

STUDY ON THE PRODUCTIVITY OF TURKEY-BROILERS, BRED ON DIFFERENT FLOOR TYPES

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Summary

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The experiments were performed on 80 turkey-broilers from 2 hybrid types (BUT-9 and StZ-1), allotted into 4 groups, raised on slat floor or on litter. The body weight and forage expenditure per 1 kg weight gain of birds was investigated from the hatching to the 112th day. In both hybrids, a higher average body weight was observed in birds raised on slat floor compared to those raised on litter. The forage expenditure per 1 kg weight gain was lower in turkey-broilers raised on slat floor.

Key words: body weight, forage expenditure, litter, slat floor, turkey-broilers, weight gain

INTRODUCTION

The production of turkey meat is extensively growing in many countries, so the investigations on the body mass in this avian species is an object of a number of investigators (Nozhchev & Bachev, 1971; Bachev & Kunev, 1972; Bachev @ Lalev, 1990; Martenchar *et al.*, 1999; Lalev, 2001; Platz *et al.*, 2003). The body weight is a primary selection parameter in turkeys and that is why many authors study the influence of various factors upon it.

Lalev (2001) has studied the correlation between the growth and development of parents of BUT-6 turkey-broilers and the principal body dimensions. He recommends a selection according to chest width and depth, that are correlating well with body weight, in order to increase the latter.

Having studied the productivity, the welfare and the health condition of turkeys, Martenchar *et al.* (1999) reported that the body weight has decreased and the welfare of turkeys was worsened with increasing the density of birds throughout the raising.

Platz *et al.* (2003) evaluated two raising technologies – outdoor and indoor, comparing the productivity, the behaviour and the health status of the heavy turkey hybrid BIG SIX and the wild Bronze turkey. The heavy BIG SIX hybrid, exhibited a lower weight gain when reared outdoor, but also a higher relative share of valuable musculature and less leg problems than under indoor rearing conditions.

In a review, Donchev and Kaytasov (1975) described that in Italy, a compari-

son of 4 systems of raising turkey-broilers for meat up to the age of 18 weeks were compared: on a deep litter, on metal bars, on perforated plastic sheets and on slatted wooden panels. A higher body weight was recorded in turkeys raised on metal slats, perforated plastic sheets and slatted wooden panels compared to those raised on litter. At the same time, the forage utilization was the best in turkeys raised on litter.

The data in available literature, referring to the impact of the raising on slat floor and on litter on the productivity of different turkey-broiler hybrids were contradictory. That is why, the present study, that was the second of its kind (Oblakova *et al.*, 2004), aimed to compare the productivity of turkey-broilers from the English BUT-9 hybrid and the local StZ-1 hybrid, raised on slat floor and on litter.

MATERIALS AND METHODS

The trial was carried out at the Hybrid Poultry Centre – Stara Zagora in an experimental premise, during the spring and the summer.

The premise was monolythic (built out of bricks), with windows and a light coefficient of 1:20, equipped with an electrical heating system and with local heating of turkeys (infrared lamps). The air recycling was done via natural ventilation.

The experiment was performed on 80 one-day old turkey-broilers from two hybrids – British United Turkeys Limited (BUT-9) and a hybrid, created in the Hybrid Poultry Centre – Stara Zagora (StZ-1), divided into 4 groups of 20 birds in each (10 male and 10 female): group I: BUT-9 reared on wooden slat floor; group II: BUT-9 – on litter; group III: StZ-1 – on wooden slat floor and group IV: StZ-1 – on litter.

The average body weight of turkey-broilers at the beginning of the trial was as

followed: group I – 58.25 g, group II – 58.75 g, group III – 42.00 g and group IV – 42.50 g. The parameter was monitored every 14 days from hatching to the age of 112 days.

The density was 5 birds per square metres, i.e. an area of 0.2 m² per bird was allowed on both slat floor and litter sections according to Manual B.U.T. requirements (Anonymous, 2000). The forage expenditure for 1 kg weight gain of turkey-broilers from both hybrids was calculated at the end of the fattening period (day 112).

Data were statistically processed by Anova/Manova (STATISTICA, 1995).

RESULTS

The data about the body weight of turkey-broilers, raised on slat floor and on litter are presented in Table 1.

By day 112, the average body weight of male BUT-9 turkey-broilers raised on slat floor (group I) was statistically significantly higher ($P < 0.01$) by 4.99% compared to male BUT-9 hybrids raised on litter (group II). Female birds from the same hybrid exhibited the same tendency: the body weight of female birds raised on slats was by 3.80% higher vs female birds raised on litter ($P < 0.01$).

The average body weight of male StZ-1 turkey-broilers raised on slat floor (group III) was higher by 4.26% ($P < 0.01$) than that in the same hybrid, raised on litter (group IV) at the age of 112 days. The same trend was observed in female StZ-1 birds, but only up to the age of 56 days and with statistically insignificant differences.

