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# Scarcity of feed raw materials for poultry production in Nigeria: The way-out

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## Abstract

Poultry farmers often turn to use of alternative feed ingredients whenever the prices of the conventional ones skyrocket. Studies have however shown that the performance of poultry birds based on alternative ingredients do not often compare favourably with birds fed conventional ingredients. In addition, in as much as, there is competition between humans and livestock for these feed ingredients (especially maize and soyabean), the pressure will persist. Instead of dissipating so much effort on search of alternatives, the poultry farmer should be encouraged to increase the efficiency of production by considering proper manipulation of feed, application of appropriate housing system and the use of feed additives.

**Keywords:** Poultry production, Feed raw materials, Alternatives.

## Introduction

The Nigerian poultry farmer is faced with challenges of getting good quality day-old chicks, provision of adequate housing and bio-security (1). Other challenges include erratic power supply, inconsistent government policies on importation and multiple taxations, in addition to other teething changes. Feed, however, is 60-80 % largest single cost in intensive production of chickens and eggs (2) with the cost of energy being a major factor for consideration. It is quite understandable why poultry farmers panic whenever the prices of feed raw materials skyrocket. The major reason is that it is seemingly almost impossible to transfer the extra cost to consumers because of the inelasticity of demand and supply of poultry products. The poultry industry is reported to consume up to 90% of the total commercially produced feed in Nigeria (3) and for this reason the

poultry sector is therefore most hard hit in the livestock industry in situations of high prices of feed ingredients or unavailability of these feed ingredients. The competition between humans and livestock for some common feed raw materials worsens the feed situation generally for livestock and mostly for monogastrics. The poultry producer will then ask "What is the way out?" The production of low priced high quality safe feed may seem to be a way out. The poultry farmer will also need to adopt good manufacturing practices.

## Feed raw materials

Conventionally, maize is the major source of energy in poultry feeds in Nigeria while soybean meal, groundnut cake and fish meal are sources of proteins. Considering the known causes of interference in energy value of grains, soluble non-starch polysaccharides (NSPs) stand out as major determinants of the



availability of energy and other nutrients. The poultry farmer can therefore further improve the efficiency of good quality grains to furnish the necessary additional energy if desirable interventions are applied. Many alternatives to maize, soyabean and premixes have been suggested but many of these alternatives have limited practicability in commercial poultry production (Table 1).

#### **Addition of crystalline Amino Acid**

Crystalline amino acids should be added to feed in the order of limiting amino acids when the protein content of the feed is reduced. A simple equation illustrates substitution of the protein source (soybean meal) with corn (maize) and L-Lysine HCl: 50 kg/tonne of soybean meal = 48.5 kg/tonne of corn + 1.5 kg/tonne of L-Lysine HCl (Anon). The substitution corresponds to a 2% reduction of the protein level in feed. This equation means that 1 tonne of L-Lysine HCl can save the usage of 33 tonnes of soybean meal provided the necessary adjustments are made with respect to other nutrients (source: anonymous). Some other workable formulations devoid of conventional ingredients are possible with careful manipulation of the amino acid requirements for poultry.

#### **Addition of exogenous enzymes to feed**

Inclusion of appropriate exogenous enzymes when properly applied will improve the nutritional value of poultry feeds and can be a very effective cost reduction strategy leading to improved feed conversion ratio. These enzymes breakdown anti-nutritive factors such as the non starch polysaccharides (NSPs) and also increase the

bioavailability of starches, protein, minerals. For example, exogenous enzymes assist in the breaking down of bonds that cannot be broken by the animal's own enzymes, and also complement the action of the endogenous enzymes. Some of the exogenous enzymes available for poultry in the market today are simply cocktails of proteases, xylanases, mannanase, glucanases, phytases etc (Table 2). These enzymes come in trade names e.g. Avizyme, Cibenza DP 100, Roxazyme G, Roxazyme G2G, Allzyme, Nutrase, Hemicell® etc. Farmers who add these enzymes to poultry feeds without a careful consideration of the NSPs profile of the substrates and also the apparent metabolizable energy of the feed will only be wasting money. Blind addition of enzymes in poultry feeds is therefore counterproductive. Other feed additives include probiotics, prebiotics, synbiotics, phytases, mycotoxins binders, anti-oxidants etc. The appropriate and judicious use of these feed additives will also help to mitigate the high cost of feed production.

#### **Conclusion**

When faced with challenge of increased cost of feed raw materials the farmer needs to look for holistic ways of increasing the efficiency of production within reasonable economic limit. Proper manipulation of the feed formulations to meet the requirements of the chicken is of major consideration, purchase of good quality day old chicks, provision of adequate and appropriate housing; purchase of good quality feed raw materials and the addition of feed appropriate additives.



**Table 1: Inventory of some feed raw materials in Nigeria**

Nutrients	Conventional Ingredients	Alternative ingredients
Energy	Maize	Sorghum, Millets, Whole wheat, molasses, biscuit waste, cassava chips, cassava grits, kp?kpo garri, full-fat soybean, rice wastes etc.
Protein	Fish meal, meat meal, groundnut cake, soybean cake	Sunflower cake, full-fat soybean, cottonseed cake, coconut meal, blood meal, dried brewer's yeast, hydrolyzed feather meal, sesame meal, cocoa by-products, cassava leaves, hatchery wastes, edible mushroom, shrimp head, rubber seed, shea butter waste, sunflower seed, pigeon pea, melon.
Filler materials	Wheat offals	Maize offals, Brewer's dried grains, palm kernel cake, rice bran, rice husk, sorghum offals, corn cob, malt dust, cassava starch residues, cassava peels, cocoa waste, shea butter cake, yam peels, melon husk, cocoa husk
Minerals	Bone meal, oyster shell, salt	Periwinkle shells, snail shells, limestone, super phosphate
Micro ingredients	Vitamins, trace minerals, antibiotics, medication feed, additives, methionine, lysine, threonine, ltryptophan, enzymes	Mostly essentially imported

Source: Adapted from 4, 5, 6 and 7

**Table 2. Some exogenous enzymes available for poultry feed production**

Enzymes	Substrates	Functions	Benefits
$\beta$ -glucanases	Barley, oats (rare in Nigeria)	Viscosity reduction	Enhanced digestion and utilization of nutrients
Xylanases	Wheat, rice bran, wheat offals	Viscosity reduction	Enhanced digestion and utilization of nutrients
$\beta$ -galactosidases	Grain legumes	Viscosity reduction	Enhanced digestion and utilization of nutrients
Phytases	Plant feedstuffs	Release of phosphorus from phytate-P	Enhanced phosphorus absorption
Proteases	Proteins	Hydrolysis of proteins	Increased protein digestion
Amylases	Starch	Hydrolysis of starch	Increases glucose release
Mannanases	Palm kernel cake, soybean meal	Hydrolysis of mannan	Increased release of mannose

Adapted from (8)



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