

The Impact of Using a Finishing Compound Feed Under the Conditions of a Lighting Program with Asymmetric Time Intervals on Productive Results in Raising for Meat and Slaughter Quail Youth Males of Balotești Population

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Abstract

In order to study the impact of a regime of finishing compound feed in the conditions of using a lighting program with asymmetric time intervals at quail youth males of Balotesti population raised for meat production and youth slaughtering results, in the period 1 – 56 days of growth was organized an experiment on a total of 200 quail males who received the same treatment for the first 28 days. At the age of 29 days they were divided into two batches: the first batch consisting of 100 males (control batch) received one single type of compound feed in the period 29 – 56 days (growth feed specific to the second phase of quail youth growth, with 3140 kcal ME/kg c.f. and 22.50% CP). The experimental batch of 100 males received two types of compound feed (compound feed for the phase two of raising the youth quail in the period 29 – 42 days and a compound feed for adult quails in the period 43 – 56 days (value 2810 kcal ME/kg c.f. and 19.81% CP). All birds were subjected to a lighting program with asymmetric time intervals with the duration of 16 hours a day (10 hours light + 2 hours darkness + 6 hours light + 6 hours darkness). The average live weight at the age of 49 days was 3.29% and with 2.95% at the age of 56 days higher in the experimental batch compared to the control group, while the average weight of the carcass was higher too in the experimental batch at the age of 49 days (with 1.00%), and at the age of 56 days (with 1.80%). Considering that there have been good performances at the experimental batch, it is advisable that when quail males are raised after 49 days of age in the direction of meat production, to use in the week 7th and 8th of growth a compound feed recipe with energy level and protein level lower compared to the period 28 – 42 days, which also contributes to the reduction of production costs for quail meat.

Keywords: compound feed, light, quail, slaughter, youth.

1. Introduction

Quail growth for meat production is a real alternative at raising other animals as sources of animal protein. Quail growth for meat production occupies a relevant place in the growth of poultry and contributes to the diversification of the poultry meat production [1].

Quality and chemical composition of meat is influenced by numerous factors, including the birds' genotype, feeding way, the age of slaughter [2;3] and lighting system [4].

In general, feeding the youth quail is biphasic, with specific compound feed for youth quail. Thus in the first 3 – 4 weeks of growth is used often in our country a fodder with a nutritional value of 3010 kcal metabolisable energy /kg c.f., 24.80% CP, 1.58% lysine and 0.97% methionine, while in 4 – 6 weeks is use a fodder with a nutritional value

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of 3140 kcal metabolisable energy/kg c.f., 22.50% CP, 1.33% lysine and 0.98% methionine [4]. Most of the times, for reasons of breeding technology applied by farmers, the age of 6 weeks is exceeded at the youth quail, which requires finding opportunities as far as possible reduction of production costs in a period where gain growth is greatly reduced.

The purpose of these investigations was to determine the cumulative effect of a lighting system with asymmetric time intervals and the use of compound feed recipes of adult quails in nutrition of young quail males intended for meat production in the period 42 – 56 days.

2. Materials and methods

Research was conducted on a number of 200 quail males of Balotesti population in the period 1 – 56 days of growth, who has received the same treatment the first 28 days. From the age of 28 days, males were divided into two groups such: a batch of 100 males (control group) received only one type of compound feed during the period 29 – 56 days (specific growing feed for the second phase of raising youth quail), and the experimental batch had received two types of compound feed (compound feed specific for the second phase of raising youth quail during the period 29 – 42 days and a recipe of compound feed for adult quail in the period 43 – 56 days. Specific compound feed for the second phase of growth at youth quail had the next nutritional values calculated: 3140Kcal metabolisable energy/kg c.f., 22.50% crude protein, 6.10% crude fat, 0.98% methionine,

1.33% lysine, 0.86% calcium and 0.70% phosphorus. Specific compound feed for adult quails had the next nutritional values calculated: 2810Kcal metabolisable energy/kg c.f., 19.81% crude protein, 5.80% crude fat, 0.88% methionine, 1.16% lysine, 3.50% calcium and 0.70% phosphorus.

During the period of study was used an intermittent lighting program with duration of 16 hours a day (10 hours light + 2 hours darkness + 6 hours light + 6 hours darkness). The densities of 125 sc/head as well as the other environmental conditions were within the limits stipulated by the specialty literature.

