

## Farmers' Perception of the Avian Influenza (Birdflu) Epidemic in Some Parts of Northern Nigeria

<sup>1</sup>G.S. Bawa, <sup>2</sup>P.I. Bolorunduro, <sup>1</sup>M. Orumunyi, <sup>3</sup>M.K. Ajala and <sup>1</sup>A. Peter

<sup>1</sup>Department of Animal Science, Ahmadu Bello University, Zaria, Nigeria

<sup>2</sup>National Agricultural Extension and Research Liaison Services Ahmadu Bello University, Zaria, Nigeria

<sup>3</sup>National Animal Production Research Institute, Ahmadu Bello University, Zaria, Nigeria

**Abstract:** A study was conducted to examine some poultry farmers' perception of the epidemic of the Avian Influenza (Birdflu) in six states (Kaduna, Kano, Katsina, Kogi, Plateau and Niger) and the Federal Capital Territory in Northern of Nigeria. Primary data were obtained with the use of a structured questionnaire administered to one hundred and fifty two (152) respondents selected using the purposive sampling technique, between February to July, 2006. Data obtained were analyzed by descriptive statistics. The results showed that 57.53% of the farmers were males and 88.82% were in the economically active age range of 21-60 years. About 88.16% of them had post secondary school education, while a significant proportion (51.97%) were relatively new in the poultry industry with not more than 5 years business experience. Majority (84.87%) had flock size of less than 10,000 birds before the outbreak of birdflu, about 90.79% were members of various farmers' groups. Only 43.43% of the respondents had good and very good knowledge of early symptoms of the Avian Influenza. Majority (85.53%) of the farmers were aware of the existence of the birdflu before its outbreak in Nigeria, mainly through radio (65.79%), television (38.16%) and print media (26.32%). Extension service to poultry farmers in the area of study was poor as only 15.15% of the respondents had contacts with extension agents on awareness creation. During the outbreak, 78.95% of the farmers opined that the Government of Nigeria was not prompt in its intervention to curb the spread, with 95.35% dissatisfied on the extent of compensation and only 34.87% were aware of Government campaign against the disease. Results also show that 75.66% of the farmers did not experienced birdflu outbreak on their farms, although 80.92% experienced reduced patronage of poultry products during the outbreak, resulting to over 50% drop in sales by 42.76% of the farmers and subsequently, staff retrenchment. About 53.34% of the respondents who were also into feed milling had between 26-50% drops in sales, while 30.98% had over 50% decline in feed sales. Despite the birdflu scourge, 96.05% of the respondents were resilient on continuous investment in poultry production, believing that the prospect in the industry is still bright in Nigeria. Recommended measures to sustain the poultry industry in Nigeria include setting up strategies for prompt information flow on poultry health problems; adequate surveillance and monitoring of poultry farms across the country, especially in controlling the importation of fertile eggs and day old chicks; and improvement in extension contacts with poultry farmers at the grass root level.

**Key words:** Farmers • Perception • Birdflu • Extension services • Nigeria

### INTRODUCTION

Estimates of livestock population in the last two decades before the outbreak of the Avian Influenza in Nigeria show that, the poultry industry is the highest and fastest growing livestock sub-sector. Although RIMS [1] estimated a total of about 104.3 million poultry population in Nigeria, significant population increase has occurred over the years. According to NAERLS/PCU [2] based on provisional partial census of livestock population in 22

states (out of 36 states constituting the Federal Republic of Nigeria and the Federal Capital Territory), Nigeria has an estimated poultry population of for both local and improved breeds of about 122.9 million, compared with 48.8 million, 53.6 million and 60.8 million for cattle, sheep and goat respectively. Poultry products constitute the major sources of protein for many households. As a major source of income and employer of labour, the poultry industry plays a significant role in the socio-economic life of Nigerians. However, the growth of the

industry in recent times has witnessed a serious setback largely because of disease outbreak, particularly the avian influenza.

