			Holding type		
Male	100	83.3	Rented	26	21.7
Female	20	16.7	Leased	16	13.3
			Owned	78	65.0
Marital Status			Farm size (Number of birds)		
Single	24	20.0	<1000	42	35.0
Married	84	70.0	1001-2000	24	20.0
Divorced	08	6.7	2001-3000	22	18.3
Widowed	04	3.3	3001-4000	18	15.0
			>4000	14	11.7
Educational status			Type of birds kept		
No formal education	16	13.3	Layers	58	48.4
Adult education	10	8.3	Point of lay pullets	06	10.0
Primary education	16	13.3	Broilers/Cockerels	28	23.3
Secondary education	34	28.3	All types	28	23.3
Tertiary education	44	36.7			
Major occupation			Type of labour		
Poultry farming	64	53.4	Self only	26	21.7
Others	56	46.6	Family labour	12	10.0
			Hired labour	82	68.3

Table 2. Distribution of respondents by knowledge and adoption of extended practices.

Practices	Knowledge of Extended Practices	Adoption of Extended Practices
Preparation of houses for birds	110 (91.7)	100 (83.3)
Brooding of chicks	110 (91.7)	101 (84.2)
Improved methods of Bird Rearing	115 (95.8)	115 (95.8)
Vaccination	112 (93.3)	112 (93.3)
Timing of Operations	100 (83.3)	90 (75.0)
Debeaking methods	80(66.7)	60 (50.0)
Proper management of laying birds	65 (54.2)	61 (50.8)
Delousing methods	65 (54.2)	59 (49.2)
Type and proper use of drugs	115 (95.8)	100 (83.3)
Recognition of infections and ectoparasite infestations	110 (91.7)	110 (91.7)
Control measures for infection	84 (70.0)	82 (68.3)
Marketing of products	75 (62.5)	70 (58.3)
De-worming	110 (91.6)	106 (88.3)
Feed milling and mixing	80 (66.7)	50(41.7)
Mean	79.7	74.5

Perception of farmers about the impact of adopted poultry practices on standard of living

The distribution of respondents by their perception of the impact of adopted poultry practices on the standard of living and farm operations before and after adoption of improved practices is shown in Table 3. Majority of

the farmers had positive perception that the adopted poultry practices had increased their income (83.3%), improved their feeding habits/household food security and nutrition (83.3%), and they were able to purchase more poultry equipment (59.2%) such as debeakers, drinkers, and feeders. Quite a sizeable percentage also indicated that they had positive perception of increased

weight of their birds (65.8%). Half (50%) of the respondents also had strong perception of the fact that their egg production had increased while 61.7 percent of the respondents were able to purchase some articles of convenience as a result of increased income. Also, 58.3 percent of respondents indicated positive perception of the fact that there was reduced mortality as a result of their adoption of poultry practices. This finding agrees with Ogunwale *et al.*, (2006) who reported that contact with extension agents and the use of various recommendations had positive impact on the standard of living of farmers as a result of increased income. Majority of the respondents (75.0%); however perceived that milling of feed has not been improved, which was evident in the negative perception indicated by respondents. This is however expected since majority also purchased their feeds and do not mill the feed themselves.

Problems encountered in poultry business

The data in Table 4 show the problems encountered in the poultry business by respondents. It was found that the problem of sourcing loans and capital to pump into the business was ranked highest. Earlier reports (Isiaka, 1998; Adebayo and Adeola 2005) also revealed finance and high cost of inputs as major problems militating against poultry production. The problem of finance is not peculiar to the poultry industry alone. It is a general problem with farmers. The down turn of the economy is a major factor. Also, removal of the subsidy by the government on agriculture is a major problem affecting farmers in the

poultry sector. The problems of manure disposal and pilfering were ranked second. This was however followed by disease problems due to weather condition, lack of quality feed ingredients from feed mills (lack of standard feed mills) and problems of infrastructure. Unavailability of local drugs and vaccines was also a major problem to poultry farmers in the study area. In- adequate workshops and seminars was least ranked by farmers. The frequencies and percentages on Table 4 show the multiple responses indicated by respondents.

The problem of manure disposal is common to most of the farmers. This however is sad to note because of its potentials for use as organic manure. Poultry manure is known to be the richest organic manure and it increases yields by supplying the nutrient requirements of plants thus making them stronger and resistant to diseases (Titiloye 1982; Schmitt and Rehm 2002). Unavailability of standard feed mills was reported by 73.3 percent of the farmers. Most of them could not rely absolutely on the quality of feed ingredients emanating from most feed mills in their vicinity. The problem of diseases due to weather condition was indicated by most of the farmers. During the rainy season, most common problems experienced by farmers include Chronic Respiratory Diseases and *Coccidiosis* while too much heat during dry season also causes heat stress. Endemic diseases such as New Castle and *Gumboro* are problems to poultry farmers, which however require reliable vaccines which are not often available.

Table 3. Distribution of the perception of farmers about the impact of adopted poultry practices on standard of living (n=120).