Thus, at the age of 112 days, the average body weight of male BUT-9 turkey-broilers (group I) was by 13.75% higher than that of male StZ-1 turkey-broilers

Table 1. Average body weight (kg) of turkey-broilers raised on slat floor and on litter

Groups	Age, days							
	14	28	42	56	70	84	98	112
<i>Group I</i>								
Male BUT-9 on slat floor (n=10)	0.279±0.005	0.756±0.017	1.629±0.037	2.903±0.068	4.440±0.117	6.639±0.096	7.830±0.131	9.580±0.098 [*]
Female BUT-9 on slat floor (n=10)	0.223±0.004	0.612±0.010	1.330±0.040	2.379±0.088	3.586±0.112	5.372±0.118	6.072±0.105	7.739±0.170 [*]
<i>Group II</i>								
Male BUT-9 on litter (n=10)	0.270±0.006	0.754±0.020	1.503±0.037	2.568±0.090	4.176±0.146	6.190±0.138	7.260±0.171	9.125±0.145
Female BUT-9 on litter (n=10)	0.222±0.003	0.530±0.010	1.261±0.023	2.112±0.123	3.553±0.105	5.183±0.089	5.778±0.096	7.456±0.144
<i>Group III</i>								
Male StZ-1 on slat floor (n=10)	0.213±0.003	0.630±0.006	1.463±0.023	2.691±0.060	4.111±0.095	5.833±0.089	7.150±0.159	8.422±0.204 [*]
Female StZ-1 on slat floor (n=10)	0.189±0.002	0.550±0.006	1.226±0.031	2.230±0.061	3.482±0.014	4.970±0.125	5.250±0.101	6.305±0.090 [*]
<i>Group IV</i>								
Male StZ-1 on litter (n=10)	0.214±0.005	0.633±0.006	1.407±0.032	2.472±0.071	4.063±0.092	5.744±0.107	6.728±0.159	8.078±0.100
Female StZ-1 on litter (n=10)	0.184±0.003	0.532±0.011	1.159±0.025	2.138±0.060	3.494±0.101	5.195±0.100	5.435±0.064	6.340±0.107

Statistically significant differences at day 112: ^{*} P<0.01 between male turkeys from groups I and II; ^{*} P<0.01 between female turkeys from groups I and II; ^{*} P<0.01 between male turkeys from groups III and IV; ^{*} P<0.01 between female turkeys from groups III and IV.

(group III), both raised on slat floor. The average body weight of female BUT-9 birds was by 22.74% higher than that of female StZ-1 birds.

The differences in the body weight between male and female turkey-broilers were statistically significant only for BUT-9 hybrids in both raising systems ($P < 0.01$).

When raised on slat floor, the forage expenditure per 1 kg weight gain was significantly lower (on the average by 15.4 %) in BUT-9 turkey-broilers compared to that of turkeys, reared on litter. The same tendency was present for the StZ-1 hybrid, but the difference was 5.67% on the average. This could be due to the higher motility of turkey-broilers bred on litter vs the activity of birds raised on slat floor.

The death rate in birds up to the age of 112 days was 5.0% for each group. It was observed up to the 6th day after the hatching. The pathoanatomical findings suggested that the cause was fibrous peritonitis, so the lethal issues could be referred to as hatching wastes.

The health status monitoring of birds showed that in 10.53% of male BUT-9, raised on slat floor, plantar pododermatitis was observed. The disease was diagnosed in the heaviest birds (10.53% of turkeys from group I) by the age of 104–105 days. After the slaughtering, the inspection revealed thoracic vesicles (decubitus). The pathological alterations were present only in the biggest male BUT-9 turkey-broilers, raised on slat floor and suggested a negative impact of wooden slats upon the health status and meat quality of the heavy hybrids.

In the other groups, there were not any health status deviations and pathological changes observed throughout the inspection.

DISCUSSION

It could be assumed that the higher body weight of turkey-broilers, raised on slat floor, was due to their reduced activity. Following out the behaviour of turkey-broilers from both hybrids, Bozakova (2003) observed a significantly higher number of moving birds ($P < 0.01$) when raised on litter, statistically significantly higher number of resting birds on the slat floor ($P < 0.01$) and aggressive behaviour episodes ($P < 0.01$) on the litter.

The raising of BUT-9 and StZ-1 hybrids on slat floor resulted in a lower forage expenditure per 1 kg weight gain compared to the rearing on litter, by 14.3% and 5.67% respectively. This was probably due to the higher activity of turkey-broilers on litter that the activity, exhibited on the slat floor.

Our results about the forage expenditure per 1 kg weight gain in turkey-broilers are different from those in Italy, described by Donchev and Kaytazov (1975), about the better utilization of forage by meat turkey-broilers raised on litter. They confirmed the results from a previous analogous experiment, reported by Oblakova *et al.* (2004).

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