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# Extent of Utilizing Electrical Equipment in Poultry Production in Ebonyi State

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**Abstract**
This study was designed to investigate the extent of utilizing electrical equipment in poultry production in the rural areas of Ebonyi State, Nigeria. A survey research design was adopted for the study. Three research questions guided the study. The population for the study was 46 respondents comprising 16 Extension agents and 30 Poultry farmers. There was no sampling because of small population of the respondents. The instrument was validated by 3 experts, two in Vocational Agricultural Education unit of Technology and Vocational Education Department and one in measurement and evaluation of science Education Department, in the same faculty and university. Cron-batch alpha reliability coefficient of the instrument was 0.82 which was good enough for the study. The instrument was administered to the respondents with the help of three research assistants in the three agricultural zones in the state. The data collected were analyzed using mean score and standard deviations. The study revealed (1) That 13 out of 18 electrical equipment items assessed are available in the poultry farms while 5 out of 18 electrical incubating equipment were not available. (2) That all the electrical watering and brooding equipment for poultry production were affordable. (3)That all the electrical feeding equipment was adequate for poultry production in all the farms as stated by the respondents among the recommendation made was that poultry farmers need to form cooperative society in order to procure necessary electrical equipment in their farms.
**Key words**: extent, poultry, electrical equipment, utilizing, farmer.

## Introduction

Poultry referes to domesticated birds which are reared for human consumption. In the view of Ogba, (2008) poultry applies to Chicken, turkeys, ducks, geese, Guinea fowls, peafowl, pigeon ostriches, quails, game birds among others. He maintains that birds render economic services to man and reproduces freely under good care. In the view of Nweke (2009) fowls are more reared than other kinds of birds, domesticated for human consumption. He maintains that poultry are usually taken by rural farmers to mean Chicken because they are reared more often than any other kinds of poultry birds as well more profitable and useful to the farmers. According to Eze (2012) fowls are classified on the basis of utility, economic value, purpose such as meat type eggs type, dual purpose, game, ornamental among others. He stressed that birds can be classified into class, breeds, variety strain among others. In the view of Okonkwo (2009) poultry is one the fastest growing segment of animal industry, its consumption are highly demanded, generally in Nigeria. He stressed that poultry meats are popular, accepted and consumed by almost hundred percent of the citizenry in Nigeria unlike some other meat, that have cultural restriction in certain parts of the country.

Ezeike (2008) maintains that the trend of development in poultry farm is due to relatively small financial involvement required, relative flexible facilities, utilization which provide excellent base for poultry production in different areas of the world with largely rural economics values. In the view of Usunam (2009), the rapid development of poultry industry is as a result of technical and scientific research achievement, together with good management and proper utilization of electrical equipment required in the production of fowls in the rural area. In another development Nwite (2012) is of the view that farmers are the producers of poultry birds used for meat and eggs in demand for protein intake in our daily diet. He maintains that rural farmers are those who participate in day to day activities in the production of poultry birds (fowls) and he stressed that poultry birds' producers exist in urban areas also. He explained that rural farmers produce about 85% of the food feed and fibre crops used in our demotic industry. It implied that rural poultry farmers are the concerns of this study. Not in the areas of crops. In another development, Odo(2013) maintains that electrical equipment are used to automate activities and reduce physical hardship for poultry production equipment for large material flow in feed, water, ventilation, air, electricity, neat energy, lighting and other electrical equipment required as inputs in the production process. In the same vein Eke (2000) maintains that electrical equipment creates an enabling environment for poultry production. He stress that birds are warn blooded animals that must have satisfactory

environment in order to maintain their body temperature like shivering in cold, or panting in heat. That Birds adjust in feed intake, taking more feed in cold environment and eating less in hot or warmer condition. He stress that birds must be provided with uniform, stable room temperature and that good environment is important for birds health. This because environmental factors create mortality and reduce performance. Based on these, electrical equipment are needed for creating availing environment in poultry production in the rural areas. In another development, Nwite (2013) stressed that egg handling equipment is a vital electrical tools used in hatching eggs set in the flats or bug eye type tray, with different capacities of 90 or 180 chicken eggs. Hatching egg Transfer machine is used to Transfer egg from brooder farm tray to hatched tray and vacuum egg lift to handle large volume of eggs electrically. He listed other electrical equipment as egg handlers which are used to find the internal structure of egg, when plugged in electrical Socket. In another development Eze (2013), stressed that electrical control setter machine in which proper temperature humidity are provided for 19 days of incubating chicken eggs. While Hatcher is a machine similar to setter but turning mechanism is always available and the tray are designed for holding newly hatched chicks, eggs are placed for the last 3 days of incubating. The available setters and hatcher found around the world include:

a. Walk in or corridor incubation
b. Tunnel type incubator
c. Vertical fan incubators are electrical equipment used in poultry production (Alidu 2014).

