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AWARENESS AND USE OF NATURAL GROWTH PROMOTERS AMONG POULTRY FARMERS IN OYO STATE, NIGERIA

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ABSTRACT

The study investigated the awareness and use of natural growth promoters (NGPs) among poultry farmers in Oyo state. Purposive sampling was used to select 11 local government areas based on the concentration of the poultry farms and 13 respondents were randomly selected from each local government. Structured questionnaire was used to elicit information from respondents. The study revealed that 69.6% of poultry farmers were males and 82.7% were within the age range of 21-50 years. Most (67.4%) of the farmers were married, 72.3% were Christian, 92.8% were educated and 46.8% practice farming as major occupation. Majority (60.4%) had flock size of less than 1,000 birds and they were aware of NGPs, with feed enzymes having highest percentage (89.3%) of awareness. Feed enzymes and probiotics have the highest utilization with 87.1% and 55.0% respectively. Major constraints to utilization of NGPs are lack of extension agents, lack of knowledge of natural growth promoters, lack of technical know-how and cost of NGPs. Significant relationship was found between farmers' educational qualification ($\chi^2 = 38.762$, $p = 0.010$, flock size; $\chi^2 = 42.078$, $p = 0.043$ and the awareness of NGPs. Significant relationship also existed between farmers' monthly income ($\chi^2 = 22.744$, $p = 0.004$) flock size ($\chi^2 = 48.184$, $p = 0.010$) and utilisation of NGPs. There is high level of awareness but utilization is low. NGPs should be subsidized and distributed through poultry farmers group.

Key words: Awareness, Utilisation, Natural Growth Promoters, Poultry, Farmers

INTRODUCTION

Chicken is a food-animal that provides meat and eggs consumed by man. They are sometimes implicated in the transmission of food-borne pathogens to man. These food-borne pathogens are carried by chicken as its normal flora or are acquired from other external sources. Pathogenic bacteria are always present in the gut, but the balance between pathogenic and beneficial bacteria determines whether or not disease will occur (Ivanov, 2003). Maintaining a healthy balance between all microflora within the gut is known as eubiosis (Jensen, 1980) and can be influenced by bacteria endemic to the microflora. In the intestine, bacteria considered beneficial to the gut, including lactic acid forming bacteria like *Lactobacillus* spp. prevent proliferation of pathogens, such as *Salmonella* spp., through competitive exclusion for nutrients and for receptor sites on the gut wall (Thomke and Elwinger, 1998). Beneficial bacteria can also produce an adverse environment for pathogenic bacteria to colonise and grow, for example, by the production of short-chain fatty acids which lower the pH and prevent growth of pH sensitive pathogenic bacteria (Thomke and Elwinger, 1998). The intestine is the biggest immune organ in the body, but to achieve appropriate protection from pathogens a complex gut microflora is essential.

The microflora also have functions in the development of the digestive and immune tissue in the host animal, it can produce nutrients that can be used by the host as a nutrient source and also can neutralize some feed toxins and

promote an environment in the gut where anti-nutritional factors and toxins are minimised (Dawson, 2001).

In the past, manipulation of the microflora to create eubiosis has been achieved by the use of antibiotic feed additives. However, with the severe restriction of antibiotic feed additive use and increasing consumer concern in markets, development of optimum feeding practices for different classes of poultry is crucial in order to ensure safer products and sustainability of poultry industry.

Over the past 50 years, there has been increasing amounts of antibiotics used as therapeutic agents to treat bacterial infections that decrease performance and cause diseases and as growth promoters. Many of the antibiotics used in the poultry industry are being used in human medicine as well. Shortly after the initiation of widespread use of antibiotics in the animal industries, they were placed under increased scrutiny because of concern over development of bacterial resistance to the usual microbiocidal effects of the antibiotics. Today, there is a consumer and governmental outcry to eliminate that practice from poultry and livestock production. Evidence has been accumulated to show that there is a link between risk of zoonotic disease and growth promoting antibiotic usage in livestock and poultry.

In June 1999, the European Union (EU) banned the use of some growth promoting antibiotics in poultry feeds. This ban was due to very disturbing observations that potential human pathogens, frequently found on processed

poultry carcasses, were increasingly resistant to certain antibiotics. However, it was the determination that bacterial resistance was not due to single but to multiple antibiotics that finally resulted in the ban of the use of sub-therapeutic dose of certain antibiotics in poultry.

