

Growth, Efficiency of Feed Utilization and Economics of Different Rearing Periods of Turkeys

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ABSTRACT

The present study on body weight and feed efficiency for growth was carried out on 112 turkey poults from day of hatch to 28 weeks of age during May to November 2002 at Poultry Research Unit of Regional Agricultural Research Station (RARS)-Parwanipur. Layer starter ration supplemented with 6% fish meal + 0.3% lysine + 0.125% methionine was fed up to 8 weeks of age, then after layer finisher diet was fed. The body weight, feed consumption was observed at 4 weekly interval and feed efficiency and economics of rearing period in terms of income over feed and poults cost was calculated. Significant increase in body weight was recorded up to 28 weeks in male and 20 weeks in female. Male turkey had significantly higher body weight than that of female in all ages. Feed efficiency is best at earlier age but up to 16 weeks it is 3.77 for male after that it deteriorates progressively. Male turkey exhibited better feed efficiency than that of female for all weeks. Significantly higher return per bird was obtained from male than that of female in all age. The profit per bird for both male and female was found maximum in 16 weeks of rearing, followed by 20 weeks and 24 weeks. Therefore, instead of waiting for highest body weight, it is better to sell turkey at 16 to 20 weeks of age to take maximum advantage of higher weight gain, higher efficiency of feed utilization and higher profit.

Key words: Economics, feed utilization, growth, rearing period, turkey

INTRODUCTION

Turkey, native of North America, is an important poultry species reared for meat production. It is one of the favored white meat famous for its leanness and delicacy. It is famous for festival especially during X-mas and New Year. Turkey production is growing globally with an average annual growth rate of 3% (Terry 2003). The consumption of turkey and broilers as white meat is increasing worldwide and a similar trend is existed in developing countries. The bird was introduced in January 2001 in Nepal. The aim was to diversify meat production from different avian species in Nepal.

Sharma (1997) reported that turkey production is possible under wide range of climatic condition and are relatively more resistant to some of the common diseases. Turkey is easy to rise with similar management as chicken and can also be reared in free-range system (Khaddakar 2001). A large variety turkey, Broad Breasted Bronze Tom could achieve a body weight of 24 pound in 24 weeks and hen reach 17.5 pound in 17 weeks while consuming 3.5 pound or less feed per pound of body weight (Austic and Neshein 1990). Singh and Moore (1972) observed a slow growth and poor feed efficiency for small variety turkey. The most economical marketing age for turkey was observed at 16 weeks in the study carried out at Haryana Agriculture University, India (Prasad 2000) whereas Singh and Moore (1972) suggested selling turkey at 20 weeks of age for maximum profit.

In preliminary observation carried out at RARS, Parwanipur, average mortality was recorded 5.35% up to 16 weeks and average body weight at maturity (43 week) was 11.34 kg and 5.98 kg for male and

female respectively (RARS 2003). Increase in age of turkey is associated with a marked increase in the proportionate yield of desirable breast part and decline in the yield of bony parts (Karki and Sah 2004). They further observed that consumers preferred turkey meat for its less fat content, high meaty parts and good taste and selling price was Rs 170-200 per kg of flesh. In general, feed consist about 65-70% of the total input in poultry farming so that saving in feed cost per kg of weight gain should be the first concerned of poultry raiser to increase the net profit. However, no works has been done on growth rate, feed utilization and economics of rearing periods of turkey in Nepal and hence, the present study was undertaken.

MATERIALS AND METHODS

A total of 112 day-old turkey poults were used in the study. The experimental birds obtained from Poultry Research Unit, RARS, Parwanipur were randomly divided into four groups and kept in cage up to 8 weeks of age. After 8 weeks, the poults were sexed and divided into male and female groups and were housed in separate compartments in deep litter housing. The observation was carried out for 28 weeks during May to November 2002. Layer starter ration supplemented with 6% fishmeal + 0.3% lysine + 0.125% methonine was fed up to 8 weeks of age, followed by layer finisher diet. All the experimental birds were raised under ordinary managements ie more or less similar to chicken. Body weight, feed consumption was recorded at 4 weekly intervals and relative growth rate percentage, feed conversion ratio was calculated. Besides growth parameters, economics of rearing period was also calculated in terms of income over poults and feed cost per bird. The cost of poults and feed was considered to be Rs 40 per birds and Rs 16 per kg of feed respectively. All the data collected from the experiment were analyzed using MINITAB statistical package.

