THE CONSTRUCTION OF CHICKEN HOUSE

BY

THOMAS ADERONKE ADEOLA
MATRIC NO: 17012505014
COMBINATION: AGRIC DOUBLE MAJOR

BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL EDUCATION, SCHOOL OF VOCATIONAL AND TECHNICAL EDUCATION, TAI SOLARIN COLLEGE OF EDUCATION, OMU-IJEBU, OGUN STATE

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF NATIONAL CERTIFICATE IN EDUCATION (N.C.E)

FEBRUARY, 2021

CERTIFICATION

I certify that this project work was carried out by **Thomas Adeola Aderonke** with the Matriculation Number **17012505014** in the Department of Agricultural Education, Tai Solarin College of Education, Omu-Ijebu, under my supervision.

_____ _____

MR. OLATOKUNBO TOSIN **DATE**

B.Ag (Ago-Iwoye)

PGDBDM (Ibadan)

PDE (Omu)

M.Ed (Ijagun)

Supervisor

DEDICATION

This project is dedicated to Almighty Allah, who has made my N.C.E programme a successful one. It is also dedicated to my loving parents, Mr. Aderibigbe Dauda and Mrs. Aderibigbe Ejimot S.

ACKNOWLEDGEMENTS

Education without cognizance is an enthusiasm. All Acknowledgment and Appreciation be to Almighty Allah, the creator of the universe, the protector, the provider, the all-knowing, the giver and taker of life for His mercies shown upon me. May his protection upon me never end (Amin).

My gratitude goes to my project supervisor Mr. Olatokunbo Tosin for his thorough supervision and advices given to me during the course of this research work.

I also acknowledge my lovely and caring parent Mr. Aderibigbe Dauda and Mrs. Aderibigbe Ejimot S, for always been there especially during the hard time. Thanks for the advice, the support, the love, the time rendered, and the prayers and so on, I pray may you reap the fruit of your labor in your lifetime in good health, wealth and long life (Amin).

Also I shall never do without appreciating my brothers and sister, Ridwan, Hammed, Akeem and Saidat for their patient, love, advices, and sacrifice you have shown to me, My prayers for you all is that Almighty Allah will replenish you.

I also appreciate all lecturers in the Department of Agricultural Education, The Head of Department, Mr. George O.B, Mr. Ogunbanjo O.O, Dr. Awe O.O, Mr. Adesanya A.S, Dr. Otufale G.A, Mr. Ige R.K, Mr. Igbosanu A.O, Mrs. Lasisi M.I, Mr. Aina A.S, and Mrs. Sebiomo A.A.

To all my friends Soaga Qudus, Adeyanju Sherrif, Okulenu Adijat, Zakariyah Adam, Shittu Sayeed, Abidoye Lateef, Agbolade Oluwaseun, Thanks for their support.

Abstract

Chicken house or constructions is to providing sheds or environment for accommodating chickens and store rooms. This study was set to design and construct chicken house. A 45ft by 30ft poultry house was erected at the teaching and research farm of Agricultural Education Department in Tai Solarin College of Education Department, Omu-Ijebu. The Design of the poultry house comprised if a rearing pen (30ft×35ft), brooding room (10ft×20ft) and lobby/store (10ft×10ft). Proper constructions were given to architectural elements such as building orientation, roof overhang, building height, length and width, entrance doors with foot dip in the design used for the poultry house construction. The constructed deep litter chicken pen is hereby recommended for poultry business starter. It is also good for small scale farmer. The good ventilation of the pen will allow fresh air to flow in. It will neutralize the strong odour of Ammonia coming from the feaces of the birds.

TABLE OF CONTENTS

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

CHAPTER ONE

1.1 Introduction

In Africa, agriculture and agro-industries account for more than 30% of national incomes on average, as well as for the bulk of export revenues. Nearly three-quarters of the African population depend on agriculture to secure their livelihoods (Heinke, Alexandra and Ludwig, 2015).

Agriculture remains the single largest contributor to the Gross Domestic Product (GDP), employment and industrialization. The fundamental value of Agriculture in the development and growth of the Nigerian economy is indicated in its contribution to food security, industrialization and the linkage effects with employment, income, market opportunities for industrial output and reduction in poverty (Olasunkanmi, Abiodun and Isaac, 2013).