In the same vein, Uguru, (2011) explained the need for emergency standby electrical plants and hatchery automation equipment. He stressed that failure of the local electrical supply must be avoided, hence the incubators must have secondary sources of electricity supply. He maintained that electrical generator need to be in the site within Hatchery building and need a capacity to support essential services of hatchery. He maintain that electrical hatchery automation equipment such as Ovo/vaccination, hatchery tray washer, waste removal system egg transfer machines, chick box washer, rack washer, vaccinating, sexing, grading system high pressure pump as electrical needs. In support of the above, Okonkwo (2014) maintained that electrical brooder is a thermostatically controlled heating system that spread the required amount of heat uniformly above large area. This is to avoid crowding of chicks under brooder directly controlling about 300-400 chicks. He maintained that infra-ray bulbs is a self reflecting bulb and hence, no need of reflector over bulbs 150 and 250 watt bulb provide enough heat to 15-250 chicks respectably; other heat generators are reflector/Hovers which provide heating elements and heating mechanism. Electrical heaters provide heating elements and heating rod or coils. Temperature can be adjusted high with pervasive pump.

In another development, Owo (2014) stressed that electrical water equipment like water heater are used in heating hot water for operating most hatchery tray wasters and for general clean up purpose in poultry house for healthy development of its production potential. This implies that urgent attention is needed to address the electrical/equipment needed in poultry production in the rural areas in different areas mentioned above. In order to meet the Nigerian meat food need, which rest on the hand of farmers. However, for Nigeria to escape from the problem of poultry meat scarcity, as well, reduce poverty, increase health care, agricultural production in the area of poultry production must be boosted through electrical equipment adequate suppliesin the rural areas.

In the same vain Nweke (2007) maintained that automated delivery of feed, and water help birds to eat when they are hungry and drink when they are thirsty and are not required to await for a visit of the personnel to provide feed and water or fight for it since it is controlled by electrical power. In another development, Usuman, (2012) stressed that electrical equipment used in poultry production were classified into different types such as incubation equipment, egg handling equipment, brooder equipment, feeding equipment, water equipment, among others. He maintains that incubation equipment include secter I, hatcher, compressed air system, standby electric plants, hatchery automation, hatchery waster, waster removal system egg transfer machine, chick box, washer vaccinating system, sexing system, grading system among others. Ekpong (2015) was of the view that feeding equipment are controlled by electrical facilities like Automatic feeder which feed is supplied to the entire height of the poultry house by specially designed feed troughs with auger type or chain type devices to move the feed from the bins to the end which is operated with electricity and the height can be adjusted depending on the age of the birds.

**Statement of the Problem**

Electrical equipment which provide enabling environment for poultry birds production, seems, to be posing a serious problem in the rural areas in Ebonyi State, the birds which are warm blooded animals need to be provided with all the needed electrical equipment to meet its satisfactory environmental body equipment like uniform, stable, room temperature to reduce high poultry birds mortality rate and increase birds health wise and performance. However, the electrical equipment that maintain effective environmental potential, needed in the area of poultry production must be boosted in electrical incubating equipment, electrical feeding equipment, electrical brooding equipment, electrical watering equipment among others, in the farm. Therefore, these electrical equipment that render different services to better production capacity in poultry farms need to be

addressed in different poultry farms to determine the availability of such electrical equipment, its affordability and its adequacy in the poultry farm. Hence, the worries of the researchers are to determine the extent of utilization of Electrical equipment by the poultry farmers in Ebonyi state in order to reduce the Losses encountered by farmers the poultry birds mortality rate in the state.

The general purpose of the study was to determine the extent of utilization of electrical equipment in poultry production in Ebonyi State. Specially, the study tends to:

1. Determine the available electrical incubating equipment for poultry production in Ebonyi State.
2. Determine the affordable electrical brooding and water equipment for poultry production in Ebonyi State.
3. Determine the adequacy of electrical feeding equipment for poultry production in Ebonyi State.

**Research Questions**

1. What are the available electrical incubating equipment for poultry production in the rural areas in Ebonyi State?
2. What are the affordable electrical watering and brooding equipment for poultry production in the rural areas in Ebonyi State?
3. How adequate is the electrical feeding equipment utilized in poultry production in the rural areas in Ebonyi State?

