A Comparative Study of Some Productive Traits in Commercial Poultry Farms in Duhok Region

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ABSTRACT: The aim of this study was to evaluate some traits such as: live body weight, feed intake, feed conversion ratio, production index and mortality rate. For this aim, commercial Ross 308 hybrid broilers were used in the study. The data were collected from three regions in Duhok and these data were compared between the three regions to identify if there is any significant difference among them. Statistically, significant differences were observed in mortality rate and in feed intake between region 1 and other regions ($P<0.05$). Data were recorded from samples from each region (between 6-8) randomized samples. In the investigation, quantitative traits such as carcass weight, dressing percentage, thigh%, breast %, back %, wing %, neck %, adipose tissue %, liver weight, heart weight and gizzard weight were recorded. Significant differences in dressing percentage between the three regions were noted. Standard broiler age was expected to be at the end of the production age between 42-45 days at maximum with an outside temperature between 42 and 45 ^{0}C.
Keywords: Broiler, production performance, carcass.

INTRODUCTION

In poultry industry, birds are reared in various systems; the semi-intensive system and closed system (Barbosa et.al. 2005). Such systems are highly common in the Middle East region as in the Northern Iraq. However, the closed system has been used widely in recent years, due to the aspects like food safety in the local market. The broiler farm where our data was collected was self-funded by the owner itself; house system and its equipments, food mixture, the transportation of the broiler to the processing site and finally the market were also self-funded. Climate condition is extremely influential for such region. The owners have to control these conditions and to balance between the outside and inside environment condition. Barbosa et.al. (2005) reported that house condition should be more careful in order to prevent the negative effect on poultry performance, especially the production because it substantially affects the metabolism and finally production. Considerable variation in productivity traits plays a significant role for selection studies. Chambers *et.al.* (1981) obtained good results about the importance of selection in providing desirable genetic improvement in the broiler weight through selection.

Feed cost is approximately 70% of the total production costs. Therefore, owners have to cope with the issues of providing the food mixture in adequate and reliable source throughout the production period. Saldonha et.al. (2006) mentioned that the main ingredient used in feed as energy is corn (zea mays), this is account for about 60% of the total feed amount, and around 40% of food cost. Unstable market in term of broiler food supply significantly affected the poultry industry and inclined the farm manager to seek for alternatives food ingredients (Dahlke et al. 2003).

Feed conversion ratio and feed intake from the broilers in the experiment showed different results. The quality of the nutritional value of the broiler food is always challenging for the farm owner. Uses of alternative and unreliable food mixture will effectively do more harm to production rate. Angel (1993) stated that a good indication of nutrient digestibility is to posses how much an animal can absorb nutrients from a specific given diet.

Many studies have been conducted on alteration of animal physiology and behavior of poultry production by regular contacts with humans (Hemsworth et. al., 1994). The difference between those regions in their data values might be the result of the stress reaction on broiler chicks such as high temperature, immune challenge and handling transport. In this regard, Gross & Siegel (1983) suggested that improving growth, feed conversion ration and immune response and decreasing levels of aggression can be approached by normal gentle handling. The aim of this research is to compare different regions and commercial projects of poultry in order to determine the best region for rearing poultry.

MATERIAL and METHODS

A total of (36) day- old (Ross 308) broiler chickens were generously obtained from commercial broiler farms in Duhok region from Akry (Region1), Amedy (Region 2) and Sumail (Region 3) two times for each one and brought to the College of Agriculture, University of Duhok. Live body weight, feed intake and feed conversion ratio were calculated. Other quantitative traits such as carcass weight, dressing percentage, thigh%, breast%, back%, wing%, neck%, adipose tissue%, liver weight, heart weight and gizzard weight were collected.

The production index was calculated by this equation {(live body weight (g)*livability)/(number of days that reared*feed conversion efficiency*10)}.

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Statistical Analysis

Descriptive statistics for the investigated traits were expressed as mean ± SE (Standard Error). The chicks were randomly divided into three treatments. Each trait was exposed to ONE-WAY ANOVA. The statistical analysis was performed using GLM (General Linear Model) procedure of SAS program. Statistically significant differences were determined by Duncan's Multiple Comparison Test.

