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UTILIZATION OF COCOA POD HUSK (CPH) AS SUBSTITUTE FOR MAIZE IN LAYERS MASH AND PERCEPTION OF POULTRY FARMERS IN NIGERIA

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ABSTRACT

Developing processing technique for efficient use of crop by–products such as cocoa pod husk (CPH) is very important in Nigeria. Oluyole and Egbeda Local Government Areas (LGAs) of Oyo state, Nigeria were purposively selected out of the nineteen L.G.As producing cocoa in the state while 120 respondents were randomly selected from the list of 800 registered poultry farmers. The farmers used Cocoa Pod Husk (CPH) for a period of 8 weeks and were interviewed with questionnaire. Frequencies, percentages, charts and chi–square were used for the analysis. The result revealed that 65 percent of the respondents were males and 85 percent were educated and 95.00% are willing to use CPH in feed production for layers. The result also revealed that there is a significant relationship between constraints of inadequate energy source of ingredients (X^2=6242, p=005) method of processing (X^2=5895, p=005), inadequate labour (X^2=9196, p<005) and perception of poultry farmers towards use of CPH as substitute for maize in layers mash. Five Points Likert Scale result revealed that 85 percent of the respondents had positive perception towards the use of CPH as substitute for maize in layers mash. In conclusion, poultry farmers are willing to use CPH as a substitute for maize in layers mash if there is an improved method of processing. Hence, there is need for modern processing technique of CPH using hygienic method and at commercial level to enhance increase in the use of waste cocoa by-products and reduction in feed production cost in Nigeria.

KEY WORDS: Cocoa pod husk, Farmers, Perception, Processing, Utilization, Cost.

INTRODUCTION

About 70 percent of the Millennium Development Goals (MDG's) target group lives in rural areas, particularly in Asia and Africa. Agriculture serves as a critical component in their livelihoods. The dominant strategy in food production is through cropping or raising livestock (World Bank, 2002). It has been predicted that in the next three to five years is crucial for the poultry industry as the lucrative ethanol industry pulls corn prices higher (Jacqui Fatka, 2007). Cocoa-pod husk is a by-product of the cocoa harvesting industry and it forms about 80% of the cocoa fruit and it is essentially a waste product except for the negligible amount used in the manufacture of local soap and feeding of livestock. It is estimated that 0.8 to 1.0 million tons of cocoa pod husk is generated annually in cocoa farms in Nigeria (Ojeniyi, 2006). According to Agunbiade and Olubamiwa (2002) cocoa pod husk contains protein, energy and fibre which has gained considerable interest as livestock ingredients in Nigeria owing to availability and lack of large scale commercial application. Meat is expensive because of high cereal prices and cereal scarcity and therefore becomes imperative to find local agricultural residues and by-products that are commonly available, unsuitable for human consumption, cheap and can provide commercial diet for livestock without negatively affecting their health and productivity (Teguia and Beynen, 2004).

Cocoa pod husk (CPH) is an agro-based by-product which may be incorporated into layers diets to reduce the maize requirement. Very little of the potentials locked up in this by-product have been exploited (Egbe and Olubamiwa, 1989) Studies conducted in Nigeria have shown that crushed CPH could be integrated into livestock feeds. Also animal feeding trials have been carried out in Ghana and Brazil (Egbe and Sobamiwa, 1989). This study is aimed at achieving two of the targets of UN Millennium Development Goals of 1990-2015 which is focused on eradication of extreme poverty and hunger and develop global partnership for development.

TABLE 1.1 Proximate composition of cocoa pod husk.

Components	g/kg DM
Dry Matter	889.6 ± 1.5
Total Ash	90.7 ± 0.4
Crude protein	91.4 ± 1.7
Crude fibre	357.4 ± 0.9
NDF	597.8 ± 18.8
ADF	470.4 ± 9.3
Lignin	211.6 ± 2.6
Hemicellulose	127.5 ± 9.6
Cellulose	261.5 ± 3.0
Total Sugars	33.0 ± 0.6

Values are presented based on dry weight material as Mean ± Standard deviation.

DM = Dry Matter.

Source: http://www.academicjournals.org/SRE

TABLE 1.2 proximate chemical compositions of main parts of maize kernels (%)

Chemical component	Pericarp	Endosperm	Germ
Protein	3.7	8.0	18 4
Ether extract	1.0	0.8	33.2
Crude fibre	86.7	2.7	8.8
Ash	0.8	0.3	10.5
Starch	7.3	87.6	8.3
Sugar	0.34	0.62	10.8

Source: Watson, 1987

OBJECTIVES

The objectives of the study are to;

1. Identify the personal characteristics of poultry farmers
2. Ascertain the farmers' level of inclusion of cocoa pod husk(CPH) in feed and
3. investigate the perception of the farmers towards the utilization of CPH as substitute for maize

MATERIALS AND METHODS

Purposive sampling technique was used to select Oluyole and Egbeda Local Government Areas (LGAs) of Oyo state, Nigeria out of the nineteen LGAs producing cocoa in the state while one hundred and twenty poultry farmers were selected from the list of eight hundred registered poultry farmers with simple random sampling technique. The farmers used the Cocoa Pod Husk (CPH) for a period of eight weeks January through February 2006 after which they were interviewed with questionnaire. The data were presented using frequencies and percentages while chi–square was used for the analysis.

RESULTS AND DISCUSSION

Majority of the respondents (58.33%) are above 50 years which implies that there is need for youth encouragement in the rural area in order to sustain poultry production in Nigeria (Table 1). This is contrary to the finding of Bekele (2005) whose respondents were relatively young which could promote learning new idea and use of the same. He referred to the farmers as economically active groups.