**Methodology**

The study employed survey research design. The area of the study is Ebonyi state, of Nigeria, which is one of the states in South Eastern zone of the country. The study covered the three agricultural zone in Ebonyi State. The population of the study was 46 respondents comprising of 16 Extension Agents obtained in Ebonyi state agricultural development project (EBADP) and 30 poultry farmers (registered and un registered). There was no sampling, because of the small population was is manageable by the researchers. The instrument for Data collection was structured questionnaire, titled extent of Electrical equipment utilization by rural farmers in poultry production questionnaire (EEEURFPP). The instrument was validated by three experts two in agricultural education option, Technology and Vocational Education Department and one in measurement and evaluation in science Education Department in the same Faculty of Education in Ebonyi State University. Split half and Pearson product moment correlation were utilized to determine the estimate of internal consistency reliability of the instrument and a coefficient of 0.82 was obtained which was good enough for the study. The instrument was administered to the respondents with the help of three research assistants. The data collected were analyzed using mean score and standard deviation to answer the research questions, Decision, cut off point, 2.50.

**Research Question 1:** What are the available electrical incubating equipment in poultry production in the rural areas in Ebonyi State.

**Table 1:** Respondents mean scores on available electrical incubating equipment for poultry production in Ebonyi State.

| S/N | Items Statement | $\overline{X}$ | SD | Remark |
|---|---|---|---|---|
| 1 | Electrical setter are available for incubating equipment | 2.41 | 1.08 | Not accepted |
| 2 | Electrical Hatcher are available for incubating poultry farmers | 2.20 | 0.74 | Not accepted |
| 3 | Electrical walk incubators are available for poultry farmers | 2.53 | 1.01 | accepted |
| 4 | Electrical tunnel type incubators are available for poultry farmers | 2.61 | 1.24 | accepted |
| 5 | Electrical fan incubator are available for poultry farmers | 2.54 | 0.78 | accepted |
| 6 | Electrical standard plant are available for poultry production | 2.53 | 1.31 | accepted |
| 7 | Electrical Hatchery automation are available for poultry farmers | 2.62 | 1.03 | accepted |
| 8 | Electrical Hatchery tray waster are available for poultry farmers | 2,55 | 0.53 | accepted |
| 9 | Electrical waster renewed system are available for poultry farmers | 2.53 | 0.55 | accepted |
| 10 | Electrical egg transfer machine are available for poultry farmers | 2.54 | 1.01 | accepted |
| 11 | Electrical vaccinators machine are available for poultry production | 2.52 | 0.74 | accepted |
| 12 | Electrical chick box waster are available for poultry farmers | 2.50 | 1.31 | accepted |
| 13 | Electrical pack wasters are available for poultry farmers. | 2.51 | 0.43 | accepted |
| 14 | Electrical sexing machine are available for poultry farmers | 2.53 | 1.34 | accepted |
| 15 | Electrical grading machine are available for poultry farmers | 2.31 | 0.53 | Not accepted |
| 16 | Electrical pressure guage are available for poultry farmers | 2.24 | 1.01 | Not accepted |
| 17 | Electrical vacuum egg lifter are available for poultry farmers | 2.53 | 0.52 | accepted |
| 18 | Electrical egg candles are available for poultry farmers | 2.52 | 0.61 | accepted |

Items 3-14, and 17-18, had mean score of 2.50 and above while items 1, 2, 15and 16 had mean score below 2.50. This implies that electrical setter, electrical Hatchers, electrical Hatchery automation, electrical grading and electrical guage, were not available in the poultry farms, as reported, by respondents in the poultry farms in Ebonyi state.

**Research Question 2:** What are the affordable electrical watering and brooding equipment for poultry production in Ebonyi State?

**Table 2:** Respondents mean score on the affordable electrical watering and brooding for poultry production in the state.

| S/N | Items statement | $\bar{X}$ | SD | Remark |
|---|---|---|---|---|
| 1 | Does electrical fitter system and water softeners affordable to reduce TDS content of water for hatchery operation affordable | 2.50 | 0.52 | accepted |
| 2 | Does electrical heaters for hot water in hatchery try washers affordable | 2.61 | 1.05 | accepted |
| 3 | Does large capacity boiler used to provide hot water affordable | 2.65 | 0.54 | accepted |
| 4 | Does electrical linear water for providing continuously water suppler affordable | 3.1 | 1.06 | accepted |
| 5 | Does electrical liner water for draining the excess water for poultry production affordable? | 3.2 | 1.06 | accepted |
| 6 | Poultry farmers use affordable electrical water to control water florid and water level | 2.53 | 0.41 | accepted |
| 7 | Does electrical brooder for warmth and light to rear baby chicks affordable | 2.51 | 0.52 | accepted |
| 8 | Rural farmers use electrical infra red bulbs to provide heating system to spared heat uniformly affordable? | 2.50 | 0.52 | accepted |
| 9 | Does electrical Reflectors/Houor for reelecting heat and light for chicks affordable | 2.52 | 1.11 | accepted |
| 10 | Does electrical flat houor for providing thermometer, record temperature for heat to chicks affordable. | 2.51 | 0.78 | accepted |

