THE EFFECT OF GREEN FODDER ON SLOW GROWING CHICKENS PERFORMANCE

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Abstract: The aim of the study was to evaluate the effect of green fodder addition to the diet on slow growing chicken´s performance. Both sexes (464 chickens) of slow growing hybrid Hubbard JA 757 were used in the experiment. The chickens were divided into two groups with six replications. From the 21 days of age green fodder was daily added to special feeders to the chickens in the third experimental groups in amount 10 g/chicken. From 28 days of age the amount was 20 g/chicken. The live weight of chickens at 49 days of age was 2.34 kg in the experimental group and the same 2.34 kg in the control group. The live body gain from 21st to 49th days of ages was also the same in both groups 1.84 kg/chicken. Feed conversion ratio during the experimental period (21–49 d) was the same too, 1.86 kg · kg^{-1}. The mortality in experimental and control groups were 0.43% and 0.86%. The daily addition of green fodder in amount 10 and 20 g/chicken from 21st to 49th days of age had no significant effect on growth and feed conversion ratio in slow growing chickens.

Key Words: green fodder, slow growing chicken, clover, feed conversion ratio

INTRODUCTION

Production of eggs and poultry meat from alternative technologies have increased continuously due to increasing interest of consumers. They believe that the products from alternative technologies are of better quality in comparison with the products form intensive technologies. Higher level of animal welfare in alternative technologies is also very important for consumers (Skřivan 2015).

In the Czech Republic, concerning alternative technologies for poultry meat production, there are only two systems. One of the alternative system is prolonged fattening period till 49–56 days of ages. The condition for chickens during prolonged fattening are almost the same as in intensive system and they are both without free range. Special hybrids with lower growth intensity are used for this kind of fattening. Only several thousands of chickens are fattened according to organic legislation in Czech. The lower interest of consumers in organic chickens is caused by very high price of this meat. On the other hand the demand for certified (Label Rouge, free range) chicken meat has increased in abroad. Both in France and Great Britain more than 20% of chickens is produced just in these certified systems, in contrast with organic production. Breeding company also offer a lot of slow growing hybrids for alternative technologies. Popularity of free range production increases in Germany, the Netherlands or Hungary too. Anyway the green fodder is only part of the free range (Lorenz et al. 2013). Free range is positive from the welfare point of view but moreover quality pasture forages can improve sensory quality of chicken meat (Horsted, Hermansen 2007, Michiels et al. 2014, Ponte et al. 2008, Rodriguez-Aurrekoetxea et al. 2015). Management how to keep the free range in good condition is very difficult therefore there are some projects dealing with using green fodder in the poultry houses. Lorenz et al. (2013) estimated that green fodder could cover about 10–15% of total daily dry matter intake in broilers. Slow growing chickens have lower nutrient requirements in the diets so they seem to be more suitable for green fodder feeding.

The aim of the study was to find the effect of green fodder addition to the diet on slow growing chickens' performance.

MATERIAL AND METHODS

Birds

Both sexes (464 chickens) of slow growing meat hybrid Hubbard JA 757 were used in the experiment. The chickens were divided into two groups with six replications (232 chickens in each group). Hubbard JA 757 is recommended for prolonged feeding till 42–81 days, usually till 56 days of age.

Housing and feeding

The chickens in each group were divided into six boxes, 40 ± 5 chickens in each one. The boxes were equipped with nipple drinkers with cups, mechanical tube feeders and wood shavings and peat as litter material. The birds were provided with one hour of darkness following a period of 23h light during the first week of age and since the second week of age the light regime was changed to 6 hours of darkness followed by 18 hours of light. The environmental conditions were in accordance with Ordinance 208/2004 Sb. and 464/2009 Sb.

Starter, BR1 (crumble pellets), was fed till 12 days of ages, grower (BR2 - pellets) was fed from 12 to 35 days of ages and finisher (BR3 - pellets) was fed from 35 to 49 days of age. The composition of the diets is shown in the Table 1 and the content of nutrients in the diets is shown in the Table 2. Both the water and feed were available *ad libitum*.

Table 1 Composition of the diets

Component	[%]		
	BR1	BR2	BR3
Wheat	36.9	48.4	48.7
Corn	20.0	20.0	20.0
Soybean meal	29.4	15.9	12.6
Soybeans	5.0	4.0	4.0
Rapeseed meal	1.5	1.5	2.0
DDGS	0	2.5	4.0
Soybean oil	1.3	0	0
Limestone	1.3	1.0	0.9
MCP	1.0	0.7	0.6
Fish meal	1.0	0	0
Animal fat	0.9	4.1	1
Lysine	0.4	0.6	0.4
Methionine	0.3	0.3	1.0
NaCl	0.3	0.3	0.3

DDGS = Dried Distillers Grains with Solubles, MCP = monocalcium phosphate

The experimental period, when chickens fed were green fodder, lased from 21st to 49th days of age. Anyway we submitted the green fodder to the chickens in the experimental group since 12th day of age to accustom this feed. Since 21 days of age green fodder was daily added to special feeders to the chickens in the experimental groups in amount 10 g/chicken. From 28 days of age the amount was 20 g/chicken. The experimental group were fed by 114 kg of green fodder in total and it wasn´t calculated in feed conversion ratio.

