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# Growth and Subsequent Egg Production Performance of Shika-Brown Pullets Fed Graded Levels of Cooked *Lablab purpureus* Beans

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**Abstract:** The lablab seeds were cooked for 30 min, sundried for three days and thereafter milled and incorporated into chickens' diets. Six treatments, comprising of six dietary levels of lablab at 0.0, 7.5, 15.0, 22.5, 30.0 and 37.5%, respectively was fed during the grower's phase. Results obtained for the growers phase indicate that final weight (g/bird), weight gain (g/bird) and feed cost (N $kg^{-1}$) decreased significantly ($p<0.05$) as the level of lablab increased in the diet. Feed intake (g/bird and g/bird/day) as well as feed cost (N/bird) and total cost (N/bird) also decreased significantly ($p<0.05$) as the level of lablab increased in the diet up to 22.5% inclusion level before increasing as the level of lablab in the diets continued to increase. The level of lablab in the diet had no effect on mortality throughout the experimental period. In addition haematological parameters such as Packed Cell Volume (PCV), Haemoglobin (Hb) and Total Protein (TP) were not significantly ($p<0.05$) affected by feeding diets containing graded levels of cooked lablab beans to pullets. Results obtained during the laying phase indicates that feeding lablab seed meal up to 22.5% in the diets at the growers stage had no significant adverse effect ($p<0.05$) on final weight, feed intake, feed efficiency, percent henday and henhoused egg production, percent production at peak, kilogramme feed per twelve eggs, feed cost per twelve eggs, Haugh Unit and yolk index. However, age of birds at first egg, age at 50% production and age at peak egg production were increased significantly ($p>0.05$) with increase in the level of lablab seed meal in the growers diets.

**Key words:** *Lablab purpureus*, beans, egg production, chicken diets

## INTRODUCTION

The feed given to chickens at a particular phase of their rearing may impart either positive or negative effect on their performance at the next phase of production. This fact becomes very crucial in the choice, processing methods and safe levels of a particular ingredient that can be incorporated into the diets of different classes of poultry birds. The strategy is to incorporate as many as possible different kinds of ingredients in such a way that the negative effect of a particular ingredient does not impart much influence on the performance of the birds being fed. For example, Sekoni (1997) reported no negative carry-over effect of feeding up to 10% of cassava peel meal at growers phase on subsequent performance of the hen during the laying phase. An explanation for this could be that cyanide does not remain in the body system of birds for long but is metabolized and eliminated fast enough from the blood stream. This may not be the case when legume seeds are included in the diets of poultry birds. According to Bawa *et al*. (2003a), Akinmutimi (2003) and Ani and Okeke (2003) legume seeds have certain antinutritional factors such as phytic acid, trypsin inhibitors, haemagglutinin and cyanogenic glucosides which may remain logged in the body of birds for a long time and impart negative effects on performance later on in their productive life. This according to the authors is due to the fact that these antinutritional factors are not completely destroyed in the seeds when cooked or roasted. Therefore incorporating the seeds at a high level in the diet may increase the presence of these antinutritional factors and hence impart negative influence on the performance of the birds. However the need to reduce feed cost through the utilization of these nonconventional, cheap but protein–rich seeds necessitates finding out the optimum level that can be included for good performance of birds in terms of egg production or weight gain (Apata, 2003). Reports by Esonu (2001) and Amaefule and Obioha (2001) indicates that feeding raw legumes in broilers starter diets have a negative effect on the attainment of slaughter weight at the finisher stage. They reported that the broilers fed raw

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legume diets at the starter phase had significantly lower ($p<0.05$) body weight at 8 weeks than those fed cooked legume seeds. This was irrespective of the type of legume seed used.