Table, 2. Indicate that items 1-10 had the mean score of 2.50 and above. This implies that most of the electrical watering and brooding equipment in the poultry farm were affordable.

**Research Question 3**

How adequate are the electrical feeding equipment in poultry production in Ebonyi State.

**Table 3:** Mean score and standard deviation of responses on the adequacy of electrical feeding equipment for poultry production in Ebonyi state.

| S/N | Items statement | $\bar{X}$ | SD | Remark |
|---|---|---|---|---|
| 1 | Poultry farmers use adequate electrical automatic feeder which move feed from bin to the other and supply feed to entire poultry farm. | 2.52 | 0.77 | accepted |
| 2 | Electrical linear feeder are adequate to feeding poultry farmers to use in chicks (birds) | 2.62 | 1.01 | accepted |
| 3 | Electrical automatic feeders are adequate for poultry farmer to use in feeding chicks (birds) | 2.2 | 1.22 | Not accepted |
| 4 | Electrical circular feeder are adequate for poultry farmers to use in feeding chicks (birds) | 2.53 | 0.87 | accepted |
| 5 | Electrical shell grit box are adequate for poultry farmer to use in feeding birds | 2.61 | 1.23 | accepted |

Table 3. This table indicate that item 1,2,4 and 5 had mean score of 2.50 and above while item 3 had mean score, below 2.50. This implies that electrical automation feeders are not adequate in poultry farm in Ebonyi State.

**Summary of findings**

The findings that emerged from the study:

1. That 13 out of 18 electrical equipment items assessed are available in the poultry farms while 5 out of 18 electrical incubating equipment were not available.
2. That all the electrical watering and brooding equipment for poultry production were affordable.
3. That all the electrical feeding equipment were adequate for poultry production in all the farms as stated by the respondents except electrical automation feeder.

**Discussion of Findings**

The result of the findings showcase the type and nature of electrical incubating equipment available, electrical watering and brooding equipment affordable and electrical feeding equipment adequate for poultry birds production in the state. Table 1 show that 13 items out of 18 electrical incubating equipment assessed are available in the poultry farms in Ebonyi State. This study is in line with the study of Nwite (2014) who observed that electrical incubating machines were many and available for washing eggs, for hatching, and removal of waste, washing and cleaning up system in the farms. The result of the findings in Table 2. Showed that electrical watering and brooding equipment are affordable for the provision of satisfactory environment for poultry production in Ebonyi State. This findings is in line with the study of Okonkwo (2014) who maintained that brooding electrical equipment generate and spread the required uniform heat above the large areas to avoid overcrowding of chicks, under brooding. The study was in line with Owo, (2011) who observed that electrical water equipment such as heaters provide hot water used in washing egg try, general clean up in poultry house, and to increase production potential. The findings in table 3: Indicate that electrical feeding equipment are adequate in the farm, since only one was not adequate out of the five electrical feeding equipment in the farm. This finding was in line with Ekpong (2015) who stress that electrical feeding equipment are many and perform faster function, in spreading feed to every available birds to pick without delay and adequate for high production potential.

**Conclusion**

The services which electrical equipment render in poultry bird production in the farm are very essential for effective environmental needs. Based on the need to meet the protein meat-intake in our daily diet, which are supplied by poultry birds. It become wise to boost the electrical need in the farm to escape the scarcity of the meat, reduce poverty, and increase health wise. This requires serious attention of the farmers to be abreast of Electrical equipment needed to meet production capacity of poultry birds for human consumption in Ebonyi State and Nigeria in general.

**Recommendation**

1. That poultry farmers should form co-operative societies in order to get all the needed Electrical equipment in incubating, Hatchery, brooding, watering, feeding equipment among others.
2. That government of Ebonyi State should to subsidize such costly equipment to enable poultry farmers procure them.
3. That seminars and workshops should be organized for poultry farmers to ensure proper utilization of electrical equipment which provide satisfactory environment to the birds.

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