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Effect of leaf meal based rations on growth performances of young turkey birds

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Abstract

An experiment was undertaken to study the effect of feeding two low cost rations on the growth performance of turkey birds. Day old poults were randomly assigned into three treatments in a randomized block design with nine replicates of ten birds each. Treatments were as follows; Treatment 1 (T1) – Ration incorporated with Gliricidia leaf meal, Treatment 2 (T2) – Ration incorporated with hybrid Napier CO3 (*Pennisetum perpureum* X *Pennisetum americarnum)* grass leaf meal, Treatment 3 (T3 – Control) Commercial Broiler grower ration. Birds were weighed weekly. Feed samples were analysed for the nutrient content. There was no difference in the crude protein content in all three rations. Treatment 2 had the lowest ($P<0.05$) feed intake and highest ($P<0.05$) liveweight gain. Highest average body weight was recorded in T3 compared to T2. Live weight gain was higher in T2 and T3 compared to T1. Treatment 2 was selected as a better feed for feeding turkey birds in Sri Lanka.

Keywords: Feeding trial, leaf meal, turkey birds

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Introduction

Mainly turkey birds are reared for meat purpose in a few small scale farms in Sri Lanka. Turkey meat and eggs are a rich source of protein. The cholesterol content in egg yolk is 16-24 mg/g and energy content in turkey meat is 162 calories per 100 g. Further it is rich in minerals and vitamins (Ahn et al., 1999; Zhao et al., 2010; Annonimous, 2012).

Therefore, there is a high potential to popularize the turkey meat industry as a source of much needed nutrients. It would provide the farmer with an extra income. Turkey birds in Sri Lanka are reared feeding the broiler starter, grower and finisher rations at respective ages. These are expensive rations and as turkey birs are reared for more than 6 months till they attain the marketable weight it incurs a huge cost for the farmers compared to the broiler chicken industry. Thereby, feeding turkey birds involves a higher investment under local conditions.

Two low cost rations were formulated incoroperating Gliricidia leaf meal (Treatment 1) and hybrid Napier CO3 (*Pennisetum perpureum* X *Pennisetum americarnum* - Treatment 2*)* grass leafmeal. Effect of these two rations were tested on turkey poults against Treatment 3 (T3 – Control) Commercial Broiler grower ration.

Materials and Methods

The experiment was conducted at the Siringapatha Farm, National Livestock Development Board, Badalgama (7.29^0 N and 79.98^0 E) which is situated at the Intermediate Zone of Sri Lanka. The feeding trial was undertaken from 19th March to 19th June 2018**.** The experimental design was Randomized Complete Block Design with three treatments and three replicates per each treatment. Treatments were Gliricidia leaf meal (Treatment 1), CO3 grass leafmeal (Treatment 2) and Broiler grower ration (Control – Treatment 3).

Preparation of leaf meals incoperated rations

Gliricidia and CO3 leaves were collected from the farm, dried under shade and ground to make the respective leaf meals. Gliricidia leafmeal (20%) or CO3 leaf meal (20%) was mixed with maize meal (35%), soya bean meal (10%), coconut poonac (24%), fish meal (10%) and vitamin and mineral premix (1%) to prepare the two feed rations. Samples of feed ingredients and the leaf meal incoroperated two rations were analysed for nutrient content according to AOAC, (1999).

Feeding trial

Day-old unsexed Nicholas cross bred turkey poults were randomnly grouped to nine replicates having 10 poults per replicate. They were fed with broiler starter ration upto 12 days of age and the treatments were gradually introduced. The feeding trial was conducted from day-14 to 12 weeks of age. *Ad-libitum* feeding was practiced throughout the research period to all the three treatments. Every fortnight the birds were weighed. Liveweight gain per bird was calculated considering the initial and final liveweights and the time period. Feed intake was also calculated using the amount of feed added to the trough and weight of the remaing feed in the trough.

At the age of 47 days Biospark – v liquid supplement was provided and at the age of 3 weeks and 6 weeks old New Castle vaccine was given to all the birds. At the age of 10 weeks Fowl Pox vaccine was provided to all the birds.

All the data were analyzed using the Analysis of Variance (ANOVA) procedure of Statistical Software SAS, (2002).

Results and Discussion

Proximate composition of feed rations (mean ± SE)

Ash, crude protein and crude fibre contents were not different ($P<0.05$) between all three treatments. However, either extract was higher ($P<0.05$) in Treatment 2 compared to Treatment 1 which inturn higher ($P<0.05$) than Treatment 3 (control). Treatment 1 had a higher ($P<0.05$) gross energy content (4447 kcal/kg) than Treatment 2 (3435 kcal/ka). The metabolozable energy content of the control was 3000 kcal/kg.

Zubair et al., (1996) observed that a diet contains a high fibre content (up to 9% crude fibre) was beneficial for the growth of turkey birds. Duke et al., (1984) observed that high fibre diets fed for turkey birds enhanced the cellulose utilization. The crude protein (21.2%), and the fibre content (2.5%) in the two leaf meal incorporated rations tested in the present study were according to the recommended levels for growing turkey birds.

Feed intake

Treatment 1 and Control had the highest ($p < 0.05$) feed intake (102.7 and 98.8 g per bird per day respectively) compared to Treatment 2 (86.1 g per bird per day). At the end of the trial when the birds were 12 weeks of age the total feed intake in Treatment 1, Treatment 2 and Control were 2.84, 2.01 and 2.89 kg per bird respectively. However feed intake varies depending on the age, breed and sex of turkey bird and the variations in the climatic conditions (Hurwitz et al., 1980; Ilori et al., 2010; Pandian et al., 2013).

Final body weight and live weight gain of the turkey birds

Highest ($p < 0.05$) final body weight was observed in control than Treatment 2 which in turn was higher ($p < 0.05$) than Treatment 1 (Table 1). Both control and Treatment 2 had higher ($P < 0.05$) live weight gain than Treatment 1. The Gliricidia leafmeal incooperated feed ration had the lowet body weight and live weight gain. It may be due to the effect of tannin in the Gliricidia leafmeal affecting the metabolisum of proteins. It was observed that the growth and feed intake of turkey birds also depend on the breed of turkey birds (Ilori et.at 2010).

Table 2 : Effect of treatments on final body weight and live weight gain of turkey birds (mean ± SE)

Treatments	Final body weight (kg)	Live weight gain (g/day)
Treatment 1[1]	$1.11^{c} \pm 0.02$	$11.65^{a} \pm 0.32$
Treatment 2[2]	$1.95^{b} \pm 0.02$	$20.96^{b} \pm 0.32$
Control[3]	$2.04^{a} \pm 0.02$	$22.00^{b} \pm 0.32$

[1]Feed ration incorporated with Gliricidia leaf meal
[2]Feed ration incorporated with hybrid Napier CO3 leaf meal
[3]Commercial broiler grower ration
[a,b,c] means within the same colomn with different superscripts are significantly different ($p < 0.05$)

Conclusion

Napier hybrid CO3 leaf meal incorporated ration (Treatment 2) was selected as the best ration in the present study for feeding turkey birds.

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