Ogundipe *et al.* (1992) had earlier reported that although growing pullets can tolerate to some extent, high fibre diets, this should not be over stressed as proper feeding of growers may increase production performance in the laying phase. Sekoni (1997) opined that growing pullets are usually abused feeding-wise and this may result in low productivity during the laying phase. Of note is the fact that certain antinutritional factors such as goitrogens and tannin present in grain legume seeds which are not easily destroyed by heat (Bawa *et al.*, 2003b) and by enzymes (Omeje, 1999), may remain logged in the body of the birds or carried in the blood stream for a long time. They can therefore exert negative influences on production later on in the life of the birds. Other antinutritional factors such as cyanogenic glucosides, alkaloids and goitrogens have been implicated in liver serosis and therefore impair nutrient utilization and productive performance. According to MacDonald *et al.* (1995), trypsin inhibitors are partly responsible for the growth retarding influence of raw legume seed meal. Growth retardation according to the author has been attributed firstly to the ability of the anti-trypsin to block the action of trypsin in protein digestion, thereby inhibiting the digestion of protein. Secondly, there is evidence that it induces pancreatic hyperactivity, resulting in increased production of trypsin and chymotrypsin with consequent loss of cystine and methionine thereby contributing to growth retardation which may be carried-over to the laying phase. This study was therefore undertaken to determine the effects of graded levels of cooked *Lablab purpureus* beans in grower diets on the subsequent laying performance of the hens.

## MATERIALS AND METHODS

The *Lablab purpureus* beans used for this experiment is the Rongai variety. It is milky white in colour. They were obtained from the Sabon-gari market in Zaria, Nigeria. The seeds were cooked for 30 min. This cooking time was found to be optimum as determined in an earlier experiment. After cooking, the excess water was drained off and the seeds were dried for three days in the sun. They were then milled before being incorporated into the diets.

Six isonitrogenous and isocaloric diets were formulated to contain lablab beans at 0.0, 7.5, 15.0, 22.5, 30.0 and 37.5%, respectively (Table 2). Each diet constituted a treatment and each treatment was replicated three times with 25 birds per replicate.The design was a complete randomized design. Feed and water were provided *ad libitum*.

The average initial weight of the birds before the commencement of the experiment was taken and the birds were subsequently weighed every week to determine weight gain. Feed intake was recorded weekly. The grower stage lasted for 12 weeks. At the end of the growers study, (at 20 weeks of age) six birds representing the average weight of the replicate were selected and bled. The bleeding was carried out using a 5 mL syringe at the vein of the wing.

At 20 weeks of age the birds were weighed per replicate. This weight formed the initial weights of the birds for the subsequent-laying phase of the study. The birds were then fed on a normal layers diet containing 17.0% CP and 2612 kcal $kg^{-1}$ metabolisable energy for the six months duration of the laying phase (Table 2). Feed and water were provided *ad libitum.*

The final weight was taken at the end of the trial to determine percent change in weight. Data collected included feed intake which was measured weekly and egg production record which was taken daily. For the egg quality analysis, three freshly laid eggs were sampled per replicate, weighed (using the Mettler PM4600 electronic platform scale) and broken into a flat white plate. The yolk and albumin width and height were measured using a venier calliper. This was done for 3 consecutive days of each month for the duration of the experiment. The Haugh unit value was calculated using the formula of Oluyemi and Roberts (1985). Mortality was recorded as they occurred. All data collected were subjected to the analysis of variance using the SAS (1985) general linear model procedure. Differences between treatment means were separated using the Duncans Multiple Range Test (Steel and Torrie, 1980).

## RESULTS AND DISCUSSION

Table 1-3 show the chemical composition of the *Lablab purpureus* seeds, the composition of the growers diets with graded levels of cooked lablab seeds, the composition of the common layer diets fed during the

Table 1: Chemical composition of *Lablab purpureus* beans

| Parameters | Percentage |
|---|---|
| Dry matter | 95.97 |
| Crude protein | 23.29 |
| Crude fibre | 11.19 |
| Ether extract | 9.13 |
| Ash | 3.85 |
| Calcium | 1.32 |
| Total phosphorus | 0.11 |

These are average values of 3 determinations of the cooked *Lablab beans*

Table 2: Composition of growers diets on graded levels of *Lablab purpureus* beans