Over the years, the contributions of the livestock sub sector to Gross Domestic Product (GDP) have decreased from 5.61% in 1960 to about 2.64% in 2010. Livestock production constitute an important component of the agricultural economy in developing countries and it is an instrument of socio economic change, improved income and quality of rural life in Nigeria (Aromolaran, Ademiluyi & Itebu, 2013)

Poultry is by far the largest group of livestock and estimated to be about 14000 million, consisting mainly of chickens, ducks and turkey in the world (Oladeji, 2011).

The Nigerian poultry industry in particular has been rapidly expanding in recent years and is therefore one of the most commercialized (capitalized) subsectors of Nigerian agriculture. The popularity of poultry production can be explained by the fact that poultry has many advantages over other livestock. Poultry birds are good converters of feed into useable protein in meat and eggs. The production costs per unit remain relatively low, and the return on investment is high. Therefore, farmers need a relatively small amount of capital to start a poultry farm. Furthermore, poultry meat is very tender and acceptability to consumers is high, regardless of their religious beliefs. Also, the production cycle is quite short, so capital is not tied up over a long period. Finally, eggs, one of the major products of poultry production, are more affordable for the common person than other sources of animal protein (Heinke et al, 2015).

By far the most prevalent poultry farming system in many developing countries is the small-scale scavenging system, which usually involves only very basic (if any) shelter for housing birds (Phil and Roberts, 2019).

In the pre-independence era, poultry enterprise was mainly in the family backyard characterized by low productivity and primitive technology. Poultry industry in the oil boom period recorded an unprecedented growth, becoming big business (Oladeji, 2011).

Poultry production plays an important role in rural incomes in sub-Saharan Africa; especially in Nigeria. A country's economic development is normally accompanied by improvement in its food supply and the gradual elimination of dietary

deficiencies. This raises global demand for animal products, thus offering potential opportunities for animal producers worldwide. The enforced demand for foods of animal origin could be satisfied especially by the production of poultry, as these products have seen the greatest increase in production in recent years ((Heinke et al, 2015)

Poultry production is one of the major subsectors in Nigerian agricultural industry. Poultry apart from supplying protein is also a good source of lipids and vitamins of high zoological value to man. Animal protein is essential in human nutrition because of its biological significance (Olasunkanmi et al, 2013)

Poultry production as an aspect of livestock production is important to the biological needs, economic and social development of the people in any nation. However, the contribution of poultry production (meat and eggs) to total livestock output increased from 26% in 1995 to 27% in 1999 with an increase in egg production alone accounting for about 13% during the period (Aromolaran et al, 2013)

Poultry products are highly nutritious and of enormous economic benefit to man both at homes and industries. Apart from meat, poultry egg serves a good source of animal protein, lipids and vitamins of high biological value to man (Oladeji. 2011).

In Nigeria, where the production of animal protein falls far short of meeting the demands of a rapidly growing population, poultry is the most common livestock kept. The poultry industry has emerged as the most dynamic and fastest growing segment in

the animal husbandry subsector. It represents an important source of high quality proteins, minerals, and vitamins to balance the human diet (Heinke et al, 2015).

The tropical region is characterized by high temperature and humidity, which can be harmful to poultry birds if it is not properly managed. High temperature and humidity can lead to heat stress and even death in extreme cases (Oloyo, 2018)

Improvements to poultry housing systems in developing countries have focused on providing an environment that satisfies the birds' thermal requirements (Phil and Roberts, 2019)

Chickens are easy to keep practically anywhere provided they have access to several essentials such as fresh air, food, water, space, and protection from harsh weather and predators

Commercial houses in developing countries are clear-span structures with litter on the floor for meat birds or cages for laying hens. The commercial chicken meat industry in some developing countries is vertically integrated, with single companies owning feed mills, breeder farms, hatcheries and processing plants (Phil and Roberts, 2019)

1.2 Statements of the Problem

The provision of food and fibre for the growing national population is another key role for agriculture. One of the developmental challenges facing most developing countries is their inability to adequately feed their ever-increasing population with the

right proportion of calories and protein. The apparent disparity between the rate of food production and demand for food in Nigeria has led to a food demand supply gap thus leading to a wide gap between domestic food and total food requirement, an increasing resort to food importation, high rates of increase in food prices, and as a result, widespread hunger and malnutrition are evident in the country (Olasunkanmi et al, 2013).