In the year 2006, the EU officially banned the usage of all antibiotics for the sole purpose of growth promotion in poultry and livestock. This is because over the years, researches have shown that microorganisms have grown resistance to antibacterial drugs and the use of low levels of antibiotics in food animal leads to the development of resistance in zoonotic organisms of animal origin (CDC, 2000). The impact of this ban had influences on the methods used to produce broilers, turkeys and table eggs. The controversies surrounding the use of antibiotic growth promoters led to search for alternatives that come from natural origin such as natural growth promoters (NGPs). NGPs or Non-Antibiotic Growth Promoters are feed additives for farm animals. They are commonly regarded as favorable alternatives to Antibiotic Growth Promoters (AGPs) in livestock production. The main advantage of NGPs over AGPs is that they do not bear any risk regarding bacterial resistance or undesired residues in animal products such as meat, milk or eggs. NGPs include predominantly Acidifiers (organic acids or their salts), Probiotics, Prebiotics, Synbiotics, Phytogenics, Feed Enzymes and Immune Stimulants. The need for this study arises due to the gradual shift from inorganic agriculture to organic agriculture.

The specific objectives were to:

1. Identify the personal characteristics of poultry farmers in the study area.
2. Determine the awareness of NGPs among poultry farmers in the study area.
3. Investigate the level of use of NGPs among poultry farmers in the study area.
4. Determine the perception of respondents on the use of natural growth promoters
5. Determine the constraints faced by poultry farmers in using NGPs in the study area.

The study hypothesized that no significant relationship exists between respondents' personal characteristics, awareness, perception and utilization of NGPs.

METHODOLOGY

The study area is Oyo State, Nigeria. Oyo state has a total population of 5,591,589 (NPC, 2006) and covers a total of 27,249 sq km. The mean temperature is about 26.7°C and the climate of the state favours agricultural activities in its diversity. The major agricultural products are trees, roots and cereals crops. Livestock sector constitute poultry, piggery, cattle rearing etc. The population of the study comprised both registered and unregistered poultry farmers with flock size of 200 and above.

Oyo state has 33 Local Government Areas out of which eleven were purposively selected based on concentration of poultry farms. Simple random sampling was used to select 13 respondents from each local government given a total sample size of 143 respondents. However, only 140 instruments were returned. Respondents' perception was measured through attitudinal statements on a five-point likert scale of strongly agree, agree, undecided, disagree and strongly disagree with a score of 5,4,3,2 and 1 respectively for positive statements and reverse order for negative statements. Respondents' score was computed and mean was used to categorise their perception into favourable and unfavourable. Analysis was done using both descriptive (tables and graphs) and inferential statistics such as Chi-square.

RESULT AND DISCUSSION

Personal characteristics of respondents

The sex distribution of respondents as shown in table 1 reveals that majority (69.6%) were male while 30.4% were female. This implies that male dominate poultry farming as also noted by Akinbile (2003) that 80% of poultry farmers are males. Majority of the respondents (84.1%) were within the age range of ≤ 30 - 50 years while 15.8% were above 50 years of age. It can be said that most poultry farmers were relatively young and still strong enough to undertake required tasks in poultry production. This is in line with Akinbile (2007) that population within this age group are productive, energetic and constitute active work force. More than half (67.4%) of the farmers were married, while 23.9%, 5.8%, and 2.9% were single, divorced and widowed respectively. Distribution of respondents based on religion indicates that 72.3% were Christians, 25.5% were Muslims while traditional religion was the least (2.2%). Also, most of the farmers (92.8%) had at least secondary school certificate education. Thus majority of poultry farmers were literate. Close to half of the respondents (46.8%) had poultry farming as their major occupation, however they supported it with other occupation as also noted by Gbadegesin and Olawoye (2000) that most farmers are self-employed and sometimes engaged in such occupations as tailoring, trading, and professional or teaching etc.

Enterprise characteristics of respondents revealed that 60.4% had flock size of 1,000 birds and below which implies that they are small scale farmers. The study also revealed that 39.4% earned less than ₦30,000 per month which can be attributed to small scale production of majority of the respondents. The implication of this is that, they may not be able to combine the cost of natural growth promoters with production cost.