RESULTS AND DISCUSSION

Mean body weight of both male and female turkey showed a tendency to increase from the date of hatch up to the 28 weeks of age (Table 1). Significant increase in body weight was recorded up to 28 weeks in male and 20 weeks in female. The body weight of male was significantly higher than that of female in all the ages and the difference of weight increased progressively with the subsequent period of rearing. At 20 weeks of age, the body weight of male and female was 4.525 kg and 3.3 kg respectively, which is less than reported by Austic and Neshein (1990), Waibel et al (2000) and Prasad (2000).

Table 1. Body weight and feed conversion ratio at different rearing periods for male and female turkey

Age, weeks	Body weight, kg (mean \pm SE)			Feed: gain ratio (mean \pm SE)		
	Male	Female	Difference	Male	Female	Difference
4	0.376 \pm 0.007g†	unsexed	-	3.137 \pm 0.067d	unsexed	-
8	1.068 \pm 0.029f	unsexed	-	3.973 \pm 0.094c	unsexed	-
12	2.330 \pm 0.155e	1.832 \pm 0.095d	0.498*	3.609 \pm 0.200cd	4.298 \pm 0.181d	-0.689*
16	3.727 \pm 0.160d	2.638 \pm 0.130c	1.090**	3.776 \pm 0.079cd	4.589 \pm 0.148d	-0.813**
20	4.525 \pm 0.137c	3.300 \pm 0.147b	1.225**	4.791 \pm 0.275b	5.337 \pm 0.136c	-0.547ns
24	5.385 \pm 0.141b	3.653 \pm 0.224b	1.732**	5.446 \pm 0.205ab	6.055 \pm 0.211b	-0.609ns
28	7.080 \pm 0.210a	4.270 \pm 0.244a	2.810**	6.027 \pm 0.231a	7.087 \pm 0.249a	-1.061*

† Means with different alphabet in a column differ significantly ($P < 0.05$). * significant at 5% level. ** significant at 1% level. ns non significant.

Figure 1. Sexwise weight gain and relative growth rate (RGR) of male and female turkey.

The Figure 1 clearly revealed that maximum gain in weight of male turkey was obtained between 24-28 week (60.54 g/day), followed by 12-16 weeks (49.9 g/day) whereas in case of female, it was observed in 12-16 weeks (28.75 g/day), followed by 8-12 weeks (27.29 g/day). However, relative growth rate (RGR) percentage was maximum in the early period and declined progressively in the subsequent periods of rearing. Feed intake of male was significantly higher than that of female at all age (Table 2). Irrespective of sex, feed intake per day was increased progressively with subsequent period of rearing.

Table 2. Economics of different rearing periods for male and female turkey

Parameter	Sex	Age				
		0-12 week	0-16 week	0-20 week	0-24 week	0-28 week
Feed intake per day per bird, g	Male	96.71	123.57	152.18	172.82	215.94
	Female	90.39	105.36	123.46	129.02	151.79
	Difference	6.35*	18.21**	28.82**	43.6**	64.2**
Weight gain per day per bird, g	Male	27.09	32.79	31.93	31.73	35.84
	Female	21.17	23.06	23.18	21.42	21.51
	Difference	5.92*	9.73**	8.75**	10.31**	14.34**
Total feed cost, Rs†	Male	129.98	221.44	340.88	464	677.28
	Female	121.44	188.8	276.32	346.8	476
Meat cost, Rs ‡	Male	291.25	465.87	565.62	673.13	885
	Female	229	329.75	412.5	456.63	533.75
Profit over chicks and feed cost, Rs	Male	121 ± 17b§	204 ± 14a	185 ± 26ab	169 ± 19ab	168 ± 27ab
	Female	68 ± 10ab	101 ± 12a	96.2 ± 13a	69.8 ± 17ab	17.8 ± 18b
	Difference	53.6*	103.6**	88.6*	99.4**	150.1**