Despite the acknowledge importance of poultry production which is characterized by low production level due to limited finance for the procurement of basic poultry equipment and materials (Aromolaran et al, 2013)

Problem of financing poultry business in Nigeria includes pen construction which involves huge amount of fund. The price of building materials is increasingly high because of depreciation value of Naira.

1.3 Objectives of the Study

- To construct a low initial cost deep litter chicken pen
- To use affordable materials in the construction
- To install low maintenance cost materials in the pen
- To establish the benefit of the pen to Agricultural Education Department.

1.4 Significance of the Pen Construction

The constructed deep litter pen will go a long way in teaching and research farm of the Department of Agricultural Education. It will also be a model to follow when

starting a backyard poultry (chicken) business. The pen is multipurpose structure that can accommodate brooders, layers, cockerels and broiler production.

It is easily accessible with wide ventilation to reduce the problems associated with heat stress usually encountered by broilers and layers.

CHAPTER TWO

2.1 Literature Review

Agricultural growth and development is important to increase food supplies and improve the nutritional status of the people of Africa. This is particularly true for Africa where food production per person actually fell over the last 20years. (Olasunkanmi et al, 2013)

The development of the poultry industry has also been described as the fastest means of bridging the protein deficiency gap prevailing in most of the developing countries. The poultry industry, if properly harness can also serve as a source of foreign earnings complementing crude oil which at present constitutes the main source of foreign earnings in Nigeria. In poultry production small scale poultry production represents one of the few opportunities for saving, investment and security against risks. It accounts for approximately 90% of total poultry production (Aromolaran et al, 2013).

For the housing, it is intended to use alternative poultry production which is a form of deep litter system of housing such that the poultry house will be properly ventilated. One must make sure there is enough space to give the birds maximum ventilation and reduce heat in other to improve the overall health of the birds. The space required depends on body weight, climate conditions and type of housing system. In this case, it is approximately about 540 cm (0.6 square feet) per kg. (Akintilewa, 2019).

Some housing designs are much more windproof than others, for no readily apparent reason, though lower, heavier houses will generally be more windproof than taller, lighter houses. If possible, always choose a design that someone else has tested for at least a year in exposed locations (Robert, 2003)

The housing and equipment used make it possible to exert considerable control over the climate provided to the birds, but such houses are expensive to build and operate, and require a large turnover of birds to make them viable ((Phil and Roberts, 2019).

Chickens are easy to keep practically anywhere provided they have access to several essentials such as fresh air, food, water, space, and protection from harsh weather and predators (U Mass, 2018).

For controlled-environment housing of layers, multi-tier cage systems are common. Most large-scale commercial farms use controlled-environment systems to provide the ideal thermal environment for the birds. Birds' performance in controlled-environment sheds is generally superior to that in naturally ventilated houses, as the conditions can be maintained in the birds' thermal comfort zone. Achieving the ideal environment for birds depends on appropriate management of the poultry house (Phil and Roberts, 2019)

Proper ventilation ensures fresh air to the birds. Chickens are unable to sweat; they start to pant like a dog around 95 degrees F. They give off moisture, heat, and

carbon dioxide as they breathe, and as manure mixes with litter, more moisture and ammonia are released. If levels of moisture and ammonia build-up, airborne pathogens are released, causing health problems. To increase air flow, windows should be installed along the south or east side, away from prevailing winds. Well ventilated house must also have appropriate insulation to prevent moisture accumulation on the walls and ceiling. When installing windows, make sure there are no flat surfaces for the birds to sit on, for they will defecate there (U Mass, 2018).

Houses of various shapes and dimensions are typically constructed using local building materials consisting of timber or mud bricks and bamboo. These small-scale commercial facilities may have several rooms or compartments where chicks are brooded, pullets are reared and layers are housed in a floor-based system or in cages. Meat birds are often kept in single-age groups of 50 to 100 chickens within the house. The house can be used as night shelter for birds that forage under free-range conditions or that are confined to an outdoor pen during the day (Phil and Roberts, 2019)

Additionally, the structure of the poultry house needs to be built to prevent the intrusion of animals. It needs to be surrounded by compacted borders of about 1.20 meters wide. The area must be kept free of weeds, scrap and any other object or obstacle. The farm must be located at about 30 meters or more from a road connecting to the poultry farms and distance of 12 meters from another poultry farm of the same species. It therefore must be located at a distance of at least 12 meters from another

house. Fencing of the poultry farm is also necessary. The poultry house must be enclosed with a fence such that it will prevent entering of humans and animals. This fence should reach a height of at least 1.50 meters from the ground. The floors of the house must be concrete to enable the ease of cleaning and disinfection and elevated to about 30 cm above the surroundings level (Akintilewa, 2019).

