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Performance of Various Broiler Chicken Hybrids Fed with Commercially Produced Feed Mixtures

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Abstract: In the experiment, we monitored the impact of a commercially produced feed mixtures on feed utilization and performance of chicken's hybrids Cobb 500, Hubbard JV and Ross 308, kept under the same conditions. Length of feeding period was 35 days. Values of body weight at the end of the feeding period, daily and weekly increase of weight, daily feed consumption, metabolizable energy, nitrogenous proteins and their consumption in different stages of feeding, feed conversion, metabolizable energy and nitrogenous proteins during the feeding period were statistically evaluated and compared between chickens hybrids. Significant differences ($p \le 0.05$) in body weight in the second week of feeding of the chickens at the Hubbard JV to Cobb 500 and Hubbard JV to Ross 308. We have found differences ($p \le 0.05$) in weekly and daily increments in the second week of feeding between Hubbard JV and Cobb 500, respectively Hubbard JV and Ross 308 and in the third week between Hubbard JV, respectively Ross 308 to Cobb 500. The differences ($p \le 0.05$) in daily and weekly feed consumption were in second week of feeding between Ross 308 to Cobb 500 and to Hubbard JV and in the third week between Cobb 500 to Ross 308 and fourth week between Cobb 500 to Hubbard JV and Ross 308. In the conversion of feed, energy and protein contents, have been differences ($p \le 0.05$) between scheduled hybrids from 0-3th week of feeding and in the 4th to 5th week were found differences ($p \le 0.05$) only between Cobb 500 to Hubbard JV, respectively Ross 308. In the conversion of feed, energy and nitrogenous proteins we found differences ($p \le 0.05$) among hybrids Cobb 500 and Ross 308 for the whole feeding period. Based on the results of the performance we found that the Ross 308 chicks responded most positively to the fed commercially manufactured compound feed compared with hybrid Cobb 500 and Hubbard JV and were the most adaptable in the current farming environment, which is ultimately reflected in the reaching of the highest body weight and the lowest feed conversion at the end of feeding. For this reason, the production of poultry meat and the use of commercially produced feed mixtures for feeding of chickens is recommend as most appropriate for the current breeding hybrid combination of chickens Ross 308.

Key words: Hybrid combination, broiler chicks, commercial produced feed, performance

INTRODUCTION

Poultry farming has become an important Money spinning industry. The poultry industry, which includes the rearing of domestic chicken, turkey, ducks, geese and certain other birds are kept throughout the world. The prominence of poultry production today is primarily due to the short generation interval and relatively quick turn over on investment and high quality protein from poultry products (Adeyemo *et al*., 2010). Production of poultry meat for the rapidly growing human population is an important system for supplying high-quality protein and provides an interesting source of finance (Gueye, 2009). Human population pressure and creates a need to produce high quality universal food, which are the resources, especially protein, increase the level of income and living standards and therefore in recent years steadily increasing demand for poultry products (FAO, 2002). The disease is most numerous animal species farmed chickens in the world (Perry *et al*., 2002; Moreki *et al*., 2010). Say (1987) notes that it is poultry meat, including chicken meat compared to other animal species has its own advantages in terms of a rapid return on investment and relatively simple management practices with multiple outlets for products. Poultry products are mainly available for people with lower income and it is attributed to the chicken meat so-called slenderness, respectively high dietician. Poultry farming plays an important role in bridging the protein gap in developing countries where the average daily consumption of protein is significantly lower than the recommended standards (Onyimonyi *et al*., 2009). The genetic selection of poultry for superior growth rate has arguably been the primary method for increasing productivity. However, many studies have been shown