Table 1: Distribution of personal characteristics of farmers

Variables	Percentage
Sex	69.6
Male	30.4
Female	
Age	
≤ 30 yrs	31.6
31-40 yrs	36.0
41-50 yrs	16.5
> 50 yrs	15.8
Marital Status	
Single	23.9
Married	67.4
Widowed	2.9
Divorced	5.8
Religion	
Christianity	72.3
Islam	25.5
Traditional	2.2
Educational qualification	
Non formal Education	3.0
Primary School	68.7
Secondary School	27.1
Certificate	
Tertiary Education	
Occupation	
Civil servant	27.3
Farming	46.8
Private employee	20.1
Others	5.8
Flock size	
≤ 500	29.5
501- 1,000	30.9
1,001-5,000	23.7
5,001- 10,000	6.5

>10,000	9.3
Monthly income	
≤ □20,000	19.0
□20,001-□29,000	20.4
□29,001-□39,000	10.9
□39,001 -□49,000	10.9
>□49,000	38.7

Farmers' Awareness and Utilization of Different Types of Natural Growth Promoters

Knowledge gives people the capability to do things and take advantage of opportunities. Table 2 below shows that awareness of NGPs among poultry farmers is relatively high with feed enzymes (89.3%), probiotics (77.1%) and prebiotics (68.6%), while awareness of phytogenics (32.9%) and synbiotics (30.7%) are low.

The expected end result of awareness of any innovation is the utilization. The result on the use of natural growth promoters shows that 87.1% of the respondents made use of feed enzymes as natural growth promoters among respondents while more than half (55%) of the respondents used probiotics. The study however reveals that the level of use of phytogenics (17.1%) and Symbiotic (17.1) was low among respondents. The result followed similar pattern with respondents awareness in which these two NGPs recorded low awareness and thus low utilization among NGPs. Even those with high awareness still ended up with low utilization except for feed enzymes. Duvel (1997) attributed non adoption/utilisation of an innovation to two basic causes which are the individual is unwilling or unable to adopt (use) the innovation.

Table 2: Distribution of Farmers' Awareness and Utilization of Types of Natural Growth Promoters

Growth Promoter	Awareness of NGPs		Utilized NGPs	
	Frequency	Percentage	Frequency	Percentage
Feed enzymes	125	89.3	122	87.1
Probiotics	108	77.1	77	55
Prebiotics	96	68.6	50	35.7
Immune stimulants	68	48.6	48	34.3
Acidifier	65	46.4	37	26.4
Synbiotics	68	32.9	24	17.1
Phytogenics	43	30.7	24	17.1

Year of Awareness of Natural Growth Promoters

Figure 1 presents the result on years of awareness of Natural growth promoters among respondents. It shows that poultry farmers' awareness of NGPs increased for all the NGPs before 2001 to 2010. However, increase in awareness was greater for Probiotics, Acidifiers and Prebiotics, when compared with Phytogenics and Symbiotics. for low before year 2001 but was on a slow increase between years 2001 to 2005. The result implies that some NGPs were being promoted on a higher level than others. This may

be as a result of availability, which may vary from one area of the country than the other. Awareness is a critical factor in the adoption of technological innovations. It is a stage an individual passes through in the adoption process. Awareness of an innovation usually precedes the utilization of the innovation (Rogers and Shoemaker, 1971). This result is consistent with the observation of Williams (1969) which states that research without communication is as barren as communication without research result.