* Significantly difference at 5% level. ** Significant difference at 1% level. † Feed price @ Rs 16 per kg. ‡ Meat price @ Rs 125 per kg of live weight. § Means followed by different alphabet in a row differ significantly ($P < 0.05$).

The feed conversion efficiency for growth of male turkey was better than female for all weeks. However, no significant difference was observed in 20 and 24 weeks of age. Cumulative efficiency of feed utilization was deteriorated with advancement of age for both male and female. This clearly indicated that there is a steady increase in feed cost for per kg weight gain of turkey with age. Male and female turkey consumed 3.776 kg and 4.589 kg of feed for per kg live weight gain up to 16 weeks of rearing whereas they required 6.027 kg and 7.087 kg of feed respectively for per kg of live weight when reared up to 28 weeks. In this experiment, the feed version efficiency for growth was very poor than reported by Austic and Neshein (1990), Waibel et al (2000) and Prasad (2000). Waibel et al (2000) observed feed to gain ratio of 2.729 up to 20 weeks of age for large white male turkey in experiment carried out at University of Minnesota. The poor feed efficiency might be due to the small variety of turkey, ordinary housing and poor feed quality offered to them in this experiment. Tyagi (2001) suggested that turkey diet needs to have a narrower energy to protein ratio as compared to chicken diet and he further reported that turkey require properly balanced diet for sustaining rapid growth and better feed efficiency. Bhanja and Majumdar (2001) reported that Turkey needs high protein diet at early stage ie 28% protein with 2800 kcal ME (metabolic energy) up to 4 weeks, 25% protein with 2900 kcal for 5-8 weeks, 22% protein with 3000 kcal for 9-12 weeks and slowly step-down of protein and gradual increase in the dietary metabolic energy with age.

At 4 weekly intervals, feed conversion ratio of both male and female increased with each subsequent period of rearing and after 16-20 weeks, it is almost double for female as compared to male. Hence to keep the birds especially female after 16 -20 weeks of age, in which the growth rate becomes slow and feed efficiency deteriorated, is not economically advisable.

The detail of economics of rearing period of male and female turkey in terms of income over poults and feed cost is given in Table 2. Male had significantly higher saving per bird at all age. Significantly higher saving per bird was obtained for male at 16 weeks of rearing (Rs 204), followed by 20 weeks (Rs 185) and 24 weeks (Rs 169) and 28 weeks (Rs 168) whereas in case of female it was also significantly higher in 16 weeks (Rs 101), followed by 20 weeks (Rs 96.2), 24 weeks (Rs 69.8) and 12 weeks (Rs 68) of rearing. This result is also in agreement with Prasad (2000), Singh and Moore (1972). Prasad (2000) reported the cost of meat production of turkey was about 1.5 times higher than the cost of chicken broilers. The maximum profit per bird over poults and feed cost was found in 16 weeks of rearing period, followed by 20 weeks and 24 weeks of rearing for both male and female turkey.

Turkey could be raised under more or less similar feed and management as chicken but slow growth with poor feed efficiency was associated with advancement of age while rearing under ordinary feed and management. Therefore, instead of waiting for highest body weight up to 28 weeks of age, it is better to sell turkey at 16 to 20 weeks of age to take maximum advantage of higher weight gain, higher efficiency of feed utilization and higher profit while rearing under ordinary feed and management conditions. Turkey is gaining popularity among farming community for its higher meat production potential and for its meat preference over chicken with a change of taste and as a festive food. So, it could be the alternate choice of farming community for higher meat production and extra cash income.

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