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Short Communication

THE QUALITY OF COMMERCIAL POULTRY FEEDS IN NIGERIA: A CASE STUDY OF FEEDS IN MAKURDI, BENUE STATE

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SUMMARY

Samples of various types and brands of commercial poultry feeds were taken from six poultry farms and subjected to proximate analysis. The feeds were found to be adequate in metabolisable energy and fat. Protein, calcium and phosphorus content were below recommended levels and there was an improper ratio between calcium and phosphorus. Crude fibre content was in excess of the expected level in poultry rations.

KEY WORDS: Poultry feeds, Feed Quality, Poultry nutrient requirements.

INTRODUCTION

The on-farm performance of improved, hybrid strains of chickens in Nigeria is below the potential of these birds. Reports from Europe and the USA (Oluyemi and Roberts, 1979; Nesheim *et al*, 1979; Scott *et al*, 1982) indicate that modern hybrid layers can lay over 300 eggs per annum, while broilers should attain more than 2kg live weight in eight weeks. Under experimental conditions, similar levels of performance have been recorded in Nigeria (Fanimo *et al,* 1999; Ezieshi *et al*, 2001). However, under farm conditions yields are as low as 180 eggs per annum (Oluyemi and Roberts, 1979; BNARDA, 1993), while broilers require up to ten weeks to reach 2kg live weight (Dafwang and Ogundipe, 1982).

Feed constitutes at least 60% of the cost production of poultry products, however, in countries like Nigeria, where there is competition for cereal grains between humans and livestock, this proportion is higher (Fetuga, 1977; Lamorde *et al*, 1981; Igboeli, 2000). Poultry production at minimal cost, therefore, requires high quality feeds, and the quality of feed should be maintained through the strict enforcement of quality control regulations.

The objective of this study was to determine the quality of commercial poultry feed on sale in Makurdi metropolis using proximate methods.

MATERIALS AND METHODS

Six poultry farms in Makurdi metropolis were randomly selected and two visits made to each farm at an interval of four weeks. During each visit a sample of all feed types and brands in use on the farm was taken. A total of sixteen samples were obtained, comprising six broiler finisher, four pullet grower and six layer's mash.

The samples were analyzed for crude protein (CP), ether extract (EE), crude fibre (CF), and calcium (Ca) by methods described by AOAC (1984). NFE was obtained by difference. Phosphorus (P) content was estimated by the procedure described by ADAS (1973) and

metabolisable energy (ME) was calculated using the formula of Carpenter and Clegg (1956), as modified by Sibald *et al* (1963).

RESULTS AND DISCUSSION

The absence of broiler starter feeds among the samples obtained may be explained by the fact that the farm visits were made in November and December when most producers were concentrating on producing broilers for the Christmas market. The results of analysis, and how they compare with recommendations for poultry diets in Nigeria, are presented in Table I.

Metabolisable energy content of the diets varied from adequate to excess. Crude protein content varied from marginal to grossly inadequate. Ether extract content was sufficient,
while crude fibre content was often far in excess of recommended values. Calcium and phosphorus content were far below required levels and phosphorus levels were often higher than that of calcium, a reverse of what should obtain in properly balanced rations.

The pattern of excess energy and low protein content observed for these feeds would result in low feed intake and slow growth (ARC, 1975). Layers would produce at a low rate and accumulate excess visceral fat, which would also interfere with laying (Sainsbury, 1980). The deficiency in calcium and phosphorus and improper balance between the two elements would also retard growth. In addition, the availability of these elements will be low, since this is affected by their relative concentration in the intestine (Scott *et al*, 1982; Nwegbu and Obioha, 1984; McDonald *et al*, 1995). Another implication of the low quantity and defective ratio of calcium and phosphorus in these feeds would be a high incidence of deformities of the skeleton. This will be especially so for the leg bones and for broilers (Bains, 1979; Nwegbu and Obioha, 1984).

TABLE I: Mean, % composition of commercial poultry diets (recommended nutrient level*; % deviation from recommended level)

	Feed type		
Nutrient	***Broiler finisher***	***Pullet grower***	***Layers mash***
CP	16.1(21; -24)	16.2(16; +1)	13.7(18; -23)
EE**	5.2(3.0; +73)	3.7(3.0; +23)	4.2(3.0; +39)
CF***	13.3(5.0; +160)	11.4(5.0; +128)	11.3(7.0; +61)
Ca	0.23(1.3; -82)	0.33(1.0; -67)	0.5(3.5; -37)
P	0.4(0.85; -57)	0.52(0.80;-36)	0.51(0.80; -37)
ME (Mj/kg)	12.7(12.6; 0.0)	13.1(11; +20)	13.0(11; +18)

*Recommended nutrient levels according to Olomu (1979); **Minimum ***Maximum (+ -) deviation above or below recommended level.

Since the metabolisable energy levels of the diets were adequate, the nutritional implications of the high crude fibre content of the diets may be insignificant. However, the management of manure could be problematic, especially on deep litter. This is because high fibre diets encourage high water intake, leading to high fecal moisture content and associated problems, such as coccidiosis and high atmospheric ammonia levels, which would be attended by inflammation of the eyes and respiratory tracts (Nesheim *et al*, 1979;Patrick and Schiable, 1980;Dafwang and Ogundipe, 1982;AERLS, 1982). Nwokolo *et al* (1984) have reported evidence that excess dietary fibre interferes with mineral availability. This would aggravate the consequences of the low calcium and phosphorus status of these feeds. The acute shortage of calcium in the layer feeds would result in a low rate of egg laying and poor eggshell quality. Hens on such feed may have to skip one or more days between lays to accumulate enough calcium for the next eggshell (Bains, 1979).

The levels of calcium and phosphorus observed in most of the feeds coincide with their average presence in the ingredients of these feeds, suggesting that they were not supplemented with specific sources of these elements. If feed manufacturers do not supplement cheap nutrients such as calcium and phosphorus, they would be less likely to supplement expensive items such as vitamins and micro minerals. Another dimension to the issue is the misleading labeling of these feeds. All the brands of feed sampled carried labels claiming recommended levels of energy, protein, calcium, and phosphorus and in some cases of crude fibre. If the labels carried true estimates of nutrients, users of the feeds may be able to take steps to correct the nutrient deficiencies. As things are, they are misled into the belief that they are using good quality feed, thus making it difficult for them to diagnose the causes of poor performance in their flocks.

This study has revealed evidence that the quality of poultry feed on the Nigerian market may frequently be of very poor quality. This will reduce productivity, which together with the high and escalating cost of feeds will progressively force more poultry farmers out of business, thereby aggravating the already acute shortage of animal protein for the populace. Urgent action to correct the situation by agencies in charge of product quality is indicated.

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