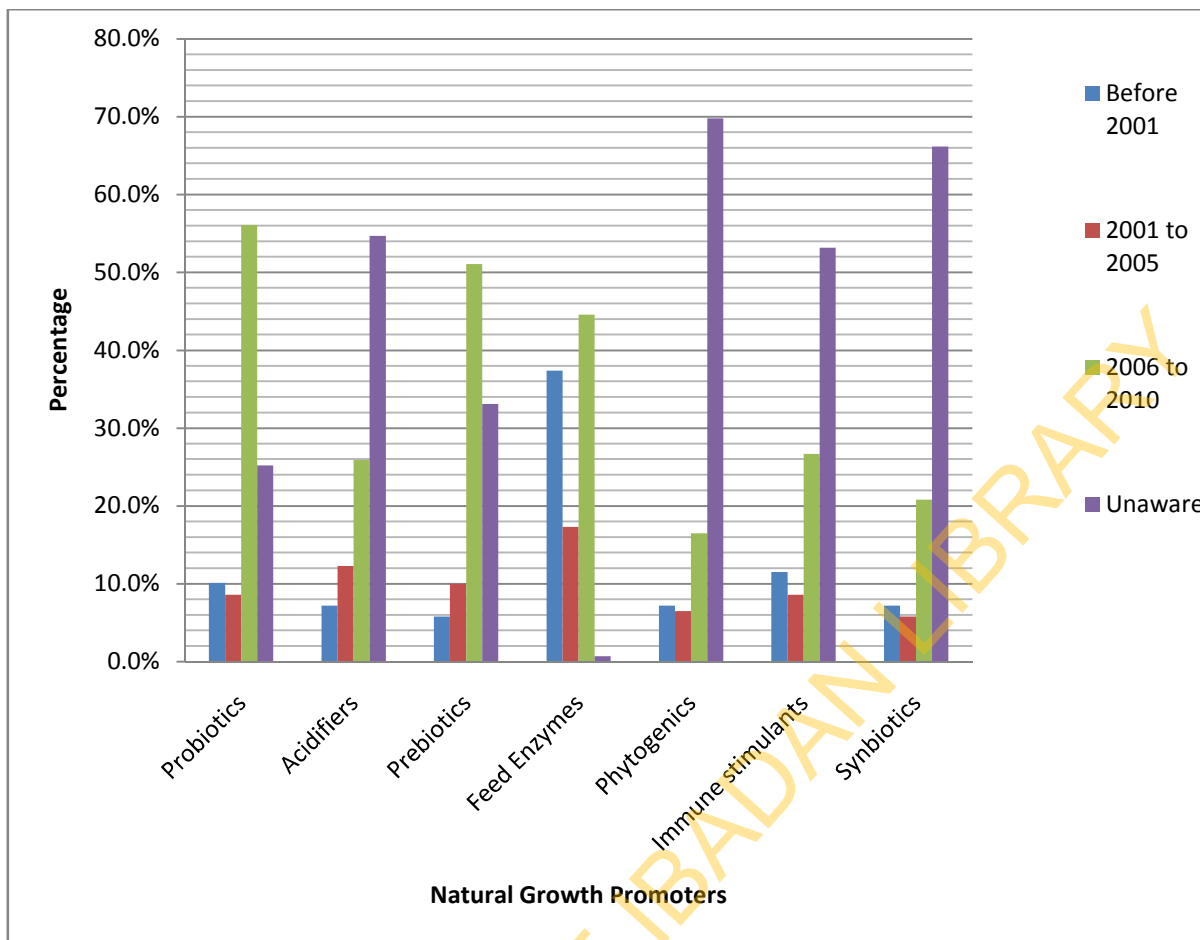


Figure 1: Year of Awareness of Natural Growth Promoters by Farmers

Reason for Using Natural Growth Promoters

The result on table 4 shows that majority of the respondents used NGPs because it improves feed efficiency (93.5%), lowers mortality rate (92.1%), gives higher profitability (89.3%), reduces incidence of diarrhea (86.3%), stimulation and rapid maturation of the immune system (85.2%). They also used NGPs because of their awareness that it does not bear any risk regarding bacterial resistance in human being (77.9%) nor of undesired residual effect in poultry

products (74.3%). Hence, the use of NGPs by respondents is not to satisfy personal interest alone, rather consumers at large are also put into consideration. Also the use of these NGPs by respondents is not because of its cheapness or availability as indicated in the result with most of them having lower percentages thus respondents have knowledge of NGPs usefulness in poultry production and the need for its usage to replace artificial growth promoters.

Table 4: Distribution of Farmers' Reason for Using Natural Growth Promoter(s)

Reason for using growth promoter(s)	F	%
Improved feed efficiency	130	93.5
Lower mortality rate	129	92.1
Higher profitability	125	89.3
Reduced incidence of diarrhea	120	86.3
Stimulation and rapid maturation of the immune system	115	85.2
Do not bear any risk regarding bacterial resistance in human being	109	77.9
Do not bear any risk regarding undesired residues in poultry products	101	74.3
Only one(s) cost effective to me	81	59.1
Only one(s) known of	73	54.1
Only one(s) available to me	64	47.1

Farmers' Level of Awareness of Benefits of Natural Growth Promoters

The mean awareness of benefit score was 31, the maximum score was 45 while the minimum was 13. From table 5 below, results revealed that larger percentage (93.6%) of poultry farmers in the study area had high awareness of the benefit of natural growth promoters with the score of 31 and above while only few (6.4%) had low awareness of the benefit inherent in the use of natural growth promoters

scoring below the mean. Farmers awareness of the benefits of natural growth promoters was high with respect to item/statement that natural growth promoters improves feed efficiency, while the lowest awareness of the benefits of natural growth promoters was on rapid development of a healthy gut microflora. High awareness of benefit of an innovation helps bring about its adoption, especially when the technology is highly accessible.

