AHC -16

Biosecurity Assessment of Selected Poultry Farms in South-West, Nigeria

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Abstract
Biosecurity are set of practices designed to prevent diseases. Poultry is one of the largest producers of man's protein in form of meat and egg and has disease as its main challenge. This survey was carried out to assess the biosecurity measures on selected poultry farms in South West Nigeria to determine their level of conformity to the standard. This survey made use of primary data through the use of a questionnaire. The questionnaire was downloaded from the site of www.Biocheck.UGent.be which is a questionnaire with a scoring system designed by the Faculty of Veterinary Medicine. A snowball sampling technique was used with 120 respondents. 56.7% of the respondents were males while 43.3% were females, a majority (36.7%) are within the age range of 41 to 50 years. All the respondents have a formal education with the majority (58.3) having BSc/HND qualification. Of the six parameters measured for external biosecurity, majority of the farmers adhered to one of them which are keeping of feed and water. 22.5% of the farmers adhered to the standard biosecurity measures as regards the entrance of visitors and personnel into the farm. Of internal biosecurity measures 44.1% the farmers adhered to the standard biosecurity measures as regards disease management. 25.9% of the farmers adhered to the standard biosecurity measures as regards cleaning and disinfection of materials. 46.7% of respondents adhered to standard internal biosecurity measures in relation to materials and measures between houses. In conclusion, there is a need to improve on biosecurity measures in poultry industry in Nigeria.

Keywords: Biosecurity measures, poultry farms, farmers

Introduction

Biosecurity has been defined as a set of practices designed to prevent the disease- causing organism from coming in contact with birds on farm (Cardona and Kuney, 2001: Woodger, 2005). These practices when followed correctly, will reduce the potential for the introduction and spread of disease-causing organism onto and between sites (Al-Saffar *et al*, 2006). Biosecurity is the cheapest, most effective means of disease control available and no disease prevention program will work without it (Jeffery, 1997). Better farm biosecurity can improve overall flock health, cut the costs of disease treatment, reduce losses and improve farm profitability. It is also the best form of defense against emergency diseases. The Nigerian poultry industry is estimated at ₦80 billion ($600 million) and is comprised of approximately 165 million birds, which produced 650,000 MT of eggs and 290,000 MT. Avian influenza (AI) was reported in 2006-2009, and there have been outbreaks in 2015. According to WHO (2014) highly pathogenic AI epidemics in poultry, such as A (H5N1), can seriously impact local and global economies and international trade. Avian influenza has proven difficult to combat despite strict vaccination strategies implemented in some part of the worlds for example in Egypt (Peyre *et al.*, 2009). Hence biosecurity has been seen to be the only means to curtail the virus establishment and spread all over the world since it is the only measure or practice effective against not only avian influenza but all other important poultry diseases. This survey was carried out to assess the adherence to standard biosecurity by poultry farmers in some part of South West Nigeria by administering modified Biocheck UGent questionnaire.

Materials and Method

The study was carried out in Osun and Oyo states, southwest Nigeria. The survey made use of primary data. The mode of collection for the primary data was through the use of a questionnaire. The questionnaire was downloaded from the site: www.Biocheck.UGent.be which is a questionnaire with a scoring system designed by the Faculty of Veterinary Medicine (the Faculty is approved by The European Association of Establishments for Veterinary Education (EAEVE)) Universiteit Gentin in collaboration with Flemish Animal Health Organization financed by the Flemish Government. The questionnaire was used to seek information from poultry farmers (broilers and layers) in Oyo (Ibadan) and Osun (Ile-Ife) states in Nigeria. The questionnaire is made up of 12 sections that analyzed the internal and external biosecurity measures put in place on these farms and they include:

External biosecurity measures: Purchase of day-old chick or pullets, Feed and water supply, Removal of manure and dead animals, Entrance of visitors and Personnel, Supply of materials, Infrastructure and biological vectors, Location of the farm. Internal biosecurity measures: Disease management, cleaning and disinfection, aaterials and measures between houses.

A snowball sampling technique was used for the study. A total of 120 respondents were used for this study. The Farmers included both males and females who either raised broiler, layers or both types of birds.

Results and Discussion

Data from table 1 show that 78.3% of the respondents had between 1−5workers on their farm and 28.3 had between 100-500 birds, this may imply that majority of the farms are small scale and work on the farm may also depend on family labor (Oladeebo and Ambe−Lamidi, 2007) and that poultry production is mostly at small or medium sized level in Nigeria Okonkwo and Akubuo (2001).

Table1: Demographic characteristics of the respondents.

Variables	Frequency	Percentage
Sex		
Male	68.0	56.7
Female	52.0	43.3
Age		
20-30	10.0	8.3
31-40	43.0	35.8
41-50	44.0	36.7
>50	23.0	19.2
Location		
Ibadan	52.0	43.3
Ile-Ife	68.0	56.6
Years of experience		
1-10	81.0	67.5
11-20	29.0	24.2
21-30	8.0	6.7
31-40	2.0	1.7
Educational level		
WASSC/NECO	6.0	5.0
OND/NCE	23.0	19.2
HND/B.Sc	70.0	58.3
M.Sc/Ph.D	21.0	17.5

10.8% of the respondents were seen to be involved in only broiler production, 32.5% of the respondents were involved in layers production only while 56.7% of the respondents were involved in both broiler and layers production. This may be due to the fact that broiler production is majorly seasonal and farmers will need another source of income during the off-season period.