The Avian influenza, popularly known as birdflu is a viral disease affecting the digestive, nervous and respiratory systems of all domestic and wild birds characterized by respiratory, reproductive, digestive and or nervous signs. Affected birds often show severe depression, sudden drop in egg production, respiratory symptoms, facial subcutaneous oedema, swollen and cyanotic combs, wattles, shanks and sudden death. The virus has an incubation period of few hours to days and mortality rate can reach up to 90-100%, often within 48 hours of showing clinical signs [3]. The avian influenza virus is present in secretions and excretion of infected birds. It is transmitted either by direct inhalation of contaminated aerosol, dust or indirectly via ingestion of contaminated water, feeds or infected carcasses. Transmission of the virus between flock is primarily attributed to the movement of infected birds, feeds, personnel, equipment and vehicles into and out of contaminated premises. No effective serum or vaccine has yet been found for the disease.

In view of the global spread and possible risk of human infection especially by the  $H_5N_1$  strain of the virus, the threat of birdflu pandemic, is one of the major public health issues, the international community is facing. Avian Influenza was first reported in Italy, 1878, South Africa, 1961, USA, 1971 Australia, 1975, Ireland, 1983, Mexico, 1994 and Pakistan, 1994. The most serious epidemic in recent times was in Hong Kong, 2003, Netherlands, 2003 and South Korea 2003 [3]. It was further reported by WHO [4] that 307 people in 12 countries were infected with the  $H_5N_1$  strain of the virus, resulting in 186 deaths including 1 death in Nigeria. The outbreak of the dreaded disease (Birdflu) in Nigeria was reported for the first time in February, 2006. Unfortunately, like most emerging poultry diseases, avian influenza is still poorly understood among poultry farmers. The on-going campaign of eradicating and or preventing the future occurrence of birdflu in Nigeria can only be achieved if all stakeholders in the poultry industry are involved. Some knowledge on symptoms of birdflu at the grass root level is required to facilitate the adoption of preventive measures to avoid future occurrence. This will also provide an entry point for agricultural extension work and services. It is against this background, that this study was designed to determine the farmers' level of, extent of economic loss as a result of birdflu, level of the farmers' technical knowledge of the disease, level of government

involvement in the control of the disease, extension message outreach to farmers in the study area and suggest possible ways of improving farmers' level of awareness of birdflu in order to boost poultry production in Nigeria.

## MATERIALS AND METHODS

The study was carried out among randomly awareness selected poultry farmers in six Northern States of Nigeria and the Federal Capital Territory (Abuja). These states, which include Kaduna, Kano, Katsina, Kogi, Plateau and Niger, were reported among the entry points of the birdflu outbreak in Nigeria in February, 2006. Data were obtained from the farmers by means of a structured questionnaire. Two hundred (200) respondents were served the questionnaire out of which only 152 were retrieved and used for the study.

The parameters considered on the socio-economic characteristics of the respondents include age, gender, business experience, membership of cooperatives, flock size, level of educational attainment and access to credit. The farmers' knowledge of the rate and mode of transmission of the disease, mortality rate, incubation period, symptoms and treatment of the disease and way of increasing such knowledge was elicited. Information on the sources of awareness of the disease, the farmers' perception of the handling of birdflu in Nigeria and the effects of the disease on the poultry industry were also obtained. The study lasted for 6 months (February to July, 2006). The data collected were analyzed using simple descriptive statistics of frequencies, means and percentages using *SPSS 13.0* package.

## RESULTS AND DISCUSSION

**Personal Characteristics of Respondents:** The majority of the respondents (58.55%) were male, while the remaining 41.45% were female (Table 1). Earlier studies by Dada [5] and Apantaku [6] lent credence to this result, confirming that men dominated the commercial poultry industry in Nigeria. This could be due to the energy demands of the venture. A similar demographic study on pigs [7] and goats [8] however, showed that women were more involved in pig and goat production, respectively than their male counterparts. Most of the respondents (88.82%) were within the economic active age group of 20-60 years. Only 5.92% of the respondents were above 60 years. The greater proportion of the economically active age group is indicative of the potential that exist for

Table 1: Demographic Characteristics of Respondents

Characteristics	Frequency	Percentage
<i>Gender</i>		
Male	89	58.55
Female	63	41.45
<i>Age (Years)</i>		
≤ 20	8	5.26
21 – 40	67	44.08
41 – 60	68	44.74
> 60	9	5.92
<i>Educational Qualification</i>		
None	2	1.32
Primary	3	1.97
Secondary	13	8.55
Post Secondary	134	88.16
<i>Experience (Years)</i>		
1 – 5	79	51.97
6 – 10	44	28.95
11 – 15	8	5.26
16 – 20	12	7.26
less than 20	9	5.92
<i>Flock Size</i>		
≤10,000	129	84.87
10,001 – 20,000	10	6.58
20,001 – 30,000	7	4.61
40,001 – 50,000	1	0.66
<i>Farmers' Group Membership</i>		
Don't belong	13	8.55
Belong	139	91.45
<i>Access to Bank Loan</i>		
Yes	30	19.74
No	122	80.26