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that such selection may be coincidentally accompanied by decreased resistance to diseases or changes in immunological response (Li *et al.*, 2001; Fathi *et al.*, 2003; Huff *et al.*, 2005). In addition to the selection and creation of new hybrid combinations of chicken many authors conducted experiments in order to draft the composition of compound feed and create different models for maximizing the performance of chickens, which were based on the declining marginal productivity (McDonald and Evans, 1977; Greig *et al.*, 1977; Allison *et al.*, 1978; Pesti *et al.*, 1986; Gonzalez-Alcorta *et al.*, 1994). The rapid growth of broilers demands that they be supplied with high quality diets to sufficiently cater for their nutrients requirements. The principal constituent of broilers is soft tissues which are mainly proteins. The protein required by broiler depends primarily on the amount needed for maintenance of health, tissue integrity and for productive purposes. For broilers to meet the protein requirement, the amino acids must be available in the proper amount (Adeyemo *et al.*, 2010). The basis for the creation and composition of compound feed is used to maximize the achievement of performance expressed predominantly increase of weight at the most economical use of feed and to achieve the highest profit, because it is the object of modern poultry business. Maximum increase of weight in the production of chickens is influenced by compound feed. The Current Feed Formula (LCFF) provides a set of requirements for nutrients and their limitations created specifically for each hybrid combination of chicken, is affected by the price of raw materials and forming a compound feed and also the requirements of the nutritional composition of meat chickens (Cerrate and Waldroup, 2009). Creation and composition of feed mixtures for chickens is important both in terms of the components but also in terms of required nutrients and energy and their ratio. With the increase of nutrients and energy in the compound feed and chicken is expected to increase their body weight without changing the quality of the carcases of chickens (Donaldson *et al.*, 1957; Combs and Nicholson, 1964; Saleh *et al.*, 2004). But some studies recommend that the energy and protein content of compound feeding stuffs shall may differ in terms of making profit and the best economy broiler chicken production, which must take into account that this factor may negatively affect the quality of carcass body (Jackson *et al.*, 1982; Pesti and Fletcher, 1983; Gonzalez-Alcorta *et al.*, 1994; Pesti and Miller, 1997). Generated compound may be and are based largely on increased protein and essential amino acids, while the power is kept constant (Eits *et al.*, 2005a, b). But other authors state that the compound may have on the contrary increased energy levels, while other nutrients are in a stable compound (Leeson *et al.*, 1996; Dozier *et al.*, 2006). Based on the above, the aim of this work was to examine the use of currently produced commercial feed mixtures to those realized economic performance and feed utilization of various hybrid combinations of chickens kept in the same feeding conditions.

MATERIALS AND METHODS

The experiment was implemented in test poultry station of Slovak Agricultural University in Nitra. The experiment enrolled 540 pieces of one day old chickens, divided by the hybrid combination in the three groups (180 pieces of Cobb 500 chickens, 180 pieces of Hubbard JV chickens and 180 pieces of Ross 308 chickens. The chickens were reared in a cage technology from the company MBD (CZ), each cage was equipped with feed disperser and water feed was ensured an *ad libitum* through a self fount. The heating was provided by central heater. The air temperature was at the first day 33^{o}C and every week was reduced about 2^{o}C. The lighting government during the feeding period was continuous. Custom feeding of chickens abided 42 days. Chickens were fed to 21th day of age an *ad libitum* with the same starter feed mixture HYD-01 (powdery form) and from 22nd to 42nd day of age fed with the growth feed mixture HYD-02 (powdery form) in the monitored groups. The fed feed mixture HYD-01 and HYD-02 have been produced without antibiotic preparations and coccidiostatics. The average composition and nutritional value of feed mixtures is shown in Table 1.

Table 1: Composition and nutrient composition of diets (%)

Ingredient	Starter diets (%)	Grower diets (%)
Wheat	35.83	31.21
Corn	35.00	40.00
Soybean extracted	20.00	21.00
(48% NL[1])	4.00	-
Fish meal (71% NL[1])	-	2.20
Dried whey	1.60	2.10
Dried blood	1.00	0.80
Ground limestone	1.00	0.90
MCP[2] 22, 7 P[3], 16 Ca[4]	0.10	0.15
Fodder salt	0.20	0.20
Sodium hydrogen carbonate	0.10	0.06
Lysine 78%	0.17	0.23
Fat - Bergafat	0.50	0.65
Euromix BR[5]	0.50	0.50
Nutrient composition		
ME_N ($MJ.kg^{-1}$)[6]	11.998	12.077
Nitrogenous proteins ($g.kg^{-1}$)	210.388	191.473
Linoleic acid ($g.kg^{-1}$)	12.769	13.413
Pulp ($g.kg^{-1}$)	29.781	29.894
Methionine ($g.kg^{-1}$)	5.157	5.152
Lysine ($g.kg^{-1}$)	11.730	9.997
Calcium ($g.kg^{-1}$)	8.238	7.126
Phosphorus total ($g.kg^{-1}$)	6.757	6.108
Phosphorus nonphytate ($g.kg^{-1}$)	3.717	3.112