The research was carried out in the framework of the holding of quail of Ionita T. Lucian Individual Enterprise located in the village of Gherghița, Prahova County, Romania.

The data have been processed using Microsoft Excell 2010, and the significance of the differences between the averages has been tested using Student test.

3. Results and discussion

The average live weight of the initially batch (Table 1, Figure 1) was 8.87 ± 0.87 g/head. In the period 1 – 28 days has been recorded an average gain of 122.58 g/head (average 4.38 g/day), a total compound feed consumption of 335.22 g c.f./head/day (83.81g c.f./head/day) and a specific consumption of 2.55g c.f./g gain. The average live weight at the age of 28 days was 131.45 ± 2.55 g/head, while the mortality up to 28 days was 2.19%.

Table 1. Average growth performance at chickens from the initial batch in the period 1 – 28 days

Average live weight (g/head)		Average gain (g/head)		Average feed consumption (g c.f./head)		Specific consumption (g c.f. /g gain)	Mortality %
1 day	28 days	By day	Total	By week	Total		
8.87 ± 0.87	131.45 ± 2.55	4.38	122.58	83.81	335.22	2.55	2.19

At 28 days, the age of the batches formation, the differences between the average weights (Table 2) of the two batches were not significant, with the same situation at the age of 35 days and 42 days. At the age of 49 days, at the experimental batch the average live weight (186.27 ± 2.41 g/head) was with 3.29% higher than in the control batch (180.13 ± 2.19 g/head), while at the age of 56 days the average live weight (192.60 ± 2.18 g/head) was

with 2.95% higher than in the control batch (186.91 ± 2.55 g/head), the differences being statistically insignificant. Weekly gain in weight (Table 2) followed the same trajectory in both batches, with the exception of the week 6th and 7th of growth when was higher in the experimental batch (3.47 g/day in the 6th week and 1.51 g/day in the 7th week) compared to the

control batch (3.06 g/day in the 6th week and 1.13 g/day in the 7th week).

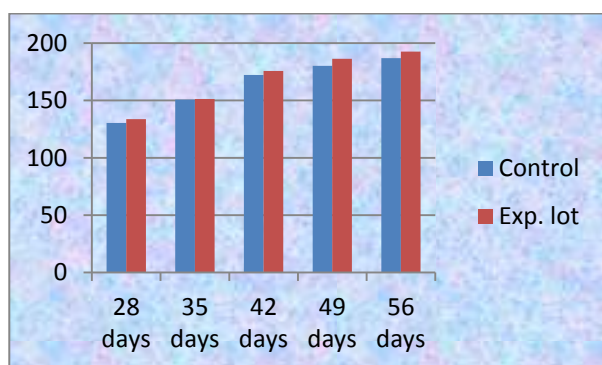


Figure 1. Evolution of live weight at two batches during 28 -56 days.

Weekly average consumption of compound feed (Table 3) was reduced to the experimental batch with 1.85% in 6th week, with 4.4% in the 7th week and with 6.45% in the 8th week of rising compared to the control batch. Also, specific consumption of compound feed has been higher (in average with 15.74g c.f./g gain) at the control batch towards to the experimental batch.

As follows from Table 4, at the age of 42 days there have been no significant differences between the two batches analysed in relation to the weight of the carcass after bleeding, weight of the carcass after plucking and weight of the carcass after evisceration.

Table 2. The average live weight and weekly average gain in the period 28-56 days

Specification	Average live weight (g/head)					Weekly average gain (g/day)			
	28 days	35 days	42 days	49 days	56 days	Week V	Week VI	Week VII	Week VIII
Control batch	130.35 ± 2.87 ns	150.75 ± 1.75 ns	172.20 ± 2.64 ns	180.13 ± 2.19 ns	186.91 ± 2.55 ns	2.76	3.06	1.13	0.97
Experimental batch	133.68 ± 1.98 ns	151.33 ± 2.05 ns	175.67 ± 2.93 ns	186.27 ± 2.41 ns	192.60 ± 2.18 ns	2.52	3.47	1.51	0.90

Table 3. Weekly average consumption and specific consumption of compound feed at chickens of the two batches studied in the period 29 – 56 days of growth

Specification	Weekly average consumption (g c.f./head)				Specific consumption (g c.f./g gain)			
	Week V	Week VI	Week VII	Week VIII	Week V	Week VI	Week VII	Week VIII
Control batch	141.57	177.60	225.25	235.66	7.33	8.27	28.40	34.75
Experim. batch	140.44	174.30	215.35	220.45	7.95	7.16	12.66	35.05