The green fodder was cut on lawn each second day and it was stored at temperature +4°C. The high of the vegetation was 10–15 cm. The botanic composition was as following: 38% *Trifolium repens,* 10% *Lolium perenne*, 10% *Taraxacum officinale, Poa pratensis* 6%, *Phleum pratense* 6%, *Trifolium pratense* 5%, *Dactylis glomerata* 4%, *Plantago lanceolata* 4%, *Nardus stricta* 4%, *Bellis perennis* 2%, *Ajuga reptans* 2%, *Medicago lupulina* 2%, *Glechoma hederacea* 1%, *Achillea millefolium* 2%, *Lotus corniculatus* 1%, *Festuca rubra* 1%, *Festuca rubra* 1%, *Festuca arundinacea* 1%.

Table 2 Content of nutrients in the diets

Content nutrients [g.kg^{-1}]	BR1	BR2	BR3
Crude protein	229.0	180.0	171.7
ME_N [MJ]	11.98	12.89	13.13
Fat	55.0	72.2	80.7
Fiber	35.8	34.9	36.2
Lysine	13.7	11.1	9.51
Methionine	6.1	5.2	4.33
Ca	8.3	6.4	6.0
Na	1.7	1.6	1.6
P	6.58	5.2	5.0

All chickens were weighted 21st and 49th days of age, feed intake and mortality were recorded and feed conversion ratio (FCR) was calculated for the experimental period.

Data were analyzed by t-test using software package Unistat 5.1 (Unistat Ltd, England).

RESULTS AND DISCUSSION

At the beginning of the experiment, 21st day of age, the live weight of the chickens was 503 g, total feed consumption till this age was 674 g/chicken, feed conversion ratio was 1.44 kg · kg^{-1} and mortality was 0.98% (Table 3).

Table 1 Chickens performance till 21 days of age

All chickens	Live weight (g)	Feed consumption (g)	FCR	Mortality (%)
	503	674	1.44	0.98

The results of the experimental period from 21st to 49th days of age are shown in tables 4–7. The results in both experimental and control groups were very similar or almost the same, there were no significant differences between the groups. Live weight at the end of the experiment was in experimental group 2.34 kg and the same in control group 2.34 kg. The average live weight gain was also the same 1.84 kg in both groups. Cumulative feed intake per chicken was 3.40 kg in both groups. The FCR was the same too, 1.86 kg · kg^{-1} (1.861 kg.kg^{-1} experimental group, 1.864 kg · kg^{-1} control group). Mortality was 0.43% in experimental group and 0.86% in control group.

Ponte et al. (2008) also published that addition of green fodder to complete diet, fed ad libitum, had no significant effect on live body weight at 50th day of chickens age, 1.53 kg was the weight in group fed green fodder and 1.51 kg in control group. Anyway feed conversion ratio from 36th to 64th was positively affected by pasture, 3.85 kg · kg^{-1} in control group vs 3.65 kg · kg^{-1} in experimental group.

Table 4 Live body gain (kg/chicken)

Parameter	Gain 21st – 49th day	
	Experiment	Control
Average	1.837	1.835
SE	0.0273	0.0397
V_x (%)	3.64	5.30
Significance	NS	

NS ≥ 0.05

Table 5 Feed consumption (kg/chicken)

Parameter	Feed consumption	
	Experiment	Control
Average	3.399	3.396
SE	0.0275	0.0500
V_x (%)	1.98	3.61
Significance	NS	

NS ≥ 0.05

Skřivan (2015) also reported positive effect of pasture on FCR. In his experiment, pasture decreased FCR till 42nd day of age in hybrid Ross 308 from 1.85 kg · kg^{-1} to 1.80 kg · kg^{-1}. He also observed lower mortality from 0.96% in control group to zero in experimental group. On the other hand,

Sun et al. (2014) evaluated the effect of pasture on live weight and they found lower live body weight in chickens on pasture in comparison with live body weight of chickens without pasture 2.21 vs. 2.63 kg.

Table 6 Feed conversion ratio (kg · kg^{-1})

Parameter	FCR	
	Experiment	Control
Average	1.842	1.8464
SE	0.0295	0.0251
V_x (%)	2.95	3.33
Significance	NS	

NS ≥ 0.05

Table 7 Mortality from 21st to 49th day of age (%)

Parameter	Experiment	Control
Mortality	0.43	0.86

CONCLUSION

The addition of green fodder to the complete diets in amount 10 g/chicken and consequently 20 g/chicken from 21st to 49th days of age had no significant effect on both live body gain and feed conversion ratio during the experimental period. Live weight at the end of experiment was the same in both groups too.

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