Impact on	Positive perception	Negative perception	Neutral perception
Increased income	100 (83.3)	08 (6.7)	12 (10.0)
Improved household food security and nutrition	100 (83.3)	10 (8.3)	10 (8.3)
Increased weight of broilers	79 (65.8)	24 (20.0)	17 (14.0)
Purchase of articles of convenience	74 (61.7)	25 (20.8)	21 (17.5)
Purchase of more poultry equipment	71 (59.2)	39 (32.5)	10 (8.3)
Improved housing condition	70 (58.3)	30 (25.0)	20 (16.7)
Improved educational status	70 (58.3)	30 (25.0)	20 (16.7)
Decreased mortality	70 (58.3)	44 (36.7)	6 (5.0)
Increased stock level	67 (55.8)	33 (27.5)	20 (16.7)
Increased Egg Production	60 (50.0)	24 (20.0)	36 (30.0)
More labourers employed	54 (45.0)	22 (18.3)	44 (36.7)
Better feed milled	16 (13.3)	90 (75.0)	14 (11.7)

Percentage in parentheses.

Table 4. Distribution of respondents according to constraints militating against poultry business.

Constraints	Frequency	Percentage	Rank
Unavailability of loans	110	91.6	1 st
Problem of manure disposal	96	80.0	2 nd
Pilfering	96	80.0	2 nd
Lack of Quality feed Ingredients from feed mills.	88	73.3	4 th
(Lack of standard feed mills).			
Disease problem due to weather condition	88	73.3	4 th
Problem of Infrastructure	80	66.6	6 th
Unavailability of Local drugs and Vaccines.	64	53.3	7 th
Marketing problems	50	41.6	8 th
Inadequate Workshops and Seminars	37	30.8	9 th

Problem of infrastructure is a major problem in the poultry business as indicated by farmers. Poultry farms need constant power supply to keep the poultry houses warm especially during the night. Also, birds are expected to be at their normal body temperature. Constant variations in the body temperature of birds could lead to lower productivity and health problems (Uguru, 2007). Poultry farmers depend more on power generating sets to maintain the body temperature because of the epileptic power supply of the Power Holding Corporation of Nigeria. The issue of bad roads experienced by farmers was said to be a factor that causes high mortality rates especially while transporting birds from one place to the other. Unavailability of local drugs and vaccines was reported by 53.3 percent of farmers as problem encountered in the poultry business. Lack of knowledge of conditions under which such drugs and vaccines are stored may affect the growth and performance of birds.

There was a relationship between adoption of improved practices and the impact of standard of living ($X^2 = 16.94$, $P < 0.05$). The positive association

implies that the more improved practices adopted by respondents, the more the impact of such practices on farmers' standard of living. The more farmers adopt, the more they are likely to experience positive impact due to the adopted practices.

Also, data in Table 5 show the relationships between farmers' characteristics and adoption score. The result of the data show that age of farmer and experience in poultry farming were negatively correlated with the adoption score ($P < 0.01$). This implies that the less the age of farmers and farm experience, the more the adoption of new techniques. However, farm size and knowledge of farmers of the extended practices tend to be positively correlated with the adoption score ($P < 0.01$). The greater the farm size the more adoption of improved practices. Also, the more knowledge of improved practices a farmer has, the greater the adoption of improved practices. Previous studies (Omonona *et al.*, 2004; Oladoja and Olusanya, 2007) have established age, sex, religion, marital status, educational attainment, farm income, farming experience and extension access as adoption correlates among poultry farmers in Ogun state, Nigeria.

Table 5: Correlation analysis showing linear relationships between adoption score and farmers' characteristics..

Characteristics (X-variables)	Correlation coefficient (r)	Coefficient of determination (r^2)
Age	-0.763**	0.582
Farm Experience	-0.670**	0.448
Farm size	0.485**	0.235
Knowledge of improved practices	0.883**	0.779

** r is significant at $p < 0.01$ level

CONCLUSIONS AND RECOMMENDATIONS

Poultry farmers adopt extension practices, which include preparation of poultry houses, techniques of brooding chicks, vaccination, timing of operation, debeaking, delousing, drug administration, recognition of infection, deworming and tips on marketing of produce. More than half of the respondents were within the medium adoption level. Adoption of most of the practices has helped in raising the standard of living of the farmers, which was further corroborated by the hypothesis testing. Also, farm size and knowledge of farmers of the extended practices were positively and significantly correlated with the adoption of extended practices.

Based on the findings of this research, it is recommended that poultry farmers would do better if they could have access to loan to pump into their business. There is need to organize soft loan facilities for farmers either by the government or corporate bodies. They could also organize themselves into cooperative associations in order to have access to loan for poultry business. This will further help farmers to be better equipped to tackle what is without doubt a complex business that requires them to be smart, alert and up-to date.

Women should be encouraged to practice modern poultry farming. Technical information to ensure proper poultry management practices should be made available to women farmers by extension agents.

Continuous training programs should be further organized for poultry farmers and workers in the industry to keep them abreast of latest technologies in the business and also to provide ways of removing most of the identified constraints. Constant contact between farmers and extension agents should be further encouraged as this is an important factor in the adoption of improved practices by farmers. Extension agents should link farmers with Subject Matter Specialists that can train them on how to mix feed ingredients. Farmers should make themselves available where such feeds are milled so as to ensure use of correct amount of feed ingredients.

Farmers should be made to see the potentials inherent in the integration of crop production with poultry farming. Livestock could be reared along with crop production. Such wastes could be used in soil fertility maintenance.

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