| | Treatment (levels of lablab) | | | | | |
|---|---|---|---|---|---|---|
| Ingredients | 1 | 2 | 3 | 4 | 5 | 6 |
| Maize | 41.20 | 36.60 | 32.05 | 27.50 | 22.95 | 18.35 |
| Groundnutcake | 14.75 | 11.85 | 8.90 | 5.95 | 3.00 | 0.10 |
| Lablab | 0.00 | 7.50 | 15.00 | 22.50 | 30.00 | 37.50 |
| Maize offal | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 |
| Bonemeal | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 |
| Limestone | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Salt | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| Premix | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Calculated analysis | | | | | | |
| CP (%) | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 |
| ME (kcal kg$^{-1}$) | 2685.00 | 2684.00 | 2685.00 | 2685.00 | 2685.00 | 2684.00 |
| CF (%) | 5.87 | 6.48 | 7.08 | 7.69 | 8.29 | 8.89 |
| Calcium (%) | 1.22 | 1.22 | 1.22 | 1.22 | 1.23 | 1.23 |
| Avail phos (%) | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.68 |
| Lysine (%) | 0.78 | 0.78 | 0.76 | 0.76 | 0.74 | 0.73 |
| Methionine (%) | 0.34 | 0.34 | 0.32 | 0.32 | 0.31 | 0.31 |
| Cystine (%) | 0.32 | 0.32 | 0.31 | 0.31 | 0.29 | 0.28 |
| Meth.+Cyst. (%) | 0.66 | 0.66 | 0.63 | 0.63 | 0.60 | 0.59 |
| Feedcost (N kg$^{-1}$) | 24.68 | 24.46 | 24.42 | 24.13 | 24.06 | 23.84 |

Optimix grower premix supplied the following per kg diet: Vit. A. 34000 i.u; Vit. D3; 6000 i.u; Vit. E, 40 mg; Niacin, 60 mg; Biotin, 2 mg; Vit. B16 mg; Vit. B2, 18 mg; Vit. B6, 12 mg; Vit. B12, 0.06 mg; Vit. K3, 4 mg; Pantothenic acid, 18 mg; Folic acid 2.4 mg; Choline chloride 700 mg; Cobalt; 0.8 mg; Copper, 12 mg; Iodine, 4 mg; Iron 80 mg; Manganese, 160 mg; Selenium, 0.8 mg; Zinc, 120 mg

Table 3: Composition of common layer diet fed at the laying phase

| Ingredients | |
|---|---|
| Maize | 46.00 |
| Groundnut cake | 13.20 |
| Soyabean cake | 10.00 |
| Maize offal | 20.00 |
| Limestone | 7.50 |
| Bonemeal | 2.75 |
| Salt | 0.30 |
| Premix (Layer) | 0.25 |
| Total | 100.00 |
| **Calculated analysis** | |
| CP (%) | 17.00 |
| ME (kcal kg$^{-1}$) | 2612.28 |
| CF (%) | 4.49 |
| Calcium (%) | 2.75 |
| Phosphorus (%) | 0.73 |
| Lysine (%) | 0.84 |
| Methionine+Cystine (%) | 0.63 |
| Feed cost (N kg$^{-1}$ feed) | 30.42 |

Layers premix supplied the following per kg diet; Vit. A; 100000 iu; Vit. D3; 20000 iu; Vit. E, 100 iu; Vit. K, 20 mg; Thiamine B1, 15 mg; Riboflavin B2, 40 mg; Pyridoxine B6, 15 mg; Niacine, 150 mg; Vit. B12, 0.01 mg; Pantothenic acid, 50 mg; Folic acid, 5 mg; Biotin, 0.2 mg; Choline chloride, 2 mg; Anti oxidant, 1.25 g; Manganese, 0.8 g; Zinc, 0.5 g; Iron, 0.2 g; Copper, 0.05 g; Iodine, 0.12 g; Selenium, 2 mg; Cobalt, 2 mg

laying phase, the response of the growing birds to the graded levels of the lablab seed diets, the haematological parameters of the growing birds fed graded levels of lablab seed diets, the subsequent performance of the birds during the laying phase and the performance of the birds in terms of age at sexual maturity and egg quality parameters of the laying birds, respectively.

There were significant ($p<0.05$) differences in all the parameters measured at the growers phase except for percent mortality (Table 4). It was observed that average final weight (g/bird) and weight gain (g/bird) decreased as the level of the lablab increased in the diet. Total feed intake (g/bird) and average daily feed intake (g/bird/day) were significantly ($p<0.05$) higher for the control diet than for all the other treatments. Feed cost (N/bird) and total cost (N/bird) decreased significantly ($p<0.05$) as the level of lablab increased in the diet up to the 22.5% inclusion level before increasing as the level of lablab in the diets continued to increase. There was no record of mortality for the 12 weeks the growing phase of the experiment lasted.