RESULTS and DISCUSSIONS

Descriptive statistics (mean ±SE) and Duncan's test results for live body weight, mortality rate, feed intake, feed conversion ratio, and production index are given in Table 1. ANOVA results reflected region factor didn't affect live body weight, mortality rate, feed intake, and feed conversion ratio, but significantly affected production index at P<0.05 level. Region 2 in terms of production index was higher compared to others, which were statistically similar. The production index can be considered as a measurement which indicates the success of breeder in broiler rearing and it is important for economical aspect and also as a result for continuous development in projects. Minor differences were numerically observed in live body weight and feed conversion ratio for the three regions (Table 1-3). Similar results are also reported by May and Lot (2000), who reported that live body weight and feed conversion ratio were stable and high without any change. However, differences were numerically found in feed intake between region 1 and both region 2 and region 3, and region 1 was higher than both region 2 and region 3. Genetic expressions were believed to be the reason behind the variation in feed intake as reported by (Richards 2003).

Descriptive statistics (mean ±SE) and Duncan's test results for carcass weight, dressing percentage, thigh, breast, back Wing %, Neck %, and Adipose Tissue % are given in Table 2 and Table 3, respectively. No significant effect of region factor on Carcass weight, dressing percentage, thigh, breast, back Wing %, Neck %, was found except for Adipose Tissue (P<0.05). When the adipose tissue was considered, region 3 produced more value than others.

Numerically, mortality rate have shown important differences for region 1 and region 3 with 9% and 19.48% respectively. However, the mortality rate for region 3 illustrated a higher-significant rate of 19.48% compared with the others. These results were in agreement with those reported by Vo et.al. (1977), who determined that increasing in the environment temperature increased mortality rate.

Table 1: Effect of region on some productive tracts.

Treatment	Traits				
	Live body weight	Mortality rate %	Feed intake	Feed conversion ratio	Production index
Region	ns	ns	ns	ns	*
Region 1	2689.16±122.15	9.00 ± 3.38b	6538.50±264.87	2.5834±0.150	201.03 ± 0.035b
Region 2	2493.75±120.35	7.76 ±2.23a	5424.00±7.23	2.1940±0.106	220.00 ± 8.780a
Region 3	2481.66±152.36	19.48 ±2.68c	5473.00±9.34	2.3062±.0151	195.35±34.060b

ns: non-significant *P<0.05

Table 2. Carcass weight, Dressing Percentage, Thigh Weight, Breast Weight and Back Weight in percentages.

Treatment	Traits				
	Carcass weight	Dressing percentage	Thigh %	Breast %	Back %
Region	ns	ns	ns	ns	ns
Region 1	1971.2 ±97.49	73.1 ±0.50	28.053± 2.26 a	33.02± 2.40 a	21.44± 1.24 a
Region 2	1873.7±97.40	74.9 0.42	27.94± 1.29 a	34.66± 2.76 a	19.64± 2.21 a
Region 3	1725.8± 126.1	69.7±2.76	29.40± 6.00 a	37.34± 9.89 a	21.61± 4.15 a

ns: non-significant

Table 3. Wing Weight, Neck Weight, Adipose Tissue Weight .

Treatment	Traits		
	Wing %	Neck %	Adipose tissue%
Region	ns	ns	*
Region 1	10.71± 0.50 a	6.65± 0.63 a	5.67± 0.62 a
Region 2	10.63± 0.54 a	7.06± 0.86 a	5.21± 0.20 a
Region 3	11.34± 2.58 a	6.58± 1.52 a	6.74± 0.40 b

ns: non-significant *P<0.05

Results from region 1,2 and 3 were nearly similar to those results by (Baracho et. Al 2006), who determined that age, gender, nutrition, management, bird density and stress condition affected broiler growth performance. However, data variation was found in dressing percentage for region 3, variation in nutrient density might be the reason behind this. James et.al. (1992) reported that dressing percentage was decreased

whenever nutrient density increased, and dietary density levels would affect feed intake and calorie utilization which ultimately will influence on dressing percentage. Fasting period before processing broiler chicks might be the reason behind the increased level in DP in region 3. Similar result was also mentioned by Teeter et.al. (1981).

Dahlke et.al. (2003) referred the effect of particle size on the size of the gastrointestinal tract. Nir et. al. (1995) reported that pelleting could lead to a decrease in the weight and content of the proventriculus, gizzard and small intestine

CONCLUSION

From the results we conclude that the region 2 means Amedy is better for reared poultry, the all results in region 2 of productive performance such as increase in live body weight, less feed intake, better feed conversion ratio, decreased in mortality and batter in production index. This may due to that the condition in this region is better for poultry reared such as temperature, ventilation and humidity, or other un known reason.

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