

AWARENESS AND MITIGATION MEASURES OF AFLATOXIN AMONG POULTRY FARMERS AND FEED MILLERS IN IJEBU-ODE AND IGBESA AREA OF OGUN STATE, NIGERIA

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ABSTRACT

Poultry feed ingredients which comprises of maize, peanut meal, soya bean meal and mixtures of maize, groundnut cake and other crops have been associated with mycotoxin contamination during crop production and storage, with limited attention given to this by local poultry farmers and regulatory bodies. A quarter of the world's growing crops are affected by mycotoxins each year. In this study, level of awareness and mitigation measures of aflatoxin among poultry farmers and feed millers in Ijebu-Ode and Igbesa area of Ogun State, Nigeria was assessed. Using a descriptive survey design, 120 respondents, comprising poultry farmers and feed processors were sampled. The questionnaire measured among other things the demographic information of the sampled population, their level of awareness of aflatoxin and mitigation practices. The results revealed that majority (88.34%) of respondents were aged 18-50 years. The industry appeared male-dominated, with 70.9%. Out of the sampled population, 59.17% were married and 58.82% had tertiary education. Regarding mycotoxin awareness, 52.72% of respondents were unaware, and farmers and processors exhibited similar knowledge about influencing factors and dangers. The findings showed that both poultry farmers and feed millers in the study area were not adequately informed about aflatoxins. Therefore, there is dare need for interventions and educational programs to enhance awareness and practices among poultry stakeholders in the study area.

Keywords: Awareness, Aflatoxin, Poultry feed, Feed ingredients, Processor

INTRODUCTION

In recent years, the Nigerian poultry industry has been rapidly expanding and has become one of the most commercialized sub-sectors of Nigerian agriculture (United States Department of Agriculture (USDA), 2021). However, poultry feed ingredients which comprises of maize, peanut meal, soya bean meal and mixtures of maize, groundnut cake and other crops have been associated with aflatoxin contamination during crop production and storage (Kimanya et al., 2008), with limited attention given to this by local poultry farmers and regulatory bodies. Food and Agriculture Organization (FAO) (2010) reports that about a quarter of the world's growing crops are affected by aflatoxins each year. In a recent study by Oyegunwa et al., (2021) on aflatoxin contamination in maize and other poultry feed ingredients obtained from feed mills in Ijebu Ode, all ingredients tested for aflatoxin contamination were above the European regulatory limit of 20ppb aflatoxins. This has raised the question of whether the farmers who patronize these feed millers are aware of the presence of aflatoxin in the feed ingredients or not. Such knowledge gap needs to be filled. Therefore, the purpose of this study is to assess the level of awareness and mitigation measures of aflatoxin among poultry farmers and feed millers in Ijebu-Ode and Igbesa area of Ogun State, Nigeria.

MATERIALS AND METHODS

Study Area

The study was carried out in Ogun State. Ogun State is located in South-western part of Nigeria and covers 16,762 square kilometers. Ondo State to the east, Oyo and Osun states to the north, Lagos State to the south, and the Republic of Benin to the west are its neighbors. Ogun State is blessed with natural resources, including mineral deposits and a large area of rich soil excellent for farming.

Sampling procedure, data collection and method of data analysis

The study population comprised of poultry farmers and feed millers in Ijebu-Ode and Igbesa areas of Ogun State. At the time of the study, there were 200 registered poultry farmers and 200 registered feed millers in the study area (OGADEP, 2023). 30% of the poultry farmers (60 respondents) and 30% of the feed millers (60 respondents) were chosen using a straightforward random sample method. Thus, 120 respondents in all were chosen for the study. Based on the study's objectives, primary data were collected from the respondents in the study area using a well-structured questionnaire. Level of awareness of aflatoxin among the respondents was measured on a Yes (1) and No (0) scale and they were also asked to add other options not listed. The individual mean score were found for each item of awareness and used for decision making. Storage practices among selected poultry farmers and feed processors was measured on a modification of likert-like three-point scale of highly hygienic (2), mild hygienic (1) and not a hygienic (0) and the individual mean score for each item with the cut-off (1.4). Feed Purchasing Practices was measured on a Yes (1) and No (0) scale and they were also asked to add other options not listed. The individual mean score were found for each item of awareness and used for decision making. Mitigation measures adopted by the respondents was measured on a modification of likert-like three-point scale of highly effective (2), effective (1) and not effective (0) and they were also asked to add other options not listed. The individual mean score were found for each effective item and used to rank the mitigation measures in order of their effectiveness. Descriptive statistics such as frequency counts, percentages, mean and standard deviation were used for data analysis.