Table 5: Awareness and Perception Scores of Respondents of Natural Growth Promoters

Variable	Category	F	%
Awareness	High Awareness (31-45)	131	93.6
	Low Awareness (13-30)	9	6.4
Perception	Favourable(57-85)	84	59.7
	Unfavourable(46-56)	56	40.3

Perception of Respondents towards the Use of Natural Growth Promoters

Results on table 5 above reveals that a higher percentage (59.7%) of the poultry farmers had favourable perception to the use of natural growth promoters, as different from 40.3% of them who had unfavourable perception. The farmers had highest perception about NGPs with respect to the item/statement that use of NGPs leads to higher overall farm outputs and productivity, while the lowest level of perception about NGPs is that natural growth promoter is a foreign phenomenon. The high level of awareness among respondents may be responsible for this. In addition, those with favourable attitude were likely to be innovators and early adopters while the 40.3% with unfavourable attitude might be late majority and laggard that need more time before taking a decision as explained in the characteristics of different categories of adopters.

there is limited access to agricultural information and this was identified as one of the most serious constraints to agricultural development in West Africa.

Table 7: Constraints Faced by the Farmers' in Utilizing Natural Growth Promoters

Constraints	Freq.	Percent
Lack of extension agents	65	46.4
Lack of the knowledge of natural growth promoters	41	29.3
Lack of technical know-how	39	27.9
Cost of natural growth promoters	38	27.1
Lack of interest	21	15
Poor demonstration	20	14.3
Language barrier	14	10

Constraints Faced by Farmers in Utilizing Natural Growth Promoters

The findings on constraints facing respondents on the use of NGPs show that close to half (46.4 %) of the poultry farmers opined lack of extension agent as major constraint to the use of NGPs in the study area. Lack of knowledge (29.3%) about NGPs, lack of technical know-how (27.9%) and cost of NGPs (27.1%) were also listed as constraints to utilization of NGPs. This is in agreement with the opinion of CTA (1996) that

Relationship between Selected Personal Characteristics of Poultry Farmers and the Awareness of Natural Growth Promoters

The result shows the relationship between poultry farmers' selected personal characteristics and their awareness of NGPs. Educational qualification and flock size ($\chi^2 = 38.762, 42.078, p < 0.05$) were significantly related to awareness of NGPs. This implies that other educational qualification and flock size influenced respondents' awareness to NGPs. The level of production of a poultry farmer may determine the extent to which they seek information on how to improve their production. Education also increases access to information, and thereby increasing awareness.

Table 8: Relationship between Selected Personal Characteristics of Poultry Farmers and the Awareness of Natural Growth Promoters

Variable	χ^2	df	p-Value	Decision
Educational Qualification	38.762	2	0.010	S
Flock size	42.078	4	0.043	S
Income level per month	33.723	4	0.210	NS

Relationship between Selected Personal Characteristics of Poultry Farmers and Use of NGPs

Table 9 shows that monthly income ($\chi^2 = 51.878, p= 0.004$) and flock size ($\chi^2= 48.184, p= 0.010$) were significantly related with use of NGPs. The result is in conformity with the findings of Akinbode and Clark (1968) that a relationship exists between farm size and adoption. This however is not in agreement with findings of Igodan et al (1987), Oduekun (1991) and Olowu (1990) who observed that scale of operation has nothing to do with adoption of

innovation. .Meanwhile, highest educational qualification was not significantly related to use of NGPs, ($\chi^2= 22.74, P> 0.05$) thus, negating the findings of Akinbode and Clark (1968), Ogunfiditimi (1981), Igodan et al (1987) and Oduekun (1991) that a relationship exists between educational level and adoption. This may be because of the limited access to these natural growth promoters among respondents. Also, the use of a product involves some financial cost and depends on how financially buoyant the poultry farmer is.

Table 9: Relationship between Selected Personal Characteristics of Poultry Farmers and the Use of NGPs

Variable	χ^2	df	p-Value	Decision
Educational Qualification	22.744	2	0.358	NS
Flock size	48.184	4	0.010	S
Income level per month	51.878	4	0.004	S

CONCLUSION

There was high level of awareness of some NGPs among poultry farmers in Oyo state, but utilization was very low. The awareness of NGPs has been on the increase in the last ten years, but was highest in the last five years. The use of NGPs is dependent on flock size and income level per month. Meanwhile, farmers' perception has no significant relationship with utilization of NGPs. Lack of extension agents that will put farmers through the use of NGPs was the major constraint to utilization of NGPs.

RECOMMENDATION

1. Extension services to the livestock farmers should place more emphasis on use, rather than awareness of NGPs in order to replace AGPs in poultry production.
2. Radio discussions, lectures and articles in newspapers on the benefits of NGPs should be carried out to boost the knowledge of farmers on the merits of NGPs so as to increase utilization.
3. NGPs should be subsidized and distribution should be done through farmer groups since many of the farmers belong to one group or the other.

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