[1]Nitrogenous proteins, [2]Mineral feed additive, [3]Phosphorus, [4]Calcium, [5]Premix provided per kg of diet: vitamin A; 2, 500, 000 IU, vitamin D3; 800, 000 IU, vitamin E; 20, 000 mg, vitamin K3; 800 mg, vitamin B1; 600 mg, vitamin B2; 1, 800 mg, vitamin B6; 1, 200 mg, vitamin B12; 8 mg, vitamin C; 20, 000 mg, biotin; 40 mg, folic acid; 400 mg, calcium pantothenate; 3, 000 mg, nicotinic acid; 12, 000 mg, Choline; 100, 000 mg, betaine; 50, 000 mg, Mn; 20, 000 mg, Fe; 14, 000 mg, Cu; 2, 400 mg, Zn; 16, 000 mg, Co; 80 mg, I; 200 mg, Se; 50 mg, anioxidant Endox; 5, 000 mg, [6]Metabolizable energy corrected for nitrogen balance

Statistical analysis: Data from this experiment were evaluated by ANOVA using General Linear Models procedures (SAS Institute, 2001). Significant difference ($p \le 0.05$, $p \le 0.01$, $p \le 0.001$) between main effects were detected by Duncan (1955) multiple range test.

RESULTS

Live weight, weekly and daily increase of weight in different stages of feeding by chickens Cobb 500, Hubbard JV and Ross 308 are shown in Table 2. Daily and weekly feed consumption, energy consumption, nitrogen and conversion of energy, nitrogenous proteins and feed in different stages of feeding is shown in Table 3.

With statistical evaluation we found significant differences ($p \le 0.05$) of the results (Table 2) in body weight only in the second week of feeding with comparing of chickens Hubbard JV to Cobb 500 and Hubbard JV to Ross 308. We found statistically significant differences of the weekly and daily increase of weight ($p \le 0.05$) in the second week of feeding the chickens Hubbard JV and Cobb 500, respectively Hubbard JV and Ross 308 and also in third week of feeding between Hubbard JV, respectively Ross 308 to the Cobb 500 chickens.

In terms of daily and weekly feed consumption (Table 3) were found significant differences ($p \le 0.05$) in the second week of feeding the chickens Ross 308 to the Cobb 500 chickens and to the Hubbard JV and in the third week between chickens Cobb 500 to Ross 308 and in the 4th week between chickens Cobb 500 to Hubbard JV and Ross 308 chickens.

The statistical evaluation of feed conversion, energy and nitrogenous proteins was found differences ($p \le 0.05$) during 0-3th week of feeding between each hybrids of chickens in the 4th to 5th weeks of age were significant differences ($p \le 0.05$) between the Cobb 500 chickens to Hubbard JV, respectively to the Ross 308 chickens. The overall statistical assessment of feed conversion, energy and nitrogenous proteins for the whole feeding period, we found significant differences ($p \le 0.05$) only between chickens Cobb 500 and Ross 308.

DISCUSSION

The basis for the creation and composition of compound feed is kind of hybrid combination of chicken feed mixture will be benefit (Cerrate and Waldroup, 2009). It is well known that the highest cost of feeding chickens up the cost of feed, representing 80% of the total cost and it is not always possible to produce the compound

Table 2: The effect of commercial feed mixtures for body weight, weekly and daily increase of weight in chickens of different hybrids