Table 2: Distribution of respondents based on their technical knowledge of birdflu

Knowledge Score	Frequency	Percentage	Interpretation
0	4	2.63	No knowledge
1	15	9.87	Poor knowledge
2-3	66	44.08	Fair knowledge
4	40	26.32	Good knowledge
5	26	17.11	Very good knowledge

adoption of any intervention that could serve as a preventive measure for future outbreak of birdflu and other poultry diseases. The high amount of physical strength involved in commercial poultry farming could be responsible for only few of the respondents (5.92%) who were above 60 years been involved in the venture. Most of the respondents (88.16%) had various forms of post secondary education ranging from National Diploma to Doctorate degree. Educational level is a key factor in shaping the perception of farmers and it also influences the adoption decision of farmers. More enlightened and educated people tend to be more dynamic to technological innovations and changes than their illiterate counterpart [9]. The high level of education among farmers in the area of study could mean that most of the

farmers are into other professions and only embraced poultry rearing as a part-time venture.

Majority of the respondents (51.97%) had between 1 to 5 years of experience in poultry farming. About 28.95% had 6-10 years experience. This shows that appreciable proportion of the farmers were quite knowledgeable in poultry production and management. The number of years of experience of a poultry farmer could be an important factor in predicting adoption behaviour. Most of the respondents (84.87%) operated small scale commercial outfit with 100-10,000 birds. Less than 20% of the farmers had above 10,000 birds. The low capital base as a result of lack of access to credit facilities by most of the farmers and their commitments to other profession could be responsible for the small scale operation. Commercial poultry production is capital intensive. Lack of credit facilities from banks by most of the respondents could be responsible for the small to medium scale level of poultry farming in the area of study. Although, while lack of access to credit facilities by farmers (from financial institutions) may be true, field experiences have shown that most farmers in Nigeria are often reluctant in disclosing their credit sources [10].

Most of the respondents (91.45%) belong to various farmers' group. It has been reported that most farmers' groups are dormant in their activities and may not meet the aspirations of their members [11]. However their involvement in creating awareness of birdflu among poultry farmers will go along way in preventing further spread of the disease between flocks and from birds to human beings. There may be need to sensitize the farmers' groups in the study area to serve as pressure groups in obtaining relevant assistance from government and non-governmental agencies for the development of poultry industry.

**Farmers' Knowledge of Birdflu Symptoms:** The criteria used to determine the farmers' knowledge of Avian Influenza (birdflu) were: *the knowledge of the rate and mode of disease transmission; its incubation period, mortality rate, symptoms and treatments of the disease.* A farmer who cannot explain any of the criteria has a score of 0, which indicate no knowledge. A farmer who scored 1 has poor knowledge; those with 2-3 score had fair knowledge; a score of 4 indicates good knowledge, while an all round score of 5 is indicative of very good knowledge of the avian influenza disease.

Based on the scoring system adopted, Table 2 shows that 2.63% of the respondents had no knowledge of the disease, while about 9.87% had poor knowledge. A larger of the respondents (44.08%) had fair knowledge; about

Table 3: Extent of respondents' awareness of birdflu and Government intervention

Awareness/Intervention	Frequency	Percentage
<i>Time of awareness of birdflu</i>		
Before the outbreak in Nigeria	130	85.53
After the outbreak in Nigeria	22	14.47
<i>Sources of Awareness*</i>		
Radio only	100	65.79
Television only	58	38.16
Print media	40	26.32
Internet	15	9.87
Seminars/workshop	20	13.16
Friends/relations	18	11.84
Farmers' group	8	5.26
Radio and television	48	31.58
Extension agents	23	15.15
<i>Intervention assessment</i>		
Prompt	32	21.05
Delayed	120	78.95
<i>Compensation payment</i>		
Adequate	7	4.65
Inadequate	145	95.35
<i>Aware of Government campaign?</i>		
Yes	53	34.87
No	99	63.13