Table 2 shows the adherence of farmers to external biosecurity. From this survey 16.6% adhered to standard practice in the purchase of day-old chicks while about 83.4% failed in adhering to these measures. In transporting their live animals or eggs to the market only about 29% of the farmers adhered to the standard biosecurity while in the handling of feed and water supply, the majority of the farmers adhered to the standard measures because about (88.4%). This could be due to farmers wanting to preserve their feed from vermin attack not necessarily for biosecurity purposes but for saving cost.

About removal of manure and dead animals only about 29.2% of the farmers had a good score this could be due to the fact that majority of the farmers store their manure on the farm and throw their dead birds in a nearby bush rather than disposing it properly. Only 22.5% of the farmers adhered to the standard biosecurity measures as regards the entrance of visitors and personnel into the farm because majority of the farmers allow visitors into their farmers without taking any preventive measures such as provision of clothes and boots for

visitors so also some farm workers do not have specific farm clothing, there is no poultry contact-free period and there is an absence of farm hygiene lock. 30% of the farmers adhered to standard biosecurity measures as regards the supply of their materials, it was discovered that farmers do not disinfect the equipment supplied to them either by using UV-disinfection unit or alcohol disinfection.

Table 2: Adherence to External biosecurity by farmers

	% Score										
	0−10	11−20	21−30	31−40	41−50	51−60	61−70	71−80	81−90	91−100	min
purchase of day old chick	9(7.5)	13(10.)	12(10)	33(27.5)	23(19.2)	10(8.3)	16(13.3)	3(2.5)	0(0)	1(0.8)	63
exports of live animals	1(0.8)	6(5)	31(25.8)	19(15.8)	28(23.3)	19(15.8)	4(3.3)	4(3.3)	7(5.8)	1(0.8)	57
feed and water supply	1(0.8)	3(2.5)	1(0.8)	9(7.5)	20(16.7)	26(21.7)	34(28.3)	11(9.2)	2(1.7)	13(10.8)	48
removal of manure and dead animals	6(5)	10(8.3)	36(30)	16(13.3)	9(7.5)	8(6.7)	8(6.7)	9(7.5)	8(6.7)	10(8.3)	66
entrance of visitors and personnels	6(5)	10(8.3)	36(30)	16(13.3)	9(7.5)	8(6.7)	8(6.7)	9(7.5)	8(6.7)	10(8.3)	79
supply of materials	4(3.3)	0(0)	0(0)	0(0)	22(18.3)	58(48.3)	0(0)	1(0.8)	0(0)	35(29.2)	73
total %	3.7	5.8	16.1	12.9	15.4	17.9	9.7	5.1	3.5	9.7	65

For adherence to internal biosecurity measures (Table 3), 44.1% the farmers adhered to the standard biosecurity measures as regards disease management. Although the majority of farmers vaccinate their birds, yet this percentage adherence was due to improper handling of vaccines and lack of a program for flock health management in which there is regular visits of a veterinarian. 25.9% of the farmers adhered to the standard biosecurity measures as regards cleaning and disinfection of materials. Although the farmers clean and disinfect the poultry houses and materials after each round it is evident that majority of the farmers do not have a proper house hygiene lock, none of the farmers check the efficacy of their cleaning using a hygiene program. 46.7% of respondents adhered to standard internal biosecurity measures in relation to materials and measures between houses this is because the majority of the farmers do not have a protocol and do not adhere to the protocol for cleaning and disinfection of materials after every round of raising their birds. Most of the farmers have multiple poultry houses but do not have house specific materials for these houses i.e. they share the same materials between the houses such as clothing, boots, feeders, drinkers, etc.

Table 3: Adherence to Internal Biosecurity Measures

SECTION	SCORE%										
	0−10	11−20	21−30	31−40	41−50	51−60	61−70	71−80	81−90	91−100	MIN
Disease Management	0(0)	2(1.7)	1(0.8)	3(2.5)	14(11.6)	26(21.7)	7(5.8)	14(11.7)	43(35.8)	10(8.3)	81
Cleaning and Disinfection	6(5)	0(0)	40(33.3)	0(0)	37(30.8)	6(5)	0(0)	23(19.2)	0(0)	8(6.7)	67
Materials and Measure	6(5)	0(0)	1(0.8)	9(7.5)	10(8.3)	40(33.3)	27(22.5)	20(16.7)	2(1.7)	7(5.8)	67
Total %	1.9	1.4	11.6	3.3	16.9	20	9.43	15.9	12.5	6.9	72

Conclusion

From this survey, it is clear that farmers have low level of adherence and according to Obinani, (2013) the spread of Avian Influenza has been attributed to lack of compliance by poultry farms and their workers with poultry farm biosecurity measures. So it becomes imperative for the government to enforce biosecurity measures on poultry farm to prevent economic loss and spread of zoonotic diseases to humans.

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