According to Onyimonyi and Onukwufor (2003) feeding toasted Bambara nut, a legume similar to lablab, in the diet of growing pullet did not depress daily gain significantly ($p>0.05$). However, the authors observed that feed cost (N kg$^{-1}$), (N/bird) and total cost (N/bird) were significantly ($p<0.05$) lowered by feeding Bambara nut in the diet of growing pullets. Bawa *et al*. (2003a) fed graded levels of cooked lablab to young pigs and reported no significant difference ($p>0.05$) between the control (soyabean meal based diet) and the other treatments, which contained lablab seeds up to 20% inclusion level. The author also reported a significant drop ($p<0.05$) in all the cost parameters as the level of lablab in the diet increased. The results obtained in this study also agree with the report of Najime (2003) who fed cooked full-fat soyabeans as a replacement for groundnut cake in the diet of broilers and observed that cost was significantly ($p<0.05$) reduced. Abeke *et al*. (2003) reported that when grain legume seeds are properly processed, they could serve as replacement for the more expensive conventional groundnut and soyabean cakes in poultry rations without any detrimental effect. The authors also observed that

Table 4: Response of growing pullets to graded levels of *Lablab purpureus* beans diets (9-20 weeks)

| | Treatment (levels of lablab) | | | | | | |
|---|---|---|---|---|---|---|---|
| Parameters | 0.0 | 7.5 | 15.0 | 22.5 | 30.0 | 37.5 | SEM |
| Final Wt.g/bird | 1594.07[a] | 1574.73[b] | 1486.10[b] | 1472.70[b] | 1396.93[c] | 1340.83[d] | 2.79 |
| Wt.gain g/bird | 1069.07[a] | 1049.73[b] | 961.10[c] | 947.70[c] | 871.93[d] | 815.83[e] | 3.60 |
| Feed intake g/ bird | 7757.00[a] | 7352.40[abc] | 7101.00[bc] | 7084.80[c] | 7614.70[ab] | 7563.20[abc] | 44.73 |
| Feed intake g bird/day | 92.35[a] | 87.53[abc] | 84.54[bc] | 84.34[c] | 90.65[ab] | 90.04[abc] | 0.53 |
| FGR | 7.26[c] | 7.14[d] | 7.39[c] | 7.48[bc] | 8.73[ab] | 9.27[a] | 0.06 |
| Feed cost N/bird | 191.44[a] | 179.84[ab] | 173.41[b] | 170.96[b] | 183.21[ab] | 180.31[ab] | 4.30 |
| Total costN/bird | 286.44[a] | 274.84[ab] | 268.41[b] | 265.96[b] | 278.21[ab] | 275.31[ab] | 1.09 |
| Mortality | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Means within the same row with different superscripts are significantly different ($p<0.05$), SEM: Standard Error of the Means, FGR = Feed-gain ratio

Table 5: Haematological parameters of growing pullets fed graded levels of *Lablab purpureus* beans diets

| | Dietary levels of lablab beans | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| Parameters | 0.00 | 7.50 | 15.00 | 22.50 | 30.00 | 37.50 | SEM |
| PCV (%) | 19.17 | 18.47 | 17.89 | 17.67 | 17.43 | 16.81 | 3.58 |
| Hb (%) | 6.39 | 6.16 | 5.96 | 5.91 | 5.81 | 5.61 | 0.85 |
| TP (g $dL^{-1}$) | 7.09 | 6.91 | 6.89 | 6.86 | 6.52 | 6.49 | 0.72 |

SEM = Standard error of the means, PCV = Packed Cell Volume, Hb = Haemoglobin, TP = Total Protein

Table 6: The effects of lablab seed meal growers diets on the subsequent performance of layers