\* Multiple responses

26.32% had good knowledge, while only about 17.11% had very good knowledge of avian influenza (birdflu) according to the spelt out criteria. This is unfortunate as birdflu is not only zoonotic but cannot be treated after infection. This also calls for the need to intensify efforts in organizing training workshops on prevention and handling the incidences of birdflu for farmers at the grass root level by relevant governmental and non-governmental agencies. The high level of educational attainment by most respondents (Table 1) could be responsible for about 87.5% of the respondent having general knowledge (from *fair* to *very good*) of the disease. The threat of birdflu is a global issue. It is possible that, this group of poultry farmers acquired their knowledge about Avian Influenza through the print and electronic media, especially in the present era of rapid spread of information and communication technology.

**Extent of Awareness of Birdflu Outbreak and Government's Intervention:** The study probed into when the farmers heard about birdflu for the first time and sources of such information. Majority of the respondents (85.52%) were aware of birdflu outbreak in Asia before it's

occurrence in Nigeria probably because of the wide publicity by the international community (Table 3). Only 15.13% of the farmers sourced information on birdflu through extension agents. Major sources of awareness by respondents on the outbreak were radio (65.79%) and television (38.16%). Extension agents were only responsible for 15.15% of the farmers in outreach. There is therefore the need to improve extension contacts with poultry farmers in order for them to be better informed on production poultry health technologies available to ensure profitable production.

The farmers' opinion on the birdflu crisis in Nigeria and intervention by the Nigerian government and international agencies were sought. The isolation of the H5N1 virus strain from infected birds was carried out at the National Veterinary Research Institute, Vom, Nigeria and confirmed in a laboratory in Italy. The mass media report of the epidemic attracted support from the international community. The setting in motion of compensation payment of the affected farmers and the fact that none of the poultry farm attendants were confirmed dead or positive of the H5N1 virus, as at the time of the first outbreak in February-July 2006, ignites hope of government attempt to curtail the spread of the disease.

Following the outbreak of birdflu in Nigeria, the Federal government set up a crisis management centre with a monitoring team to curtail the spread of the disease. Ban on poultry and poultry products movement was enforced in states with confirmed cases of birdflu. An attempt was made to pay N250.00 (US \$1.95) for each bird culled to compensate for the loss and also serve as an incentive for other farmers to report cases of birdflu outbreak on their farms. Public enlightenment campaign was also carried out. However, majority of the respondents (78.95%) opined that an intervention by government was delayed. WHO [3] reported that over 130 poultry farms mainly in 13 states across the country were affected by the birdflu virus. Perhaps if the Nigerian government had acted promptly on the blue print on prevention of the virus submitted in 2005 by the Technical Committee of Experts on the Prevention and Control of Birdflu, the spread of the epidemic across the country could have been reduced. It was reported that the monitoring experts set up by the government lacked the necessary equipment for the job [12]. Some of the bio-security measures such as quarantine of all poultry farms within 3 kilometer radius from the point of outbreak and restriction of movement of poultry products between states and across the Nigerian boarder was not fully

Table 4: Impacts of the birdflu outbreak on poultry farms

Impact	Frequency	Percentage
<i>Depopulated stock</i>		
Yes	37	24.34
No	115	75.66
<i>Reduced patronage of poultry products</i>		
Yes	123	80.92
No	29	19.08
<i>Reduced staff strength</i>		
Yes	138	90.79
No	14	9.21
<i>Extent of sales decline of poultry products</i>		
< 25%	21	13.82
26-50%	40	32.89
51-75%	51	33.55
76-100%	14	9.21
No drop in sales	16	10.52
<i>Extent of poultry feeds sales decline</i>		
<25%	5	7.04
26-50%	40	53.34
51-75%	19	26.75
76-100%	3	4.23
No drop in production and sales	4	5.63
<i>Resilience in investment</i>		
Yes	146	96.05
No	6	3.96

implemented by the law enforcement agencies. The compensation of farmers that had their birds depopulated with a meager sum of money was not enough to cover up the cost of raising birds to point of lay (about N500.00). With the outbreak of the disease in several states of Nigeria, the prospect of further spread to neighboring countries was high. The assistance and support of international organizations is therefore still relevant. Majority of the respondents (78.95%) opined that the Nigerian government did not create prompt awareness on the birdflu. Most of the awareness campaigns were through print and electronic media. The rural communities with large number of domestic fowls were not well covered by the campaign channels. In view of the zoonotic nature of the disease, there may be need to step up public enlightenment campaigns with emphasis on individual precautionary measures to accommodate poultry farmers at the rural level.