The findings also show that more men are involved in poultry farming than females as 65 percent of the respondents were males. This implies that poultry farming is not gender specific. The dominance of males in poultry farming is not surprising as more males have been reported to have access to education than females, especially in the developing countries (Pigozzi, 2000) Women are mostly engaged in backyard poultry management especially in rural areas (Igbokwe, 2001) Agriculture provides key contributions to the economic empowerment of women

The result revealed that majority 85.0% had formal education with 46.7% having tertiary education. This indicates that the technology of CPH inclusion in feed will be properly applied as most of the farmers are educated. The farmers had formal education which could enable them read and write in English language. This potential could assist in their information seeking habit and record keeping system. This may have positive effect on their capabilities to expand their poultry business. (Ogunlade *et al*, 2007)

Farmers may be aware of a technology but their willingness to adopt that technology is also very important. In this study most of the farmers 95.00% are willing to use CPH in their feed especially as majority of them are educated. Ekong (1988) reported that educational attainment has some implications on willingness to adopt improved technologies and on the production and productivity of farmers.

TABLE 1: Personal characteristics of respondents

Variables	Frequency	Percentage
Age (Years) < 30	8	6.67
31 – 40	12	10.00
41 – 50	30	25.00
> 50	70	58.33
Total	120	100.00
Sex		
Male	78	65.00
Female	42	35.00
Total	120	100.00
Education		
No formal Education	18	15.00
Primary	12	10.00
Secondary	34	28.30
Tertiary	56	46.70
Total	120	100.00
Willingness to use CPH		
Willing	114	95.00
Not willing	6	5.00
Total	120	100.00

Source: Field Survey, 2006

The findings reveals that majority (58.33%) of the poultry farmers are small scale farmers with less than 500 birds (table 2) This implies that they need to be empowered to facilitate adoption of new innovation that would reduce cost of feed formulation. The implication of information of new innovations is that farmers could increase their production provided there is adequate information (Ogunlade, 2007)

TABLE 2 Frequency distribution of number of birds reared by the respondents

Variable	Frequency	Percentage
<500 Birds	70	58.33
501-1000 Birds	20	16.67
>1000 Birds	30	25.00
Total	120	100.00

Source: Field Survey, 2006

In many developing countries, including Nigeria, domestic animals especially poultry competes with humans for cereals such as maize, rice, wheat, millet etc., which are traditionally included in poultry feed at levels up to 50-60%.

Majority of the farmers 59.17% used 20% CPH maize replacement which increased their egg production by 5% while 40.83% that utilized above 20% had 10% increase. According to Teguia (2004) the birds fed on the diet

containing 6.5% cocoa husks (10% maize replacement) showed a higher weight gain than their counterparts fed on the control diet without cocoa husks. The better performance was seen in spite of the higher crude fibre content of the diet with cocoa pod husk (CPH) is an agro-based by-product which may be incorporated into layers diets to reduced the maize requirement. Very little of the potentials locked up in this by product have been exploited (Egbe and Olubamiwa, 1989)

In broiler production the inhibition of growth seen in the group that received the diet with 30% maize replacement could be due to the high dietary concentration of theobromine present in the husks (Day and Dilworth, 1984)

TABLE 3 Distribution of Respondents on Level of CPH Inclusion in Layers Mash (n = 120)

Variable	Frequency	Percentage
Level of Maize replacement		
500kg/ton (Increased egg by 5%)	49	40.83
600kg/ton (Increased egg by 6.5%)	71	59.17
Total	120	100.00

Source: Field Survey, 2006

The result on Table 4 revealed that 85.00% of the respondents have favourable perception towards the use of cocoa pod husk (CPH) as substitute for maize due to increase in their egg production. This implies that if all resources such as availability of the CPH, improved processing methods and scientific application of the inclusion of CPH in feed are made available, farmers will be ready to use CPH to increase their income.

TABLE 4 Distribution of Respondents by Perception towards Substitute of CPH for Maize in Layers Mash

Variable	Frequency	Percentage
Favourable (10-50)	102	85.00
Unfavourable (51-100)	18	15.00
Total	120	100.00

Source: Field survey, 2006.

Mean= 50.5

The result on table 5 revealed that there is a significant relationship between constraints of inadequate energy source of ingredients(X^2=6242, p<005) method of processing (X^2=5895, p<0.05), inadequate labour (X^2=9196, p<0.05) and perception of poultry farmers towards use of Cocoa pod husk as substitute for maize in layers mash.

However, its use in livestock feeding has been limited by constraints of its high crude fibre contents which have been reported to depress nutrient digestion and absorption particularly in the non ruminant animals (Sobamiwa, 1993)

CONCLUSION AND RECOMMENDATION

Poultry farmers are willing to use CPH as a substitute for maize in layers mash hence; there is need for modern processing technique of CPH using hygienic method and at commercial level. This will enhance increase in the use of waste cocoa by-products, poultry farmers' income and reduction in feed production cost in Nigeria.

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TABLE 5: Chi-square test of Relationship of Perceived Constraints and Perception towards use of CPH

Variables	X^2	df	P	CC	Decision
Constraints of Energy Source of ingredients	6.242	2	0.044	0.409	Significant
Methods of Processing	5.895	2	0.050	0.399	Significant
Inadequate Source of Labour	9.196	2	0.010	0.478	Significant

Source: Field Survey, 2006

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