| | Dietary levels of lablab beans | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| Parameters | 0.00 | 7.50 | 15.00 | 22.50 | 30.00 | 37.50 | SEM |
| In.wt. (kg $b^{-1}$) | 1.59[a] | 1.58[a] | 1.49[b] | 1.48[b] | 1.40[c] | 1.34[d] | 0.07 |
| Fn.wt. (kg $b^{-1}$) | 2.47 | 2.46 | 2.45 | 2.46 | 2.46 | 2.46 | 0.12 |
| % ch Bd.wt. | 54.77[d] | 56.43[d] | 64.93[c] | 66.82[c] | 75.86[b] | 83.22[a] | 1.34 |
| FI (g/b/day) | 124.39[bc] | 123.61[c] | 123.74[c] | 123.94[c] | 125.23[ab] | 125.99[a] | 0.32 |
| FE egg/kg feed | 5.82[a] | 5.65[ab] | 5.61[ab] | 5.64[ab] | 5.31[c] | 5.25[c] | 0.13 |
| Henday (%) | 72.79 | 71.74 | 71.21 | 70.32 | 68.47 | 68.11 | 2.84 |
| Henhouse (%) | 70.78 | 69.73 | 69.29 | 69.21 | 66.55 | 66.17 | 1.49 |
| Peak prod (%) | 83.00[a] | 80.61[ab] | 79.84[ab] | 79.82[ab] | 79.06[ab] | 76.37[b] | 0.92 |
| kg feed/12 eggs | 2.07 | 2.13 | 2.15 | 2.16 | 2.26 | 2.28 | 0.16 |
| Fcost/12 eggs | 60.79[b] | 62.55[b] | 63.02[b] | 63.33[b] | 66.31[a] | 67.01[a] | 1.44 |
| Income above feed expences (N) at N10/egg | 59.21[a] | 57.45[b] | 56.98[b] | 56.67[b] | 53.69[c] | 52.99[c] | 0.64 |

Means within the same row with different superscripts is significantly ($p<0.05$) different, SEM = Standard Error of the Means, FI = Feed Intake, FE = Feed Efficiency

Table 7: The effects of graded levels of *Lablab purpureus* beans meal growers diet on the subsequent performance of layers (Age and egg quality parameters)

| | Levels of lablab beans | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| Parameters | 0.00 | 7.50 | 15.00 | 22.50 | 30.00 | 37.50 | SEM |
| Age at 1st egg (days) | 158.33[c] | 163.33[b] | 168.00[ab] | 168.00[ab] | 168.67[a] | 170.33[a] | 2.07 |
| Age 50% prod (days) | 189.00[c] | 193.67[b] | 198.00[a] | 198.00[a] | 199.00[a] | 200.33[a] | 2.04 |
| Age at pk prod (days) | 210.67[b] | 215.00[ab] | 219.67[ab] | 219.68[ab] | 220.67[ab] | 222.00[a] | 2.10 |
| Wt. at 1st egg (kg/b) | 1.83[a] | 1.78[a] | 1.69[b] | 1.67[b] | 1.60[c] | 1.54[c] | 0.03 |
| Av.egg wt (g) | 60.03 | 60.02 | 60.03 | 60.03 | 60.01 | 60.01 | 0.04 |
| Yolk index | 0.44 | 0.43 | 0.44 | 0.44 | 0.43 | 0.45 | 0.01 |
| Haugh unit | 86.73 | 86.63 | 86.42 | 86.53 | 86.60 | 86.60 | 1.02 |
| Mortality (%) | 2.78 | 2.78 | 2.78 | 2.78 | 2.78 | 2.78 | 1.96 |

Means within the same row with different superscripts are significantly ($p<0.05$) different. SEM = Standard error of the means

feed cost and consequently production cost is reduced when unconventional, cheap and unexplored (but protein rich) grain legumes are processed and incorporated into poultry ration as replacement for the conventional and expensive cakes presently used in poultry feed formulations.

Haematological parameters such as Packed Cell Volume (PCV), Haemoglobin (Hb) and Total Protein (TP)

(Table 5) were observed to be better for the control diet than for the lablab diets although the differences were not significant (p>0.05). Apata (2003) reported a similar finding when processed *Prosopis africana* seeds were fed in the diet of laying hens. The author argued that with proper processing grain legume seeds can be incorporated in poultry diets without any adverse effects. The PCV, Hb and TP values obtained in this study are similar to values reported by Oladele (2000) for normal healthy birds. This implies that the levels of lablab in the various diets did not have any significant adverse effect on the health of the birds.