The problems associated with poultry production in Nigeria are low egg production, diseases and pests, low and poor performing breeds, poor weight gain or feed conversion, feeding and management problems and lack of capital. Poultry industry in Nigeria is plagued by host of risks and uncertainties and these include natural risks, poultry diseases, pests, all these result in high mortality rates in poultry production; social risks; economic risks (price fluctuation;), loss or unexpected depreciation of investment: uncertain or unstable supply of feed as well as variation in the quality of feed (Olasunkanmi et al, 2013).

CHAPTER THREE

MATERIALS AND METHOD

3.1 Location of the poultry house

The poultry house was located at the departmental teaching and research farm in the front of the fish ponds constructed at Tai solar in college of Education Omu- Ijebu, Ogun State.

3.2 Poultry house, Dimension and Design

The Dimension of the poultry house construction is 45 by 30ft, the design for the construction includes the lobby/store, the brooding room for the poultry and the rearing pen with two doors at the entrance.

3.3 Poultry house foundation laying

Poultry house foundation pit was dug in form of rectangular shape with 18inch (1.6ft) width and depth of 12inch (1ft). After digging out the foundation the bottom of the foundation pit was blinded with the mixture of cement, gravel and sharp sand.

3.4 Block laying

The size of the block used for the construction of the poultry house was 9inches.The total number of blocks used from the bottom of the foundation pit up to the top of the dwarf wall were 350pieces.

3.5 Construction cost determination

The total cost of constructing the poultry house were determined by knowing the unit price of each of the materials used and then multiplying the unit cost by the total number of the materials. The sum of the prices of all the materials used for the construction of the pen including the workmanship of the bricklayer, the carpenter and the transportation costs represent the cost of construction of the poultry house.

CHAPTER FOUR

RESULTS AND DISCUSSION

Table 1: Costs of Poultry House Construction

ITEMS	NUMBER	UNIT PRICE (#)	TOTAL (#)
Concrete Block	367	260	95,420
Cement	15 bags	3,500	52,500
Sharp Sand	½ tipper	8,500	8,500
Water	3,500 litres	3,500	3,500
Gravel	150kg	4,000	4,000
Brick layer Workmanship	-	-	30,000
2×2”	80 pieces	300	24,000
2×3”	80 pieces	450	36,000
2×4”	30 pieces	550	16,500
3” Nail	½ bag	4,500	4,500
4” Nail	½ bag	4,500	4,500
Nail for Roofing Sheet	3 boxes	2,500	2,500
Roofing sheet	6 bundles	18,000	108,000

Facing Board	4 pieces	2,400	9,600
Boko-Haram Net	1 roll	5,000	5,000
Carpenter Workmanship	-	-	35,000
Transportation	-	-	5,000
Miscelleneous Expenses	-	-	10,000
Total			**451,020**

4.1 Cost of Poultry House Construction

Table 1 shows various cost incurred on different materials used in poultry house construction. A total of #95,420 was expended on 367-9inches concrete blocks at the unit price of #260/blocks. Fifteen (15) bags of cement were used at the unit price of #3,500 giving a total cement cost of #52,500. 1/2 tipper load of sharp sand at the cost of #8,500 was used while #3,500 was spent on 3,500 litres of water. A total of #4,000 was expended on 150kg of gravel while the bricklayer's workmanship was #30,000.

The other aspect of poultry house construction work that requires the use of wooden planks was also presented in table 1. Eighty (80) pieces of 2×2 " wood planks at the unit price of#300 giving a total of #24,000 were utilized. #36,000 was expended on 80 pieces of 2×3" planks, while #16,500 was expended on 30 pieces of 4×4" wood planks. Various sizes of iron nails were also used for the construction work as presented

in table 1. Half bag of 3 inches and 4 inches nails were used at the cost of #4,500 respectively. Three (3) boxes of roofing sheet nails at the cost of #2,500 were also used.