**Impacts of Birdflu Outbreak on the Poultry Farms:**

About 75.66% of the farmers (Table 4) indicated that their farms were not affected by the birdflu; whereas 24.34% of

them had their flock depopulated because of the disease. These farms lost their birds in thousands. For example, Sambawa Farm located Jaji, Kaduna lost about 150 Ostriches and 45,000 birds in a day. Sovet Farms Limited based in Kano lost over 39,000 birds in less than 10 days. Most of the respondents whose farms were not affected by birdflu sold up their birds at a give away price to avoid total loss in investment due to the epidemic.

About 80.92% of the respondents reported that reduced patronage by consumers was experienced. About 19.08% of the respondents indicated that despite the awareness camping on the risk of eating poultry products, some consumers still patronize their products. Most of the respondents (90.79%) who had their birds destroyed in a bid to prevent the spread of the virus, laid off their staff which led to increase in unemployment rate in the affected areas. The 9.21% of the respondents who had retained their workers, during the outbreak were mainly small-scale farmers with only one or two staff and were also not affected by the disease. A significant proportion of the respondents (42.76%) had over 50% drops in sales of their birds and other poultry products. The drop in sales of poultry products was because of panic created by the media on the dangers of eating poultry and eggs as the disease is known to be zoonotic. About 56.34% of poultry farmers who were also into feed milling business had 25-50% drop in sales of feeds, while 30.98% of the farmers had above 50% drop sales of feeds. With the closure of most of the farms, the demand for feed also dropped. Most of the farmers whose flocks were not depopulated maintain their birds on maintenance ration, to reduce cost of production. This affected the sales of feed brand like layers mash, broiler starter, broiler finisher etc. during the period of study. Most of the respondents (96.05%) still showed their commitment to invest in poultry production despite the birdflu crises.

**CONCLUSION AND RECOMMENDATIONS**

The avian influenza virus constitutes a life threatening menace not only to poultry but also to humans. The results of the study revealed that although there were no confirmed cases of death in humans following the outbreak of the *H5N1* viral strain at the time of the survey, many poultry farmers were forced to sell off their stock at ridiculously low prices. Some of the farmers left the poultry enterprise entirely for other perceived less

stressful and more lucrative ventures like fish farming. Poultry related ventures like feed manufacturers; poultry drug sellers etc were also affected. Extension services to poultry farmers were inadequate as a result; most of the poultry farmers were not well knowledgeable about the disease. In view of the important role the poultry industry plays in the economy of Nigeria, concerted efforts should be made by all stakeholders to revamp the sector. The following are recommended measures that can safeguard the Nigerian poultry industry from the scourge of birdflu and other diseases;

- There should be easy flow of agricultural information from research institutes, World Health Organizations, Food and Agricultural Organizations and universities to poultry farmers. For this purpose, the Agricultural Development programme (ADP) in Nigeria should be used to monitor and provide farmers with information on the early symptoms of the disease, mode of transmission and the bio-security measures to be observed to avoid spreading.
- It was obvious that extension contact in the study area was poor. Extension agencies should intensify the production of radio and television programmes on birdflu management regularly. Extension contacts and training workshops on birdflu prevention and general poultry health management, aimed at upgrading the farmers' knowledge of the disease should be regularly conducted.
- In case of future outbreaks, the Nigerian Government should compensate farmers adequately at cost equivalent to the market value of birds. This is to prevent farmers from rushing infected birds to the open market where they will get better price than reporting to relevant quarters for destruction.
- Government at all levels must intervene decisively in providing centers where farmers can report the disease in case of outbreak. Those centers should provide information on the disease and how it can be controlled in addition to registration of farmers for compensation.
- With the peculiar challenges of rural areas where more than half of the poultry exist, the use of radio announcements and town meetings would be faster means of getting messages to farmers on poultry health management.
- Strict laws should be enforced on controlled importation of fertile eggs, day old chicks and adult birds from other countries

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