At the age of 49 days, the average weight of the carcass after bleeding was with 3.03% higher, the average weight of the carcass after plucking was with 2.54% and the average weight of the carcass after evisceration was with 1.00% higher in the experimental batch compared to the control batch, the differences being statistically insignificant. Also, at the age of 56 days, the average weight of the carcass after bleeding was with 3.43% higher, the average weight of the carcass after plucking

was with 5.00% and the average weight of the carcass after evisceration was with 1.80% higher in the experimental batch compared to the control batch, the differences being statistically insignificant. There have been no significant differences between the two batches neither in terms of average weight of the blood, average weight of flakes and the average weight of organs and intestines at any one of the three ages.

As regards at the average weight of the component parts of the carcase (table 5), the highest differences were found only in the case of the average weight of the chest, which was higher with 7.65% at the age of 49 days and with 2.80% at the age of 56 days at the experimental batch compared to the control batch. In a study conducted in Poland by [5] regarding the feeding of quail male youth for the purpose of meat production, the authors came to the next

conclusions: the average weight of the chickens at 1 day of age was between 7.33 and 7.53 g/head; at the age of 28 days was between 109.45 and 120.11 g/head; at 42 days of age was between 159.17 and 167.04 g/head; at 49 days was between 104.51 and 106.54 g/head; eviscerated carcass yield was between 64.53 and 66.31%; at 42 days the average proportion of the chest was between 46.28 and 46.97%; the average proportion of the thighs was between 27.54 and 29.94%.

Table 4. The slaughter results obtained from males of the two batches studied at 42, 49 and 56 days

Specification	Control batch			Experimental batch		
	Age					
	42 days	49 days	56 days	42 days	49 days	56 days
Live weight (g)	172.20 ±	180.13 ±	186.91 ±	175.67 ±	186.27 ±	192.60 ±
	2.64	2.19	2.55	2.93	2.41	2.18
	ns	ns	ns	ns	ns	ns
Weight of the carcase after bleeding (g)	167.80 ±	176.80 ±	181.93 ±	170.93 ±	182.33 ±	188.40 ±
	2.63	2.14	2.17	2.98	2.26	2.12
	ns	ns	ns	ns	ns	ns
Weight of the carcase after plucking (g)	147.53 ±	158.73 ±	162.33 ±	149.6 ±	162.87 ±	170.86 ±
	2.28	2.18	2.12	2.91	1.97	2.26
	ns	ns	ns	ns	ns	ns
Weight of the carcase after evisceration (g)	109.73 ±	117.87 ±	120.06 ±	112.67 ±	119.00 ±	122.26 ±
	2.05	3.07	1.47	2.11	1.23	1.25
	ns	ns	ns	ns	ns	ns
Carcase yield (eviscerated carcase /live weight) (%)	65.57 ±	65.42 ±	64.56 ±	63.97 ±	63.98 ±	63.54 ±
	0.60	0.59	0.50	0.43	0.44	0.64
	ns	ns	ns	ns	ns	ns
Weight of the blood (g)	4.40 ±	3.33 ±	4.20 ±	4.73 ±	4.07 ±	3.93 ±
	0.28	0.23	0.31	0.28	0.32	0.30
	ns	ns	ns	ns	ns	ns
Weight of the flocks (g)	20.27 ±	18.07 ±	19.60 ±	19.13 ±	19.33 ±	19.47 ±
	0.63	0.54	0.42	0.52	0.89	0.57
	ns	ns	ns	ns	ns	ns
Weight of the organs and intestines (g)	28.67 ±	30.50 ±	29.87 ±	29.53 ±	31.47 ±	32.80 ±
	0.44	0.54	0.52	0.82	0.63	0.55
	ns	ns	ns	ns	ns	ns
Proportion of the blood (%)	2.56 ±	1.85 ±	2.24 ±	2.71 ±	2.17 ±	2.18 ±
	0.17	0.12	0.15	0.17	0.16	0.15
	ns	ns	ns	ns	ns	ns
Proportion of flocks (%)	12.07 ±	10.22 ±	10.79 ±	12.52 ±	10.60 ±	10.32 ±
	0.30	0.28	0.24	0.35	0.43	0.28
	ns	ns	ns	ns	ns	ns
Proportion of the organs and intestines (%)	19.51 ±	19.22 ±	18.44 ±	19.74 ±	19.35 ±	19.26 ±
	0.57	0.34	0.40	0.41	0.36	0.47
	ns	ns	ns	ns	ns	ns