One hundred and eight (108) thousand naira was spent on 6 bundles of roofing sheet at the bundle price of #18,000. Four pieces of facing board at a unit price of #2,400 and total cost of #9,600 were also utilized for the construction work. One roll of Boko Haram net at the cost of #5,000 was also used.

Other expenses incurred were carpenter workmanship (#35,000), Transportation (#5,000) and miscellaneous expenses of #10,000.

From table 1, it could be elicited that a total of four hundred and fifty one thousand and twenty Nair was expended on the small scale poultry house in Tai Solarin College of Education, Omu-Ijebu.

4.2 Poultry House Design

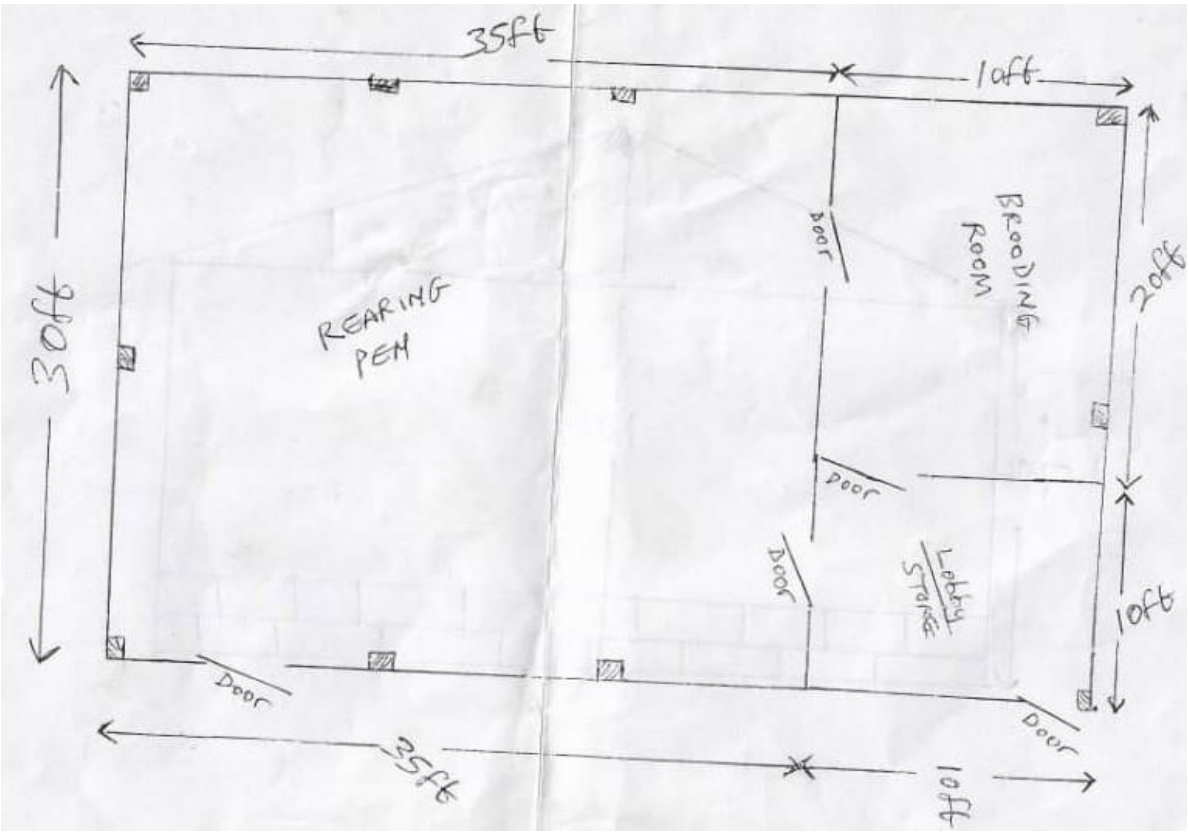

Figure 1

Figure 1 shows the design of the poulty house. It shows that the dimension used for the poulty house was 30ft by 40ft.The components of the design were:35ft by 30ft rearing pen,10ft by 20ft Brooding room,10ft by 10ft lobby/ store, side-wall pillars at the eaves level of 7ft each and the center wooden poles were 12ft each. There were two entrance doors and three inner doors. Also side netting with Boko-haram nets was done to cover the space between the dwarf wall and the eaves in order to prevent predators from

gaining access to the birds in the poultry house. The roof of the poultry house was extended with an overhang of about 3.5ft.

