

# Utilisation of Whole (unground) Millet by Laying Birds

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## ABSTRACT

This study investigated the effect of ground and whole (unground) millets based diets on the performance of laying birds. The experiment consisted of three treatments. Three treatments were allocated to birds fed diets with ground millet, whole (unground) millet the control treatment of maize based diet. Each treatment was allocated 60 birds divided into 10 replicates. Feed and water were given ad-libtum. Feeding ground or unground millet based showed no significant ( $p>0.05$ ) effect on the feed intake of laying birds, however birds fed unground millet based diet had the highest consumption of 104.91g/b/d. Similarly, birds with higher feed consumption (unground millet) had the highest egg production value of 76.20%. This value was significantly higher than that of the control diet (68.18%) but not significantly different with the ground millet based diet (70.93%). It can be concluded that millet is better utilized by laying birds in any form (ground or whole) than maize.

**Keywords :** Laying birds, Ground Millet, Unground Millet, Egg Production

## I. INTRODUCTION

In Nigeria and many other tropical countries, the daily per capita animal protein consumption is below the recommended level (Bamgbose, 1998). The FAO (1990) recommended a daily protein consumption of 65g per day per adult, out of which at least 26g should be of animal origin. The 2009 FAO food security indicators showed that 59.8g of protein is consumed per adult daily in Nigeria, with only 7.2g from animal source, against the requirement of 26g. Nigeria can therefore be said to be under nourished if the level of protein intake by the populace is used as a yardstick. The laying hen has the potential to bridge the gap between supply and demand in developing countries like Nigeria (Bashar, 2008).

Poultry production is aimed at the massive production of meat and eggs. Inadequacies in human nutrition can be corrected through increase in the production of animal protein within a short time. This is achievable through enhanced poultry production because poultry has a high efficiency of utilization of nutrients and quick return on capital investment compared to other species of livestock. Poultry farming therefore

guarantees supply of good quality protein within a short period of time. Moreover, the consumption of poultry products in Nigeria outstrips that of most livestock, with the exception of beef (Ikpi and Akinwumi, 1981).

The constant set back in the industry however is as a result of rising cost of major inputs such as feeds, housing and equipment. Poultry feeding is a major item of cost in poultry production, as it accounts for 60-80% of the cost of production (Ogundipe, 2003).

Cereal grains are the primary sources of energy in poultry diets. Therefore, producers must not only be concerned with the composition of the grain, but also how it is processed so that the animal may fully utilize the nutrients. Researchers show that the physical form of diets and feed particle size have a great effect on poultry yield (Davis, 2003).

The effect of particle size on feed quality and quality of poultry has earlier been reported (Behnke 2004). Particle size increases the surface area of the grain, thus allowing greater interaction with digestive enzymes. Poultry birds (including young birds) can be fed whole grains, either as entire diet or as supplement (Diane,

2004). Whole grains are more nutritious than ground since oxidation occurs after grinding, reducing nutritional content.

The main objective of the study is to determine the utilization of unground millet by laying hens as compared to ground millet.

## II. METHODS AND MATERIAL

### Study Area

The research was conducted at the poultry unit of College of Agriculture, Hassan Usman Katsina Polytechnic, Katsina. Katsina State is located between latitude 11000' N and 13020' N and longitude 7000' E and 8055' E. It shares border with Niger Republic to the North, Kaduna State to the South, Jigawa and Kano States to the East, and Zamfara State to the West. Katsina State has a land size of about 24,971.215km<sup>2</sup> with a population of 5,801,584 as at 2006 national census (Federal Republic of Nigeria, 2012).

The climate of Katsina State is the tropical wet and dry type (Tropical Continental Climate), classified by Koppen as Aw climate. Rainfall is between May and September with very high intensity between the months of July and August (Abaje, Sawa & Ati, 2014). The average annual rainfall varies from 550 mm in the northern part to about 1000 mm in the southern part of the state. The pattern of rainfall in the state is highly variable. The annual mean temperature is about 270C. The highest air temperature normally occurs in April/May and the lowest in December through February (Nigerian Meteorological Agency, 2012).

### Experimental Diets

Three experimental diets were formulated as follows: T1 (control) contained ground maize with 18% CP. T2 contained ground millet while T3 also contained whole (unground) millet. The calculated analysis of the experimental diets is shown in the table below. The diets were adjusted to contain same levels of all nutrients, i.e. energy (2500 Kcal), Protein (18%), calcium (3.6%), lysine (0.82%).

**Table 1.** Calculated analysis of experimental feed

	T1 Maize based diet	T2 Ground Millet based diet	T3 Unground Millet based diet
Energy (kcal)	2500	2500	2500
Protein (%)	18	18	18
Lysine	0.82	0.82	0.82
Methionine	0.36	0.36	0.36
Calcium	3.6	3.6	3.6
Phosphorous	0.36	0.36	0.36
Ether extract	3.8	3.8	3.8
Fibre	4.8	6.7	6.7

### Experimental Procedure

One hundred and eighty 33 week old ISA Brown layers were used in the experiment. Each of the 3 treatments had 10 replicates, with 6 birds per replicate. The birds were fed and watered ad-libitum and. They were fed the experimental diets for a week preceding the beginning of the research.

Feed intake and egg production were recorded daily. Maximum and minimum temperatures of the house were taken daily using a minimum and maximum thermometer.

The data generated was analyzed using Statview statistical package (SAS. Institute Inc. 1998).

### III. RESULTS AND DISCUSSION

The highest average feed intake was recorded for T3 ( unground millet) (104.91 g/b/d). It did not however differ significantly ( $P<0.05$ ) from the value recorded for treatments 1 and 2 (100.91 g/b/d for T1 and 101.31 g/b/d for T2 respectively). The non-significant differences.

( $P>0.05$ ) in feed intake by birds fed ground or whole millet based diets indicates that feeding whole millet does not have any detrimental effect on feed intake, as earlier reported by Garcia and Dale (2006).

The highest egg production value of 76% was recorded for the unground millet based diet containing (T3). This value was significantly higher than production obtained for T1 (maize based diet) of 68%. T2 (ground millet based diet) recorded 70.93%. It was however not significantly different from the value obtained for both

T1 and T3. Egg production was generally better for the millet based diets compared to the maize based diet. This therefore indicates better performance with millet as the major source of energy. These results are in agreement with the findings of Umar Faruk et al., (2010) and Kumar et al., (1991) who observed increase in egg production when birds were fed diets containing millet.

**Table 2.** Table showing performance of laying birds to experimental feed

Parameters	T1 Maize based diet	T2 Ground millet based diet	T3 Unground millet based diet	SEM
Feed intake (g/b/d)	100.91	101.31	104.91	5.64
Hen-day egg prod. (%)	68.18 <sup>a</sup>	70.93 <sup>ab</sup>	76.20 <sup>b</sup>	6.38
abc treatment means in the same row not followed by the same superscript are significantly different from one another ( $P < 0.05$ )				

#### IV. CONCLUSION

The research attempted to assess the effect of feeding maize, ground millet and unground millet based diets to laying birds. Result obtained indicated that there were no significant differences in feed intake between the treatments. Hen-day egg production was however higher ( $P < 0.05$ ) for the unground millet-based diet compared to the maize-based control diet. It can be concluded that feeding ground or whole millet does not have any negative effect on feed intake of laying birds. Egg production was enhanced by feeding either ground or whole millet. Thus, the use of whole millet can be promoted especially amongst rural farmers who cultivate millet. An additional advantage of this feeding technique is that it eliminates grinding, thereby reducing feed cost.

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