The conclusion reached by the researchers was that the use of some compound feeds with lower protein levels towards to the recommendations from the specialty literature (20.30 % CP in the period 0 – 8 days, 19.30 % in the period 9 – 28 days and 18.20 % in the period 29 – 42 days), but

keeping the same levels of lysine and methionine, calcium and phosphorus, does not have a negative impact on the average weight of chickens, the slaughter results and the weighting of the component parts of the carcase. By comparing the results obtained by [5] with the results from the

present work, it is observed that the reduction in the level of energy and protein in the formulation

used by us had any negative effects.

Table 5. Cutting results obtained from males of the two batches studied at 42, 49 and 56 days

Specification	Control batch			Experimental batch		
	42 days	49 days	56 days	42 days	49 days	56 days
Weight of the carcass (g)	109.73 ± 2.05 ns	117.87 ± 3.07 ns	120.06 ± 1.47 ns	112.67 ± 2.11 ns	119.00 ± 1.23 ns	122.27 ± 1.26 ns
Weight of the chest (g)	52.40 ± 1.14 ns	53.13 ± 0.13 ns	58.06 ± 0.88 ns	55.47 ± 1.51 ns	57.53 ± 0.77 ns	59.73 ± 1.05 ns
Weight of the thighs (g)	27.07 ± 0.55 ns	27.20 ± 0.66 ns	28.93 ± 0.62 ns	27.53 ± 0.52 ns	27.53 ± 0.51 ns	29.13 ± 0.53 ns
Weight of the cord (g)	22.47 ± 0.46 ns	23.87 ± 0.82 ns	23.48 ± 0.42 ns	21.40 ± 0.32 ns	22.93 ± 0.33 ns	24.13 ± 0.83 ns
Weight of the wings (g)	7.80 ± 0.17 ns	8.20 ± 0.30 ns	9.20 ± 0.24 ns	8.27 ± 0.23 ns	9.00 ± 0.13 ns	9.07 ± 0.22 ns
Proportion of the chest from the carcass weight (%)	47.76 ± 0.60 ns	45.13 ± 0.65 ns	48.41 ± 0.69 ns	49.27 ± 0.61 ns	48.35 ± 0.57 ns	48.90 ± 0.89 ns
Proportion of the thighs from the carcass weight (%)	20.52 ± 0.42 ns	23.06 ± 0.36 ns	24.18 ± 0.70 ns	24.55 ± 0.43 ns	23.17 ± 0.52 ns	23.82 ± 0.33 ns
Proportion of the cord from the carcass weight (%)	20.48 ± 0.44 ns	20.31 ± 0.78 ns	19.60 ± 0.47 ns	19.07 ± 0.22 ns	19.29 ± 0.34 ns	19.82 ± 0.82 ns
Proportion of the wings from the carcass weight (%)	7.12 ± 0.15 ns	6.94 ± 0.19 ns	7.70 ± 0.70 ns	7.36 ± 0.16 ns	7.57 ± 0.13 ns	7.43 ± 0.22 ns

4. Conclusions

The average live weight was higher in the experimental batch compared to the control batch at the age of 49 days (with 3.29%) and 56 days (2.95%), the difference being not statistically assured. Weekly gain in weight during the 6th and 7th weeks of growth was higher in the experimental batch (3.47 g/day in the 6th week and 1.51 g/day in the 7th week) compared to the control batch (3.06 g/day in the 6th week and 1.13 g/day in the 7th week).

The average weight of the carcass was higher in the case of experimental batch at the age of 49 days (with 1.00%), and at the age of 56 days (with 1.80%).

Also the average weight of the chest was higher in the experimental batch at the age of 49 days (with 7.65%), and at the age of 56 days (with 2.80%).

As a result of research we can say that the use of a lighting program with asymmetric time intervals lasting 16 hours (10L + 2N + 6L + 6N) concurrently with the use of a compound feed recipe with nutritional value for adult quails in the period of 42 – 56 days, led to superior economic and even productive results in raising of quail youth for meat production. Also, should be studied the effect of introduction into the diet of youth quail male compound feed for adult quails from the age of 35 days, along with a proper reduction in calcium in the compound feed structure, which could lead to higher economic outcomes in meat production.

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