The final live weight of the hens at the end of the laying phase (Table 6) showed no significant (p>0.05) difference among the various treatments. This shows that the birds were able to recover from any nutrient deficiency suffered during the growing phase. This agrees with the result of Ogundipe *et al*. (1992) that birds fed previously on poor diet are able to recover and attain normal physiological maturity and even perform outstandingly when their diet was changed to a balance ration that meet their nutrient requirement later in life. This is supported by the findings of Sekoni (1997) who reported higher hen-housed egg production (71.33%) on layers that were fed previously on 15% cassava peel meal diet in the growing phase as opposed to the hen housed egg production of 69.86% for layers that were fed on conventional grower ration during their growing phase. The author went further to advocate a feeding regime that tends to slow down the growth and physiological development of growing pullets so that proper physiological development will be achieved. This according to the author will lead to better productive performance in the laying flock. The summation therefore is that although growing pullet may suffer from some nutrient deprivation during the growing phase, they can recover and perform well when they are later placed on adequate layers diet. Percent change in body weight was significantly (p<0.05) higher for those laying hens fed higher levels of lablab bean meal in their grower diet. This also shows that deficiencies experienced by the birds at the growing phase are made up for at the laying phase. According to Aduku (1992) and Olomu (1995) birds that were starved of feed for sometime, on restricted feeding regimes and or fed on poor diet resulting from low nutrient level or due to problem of palatability, tend to eat more and recover body nutrient losses faster than those on normal conventional diets when placed on adequate diet. This was the observation noted in terms of feed intake (g/bird/day) in this study. Feed intake was significantly (p<0.05) higher for the laying hens that were previously fed high levels (30.0 and 37.5%) of lablab seed meal diets when compared to those bird fed the control and other diets containing lower levels of lablab seed meal. The reason could also be that the birds ate more to meet the short fall in body nutrient requirement of the growing phase. Feed efficiency (eggs/kg feed) was however significantly (p<0.05) better for the laying hens fed previously on the normal conventional growers ration than for the 30.0 and 37.5% lablab seed meal based diets. There was a gradual reduction in feed efficiency in the laying hens as the level of lablab in their previous grower ration increased. This could be due to the cumulative effect of inhibition of nutrient utilization by certain antinutritional factors in the lablab seed meal grower diet previously fed. There was however a gradual reduction in percent hen day and hen housed egg production as the level of lablab in the previously fed growers diet increased. This result is similar to that of Sekoni (1997) who reported a gradual but insignificant (p>0.05) decrease in percent hen day and hen housed egg production in laying hens previously fed higher graded levels of cassava peel meal diets in their growing phase. Similar findings have also been reported by Udedibie (1991), Apata (1998) and Balogun *et al*. (2001). Kilogram feed consumed per 12 eggs produced, did not show any significant effect (p>0.05) among the treatments, although there was a gradual increase in these values as the levels of lablab in their previous grower's diet increased. This shows that any carry-over effect from the grower phase might have been eliminated by the time the birds came to the laying phase. However, feed cost per 12 eggs showed a significant (p<0.05) difference among the treatments. These costs increased as the level of lablab beans in the grower diets previously fed increased. It means therefore that any cost savings made as a result of feeding poor diets to growing pullets may not necessarily mean better profit during the egg production period. Ogundipe *et al*. (1992) and Abeke (1997) had earlier reported that unnecessary tendency to save cost by feeding poor quality diets as opposed to proper feeding of growing pullet may result in loss of profit during the laying phase. Aduku (1992) also reported that unnecessary delay in sexual maturity of growing pullets might also mean a delay in their productive time and consequent reduction of their production life. This is coupled with high cost of feeding them for a longer period of time, which will definitely result in an increase in the cost of production.

Income above feed expenses showed a significant (p<0.05) decrease as the level of lablab fed in previous growers phase increased. This result buttresses the fact that cost savings in terms of feed at the grower phase may not necessarily mean a better profit margin during the laying phase.

Age at first egg, age at 50% production and age at attainment of percent peak egg production (Table 7) were significantly (p<0.05) increased by feeding lablab seed meal diet during the grower's phase. This indicates that feeding balanced diets to growing pullets enhances sexual maturity. The loss in production time due to delay in sexual maturity may nullify any gain in savings made during the growing phase. This result is very similar to findings reported by Sekoni (1997) and Sobamiwa (1988). Average egg weight, yolk index, Haugh unit value and percent mortality were not affected by the diets fed during the growing phase. Egg quality parameters are usually dependent on the current feed given to laying hens and not on the previous diets given at the grower's stage since egg quality responds swiftly to change in diet (Abeke, 1997).

## CONCLUSIONS

It can be concluded from the result of the study that feeding cooked *Lablab purpureus* beans beyond 22.5% in the diets of growing pullets has adverse effect on the subsequent laying performance of the hens.

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