4.3 Discussion

The poultry house dimension was 45ft by 30ft.The width of the poultry house exceeded the 22 to 25 feet recommended by Raphael, atta peprah (2020). The orientation of the erected poultry house was in the east-west direction, this supports the earlier report by chick, (2013) who reported that the poultry house should be orientated in the east-west direction. The height of the sides from foundation to the roofline was 7feet and 12feet at the centre which is in line with the earlier recommendation by Raphael atta peprah (2020). Roof overhang which forms part of the poultry house roof was in support of the earlier report of daghir (2008) and Raphael atta peprah (2000) also, consideration were given to elements such as building orientation, roof overhang, building height, width and length, in the design of the poultry house. This outcome also corroborate the earlier report by Ayodeji Oloyo and Adedamola Ojerinde(2019) who reported that proper consideration of the architectural elements enhanced naturally ventilated buildings for optimum production in chicken.

The total cost of poultry house construction was four hundred and fifty one thousand and twenty naira only (#451,020).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

This project was carried out to create a conducive environment for bird's optimal performance. The design of the poultry house shows a dimension of 30ft by 45ft. The house was partitioned into rearing pen, brooding room and lobby/store. The heights of the wooden poles at the eaves were 12ft each. There were two main entrances and three inner doors. The total cost incurred on the poultry house construction was four hundred and fifty one thousand and twenty Nair (#451,020).

5.2 Conclusion

Although, the construction takes a lot of energy through participation of the whole class the achievement is enormous. Contributing to the development of Agriculture in Nigeria is a joint project which we must undertake.

Chicken house constructions entails providing sheds or environment for accommodating birds and store room (feeds and equipment) the extent to which these birds are exposed to the environment (sunshine, rain, wind) is determined partly by the system of management and this includes the design of the house used for birds.

5.3 Recommendation

The constructed deep litter chicken pen is hereby recommended for poultry business starter. It is also good for small scale farmer. The good ventilation of the pen

will allow fresh air to flow in. It will neutralize the strong odour of Ammonia coming from the feaces of the birds.

References

Akintilewa Omisakin (2019). Business Plan for Establishing a Poultry Farm in Nigeria. Thesis. Centria University of Applied Sciences Business Management December 2019

Aromolaran Adetayo K., Ademiluyi I.O. & Itebu O. Jennifer (2013) Challenges of Small Poultry Farms in Layer Production in Ibadan Oyo State Nigeria. Global Journal of Science Frontier Research Agriculture and Veterinary Sciences Volume 13 Issue 2 Version 1.0 Year 2013. Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Online ISSN: 2249-4626 & Print ISSN: 0975 5896

Heinke Heise, Alexandra Crisan and Ludwig Theuvsen (2015). The Poultry Market in Nigeria: Market Structures and Potential for Investment in the Market. International Food and Agribusiness Management Review . Volume 18 Special Issue A, 2015

Oladeji, J. O.(2011). Sources and utilization of poultry production information among poultry farmers in Oyo State. International Journal of Livestock Production Vol. 2(2), pp. 011-016, February 2011 http://www.academicjournals.org/IJLP ISSN 2141 2448 ©2011 Academic Journals

Olasunkanmi M. Bamiro, Abiodun O. Otunaiya and Isaac Adejumo (2013) *Profit Efficiency in Poultry Production in Peri-Urban Lagos, Nigeria.* International Journal of Applied Agricultural and Apicultural Research. IJAAAR 9 (1&2): 120-130, 2013

Oloyo A (2018*). The Use of Housing System in the Management of Heat Stress in Poultry Production in Hot and Humid Climate: a Review*. Poultry Science Journal 2018, 6(1): 1-9. ISSN: 2345-6604 (Print), 2345-6566 (Online) http://psj.gau.ac.ir DOI: 10.22069/psj.2018.13880.1284

Phil Glatz and Robert Pym (2019) Poultry housing and management in developing countries. Poultry Development Review. Food and Agricultural Organization of the United Nations. Pp 1-5.

Robert Plamondon (2003) Range Poultry Housing. Edited by Anne Fanatico and Richard Earles NCAT Agriculture Specialists June 2003. www.attra.ncat.org.

U Mass, (2018). Poultry Housing. UMass Extension Crops, Dairy, Livestock, Equine – www.umass.edu/cdl