RESULTS AND DISCUSSIONS

Table 1: Categorization of level of awareness of Aflatoxin among respondents

Category	Frequency	Percentage	Minimum	Maximum
Low	63	52.5	5.00	24.00
High	57	47.5		
Mean \pm SD	2.5 \pm 1.8			

Source: Field survey, 2023

The result in Table 1 show that majority of the respondents (52.5%) had low level of awareness of aflatoxins while 47.5% of the respondents had high level of awareness of aflatoxins in the study area. The low level of awareness of aflatoxins could be linked to lack of public awareness of aflatoxin despite the fact that a good number of the respondents in the study area were educated. It could be ascertained that public awareness of aflatoxins is low.

This result supports the findings of Afolabi et al. (2019) that to be educated does not mean being current and knowledgeable about toxins until there is proper public awareness and control measures.

Table 2: Mean and ranking of mitigation measures adopted by the respondents

Items	Mean	Rank
Avoidance of contaminated feed	2.113	1 st
Safe disposal of contaminated feed	1.654	2 nd
Improved public awareness on aflatoxin	1.638	3 rd
Lowering mold growth in harvested crops	1.560	4 th
Planting pest-resistant varieties of crops	1.549	5 th
Improving feed storage hygiene	1.500	6 th
Modulating the metabolism of ingested aflatoxin	1.459	7 th
Reducing internal dose and subsequent risk	1.300	8 th
Prophylactic control measures	1.294	9 th
Strengthening extension services for awareness	1.254	10 th
Clay-based enterosorbents	1.201	11 th
Proper implementation of feed safety policies	1.190	12 th

Source: Field survey, 2023.

The results in Table 2 shows the various mitigation measures adopted by the respondents in the study area and were rated and ranked according to their mean values. They include avoidance of contaminated feed (1st), safe disposal of contaminated feed (2nd), improved public awareness on aflatoxin (3rd), lowering mold growth in harvested crops (4th), planting pest-resistant varieties of crops (5th), improving feed storage hygiene (6th), modulating the metabolism of ingested aflatoxin (7th), reducing internal dose and subsequent risk (8th), prophylactic control measures (9th), strengthening extension services for awareness (10th) and clay-based enterosorbents (11th) while proper implementation of feed safety policies (12th). This is indication that few respondents who were aware of aflatoxin in the study area adopted avoidance of contaminated feed, safe disposal of contaminated feed, improved public awareness on aflatoxin and many more for mitigating aflatoxin among the poultry farmers and feed millers in the study area. This result supports the findings of Afolabi et al. (2019) that avoidance of contaminated feed, safe disposal of contaminated feed, improved public awareness on aflatoxin have been adopted for large scale poultry farmers and feed millers in industrialized areas in order to avert higher mortality rate and low productivity among poultry birds.

Conclusion

The study showed that both poultry farmers and feed millers in the study area were not adequately informed about aflatoxin, with over 50.0% of participants exhibiting a lack of awareness concerning these toxins, their occurrence, predisposing factors, and associated risks to animals and humans. Few respondents who were aware of aflatoxin adopted

avoidance of contaminated feed, safe disposal of contaminated feed, improved public awareness on aflatoxin, lowering mold growth in harvested crops, planting pest-resistant varieties of crops, improving feed storage hygiene and many more as mitigating measures of aflatoxin in the study area.

Recommendations

Based on the findings highlighted, it is recommended that:

1. The government should develop strategies targeted at minimizing aflatoxins contamination while the maize is still in the field (pre-harvest).
2. Strengthening of existing public extension services to enable it to deliver useful updates or information on aflatoxins and its mitigating measures.
3. Government and private sectors should play a crucial role in strengthening policies that impact on feed safety, as well as support risk assessment initiatives to ensure that well thought out standards for aflatoxins are in place.

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