	Cobb 500			Hubbard JV			Ross 308		
Parameter	$\bar{x}$[1]	S.D.[2]	CV%[3]	$\bar{x}$	S.D.	CV%	$\bar{x}$	S.D.	CV%
Body mass (g)									
1 wk[4]	110.45^{a}	9.735	8.81	111.90^{a}	15.651	13.99	106.25^{a}	13.568	12.77
2 wk	301.00^{a}	36.098	11.99	330.80^{b}	42.704	12.91	296.45^{a}	49.797	16.80
3 wk	693.25^{a}	40.085	5.78	680.85^{a}	88.202	12.95	650.65^{a}	87.532	13.45
4 wk	1136.35^{a}	63.152	5.56	1123.50^{a}	134.748	11.99	1109.70^{a}	138.369	12.47
5 wk	1629.15^{a}	106.637	6.54	1627.25^{a}	206.702	12.70	1644.70^{a}	209.988	12.77
Weekly daily increase of weight (g)									
1 wk	60.15^{a}	10.271	17.08	62.60^{a}	15.038	24.02	58.90^{a}	13.814	23.45
2 wk	195.55^{a}	18.545	9.48	218.90^{b}	37.070	16.93	190.20^{a}	38.362	20.17
3 wk	387.25^{a}	42.268	10.92	350.05^{b}	52.999	15.14	354.20^{b}	44.573	12.58
0-3 wk	642.95^{a}	40.799	6.35	631.55^{a}	87.236	13.81	603.30^{a}	87.805	14.55
4 wk	443.10^{a}	37.233	8.40	442.65^{a}	58.217	13.15	459.05^{a}	64.217	13.99
5 wk	492.90^{a}	59.015	11.97	503.75^{a}	101.935	20.24	535.00^{a}	110.296	20.62
4-5 wk	936.00^{a}	76.540	8.18	946.40^{a}	148.304	15.67	994.05^{a}	148.263	14.92
0-5 wk	1578.95^{a}	107.813	6.83	1576.70^{a}	207.161	13.14	1597.35^{a}	210.452	13.18
Daily increase of weight (g)									
1 wk	8.593^{a}	1.467	17.08	8.943^{a}	2.148	24.02	8.414^{a}	1.973	23.45
2 wk	27.936^{a}	2.649	9.48	31.272^{b}	5.296	16.93	27.171^{a}	5.480	12.58
3 wk	55.321^{a}	6.038	10.92	50.007^{b}	7.571	15.14	50.600^{b}	6.367	12.58
0-3 wk	30.630^{a}	1.950	6.37	30.069^{a}	4.161	13.84	28.733^{a}	4.188	14.57
4 wk	63.300^{a}	5.319	8.40	63.236^{a}	8.317	13.15	65.579^{a}	9.174	13.99
5 wk	70.414^{a}	8.431	11.97	71.964^{a}	14.562	20.23	76.429^{a}	15.756	20.62
4-5 wk	66.857^{a}	5.467	8.18	67.60^{a}	10.593	15.67	71.004^{a}	10.590	14.92
0-5 wk	45.113^{a}	3.081	6.93	45.081^{a}	5.878	13.04	45.638^{a}	6.013	13.18

$^{a-b}$Value within a row with no common superscripts are significantly different ($p \le 0.05$).

[1]Average, [2]Standard deviation, [3]Coefficient of variation, [4]Week

Table 3: The effect of commercial feed mixtures for the weekly and daily consumption of feed, energy and crude protein, convergence feed, energy and nitrogenous proteins in different stages of feeding in chickens of different hybrids

	Cobb 500			Hubbard JV			Ross 308		
Parameter	$\bar{X}$[1]	S.D.[2]	CV%[3]	$\bar{X}$	S.D.	CV%	$\bar{X}$	S.D.	CV%
Weekly feed consumption (g)									
1 wk[4]	99.405[a]	8.762	8.81	99.255[a]	13.882	13.99	99.450[a]	12.699	12.77
2 wk	333.846[a]	24.851	7.44	318.560[a]	41.124	12.91	268.584[b]	45.116	16.80
3 wk	453.366[a]	41.896	9.24	483.404[ab]	62.623	12.95	521.771[b]	70.158	13.45
0-3 wk	886.611[a]	49.398	5.57	901.226[a]	108.646	12.06	889.855[a]	124.632	14.01
4 wk	858.916[a]	47.849	5.57	752.625[b]	88.785	11.79	751.267[b]	93.676	12.47
5 wk	936.733[a]	61.351	6.55	951.942[a]	120.922	12.70	980.241[a]	125.152	12.77
4-5 wk	1795.650[a]	105.952	5.90	1704.560[a]	204.778	12.01	1731.510[a]	212.244	12.26
0-5 wk	2682.260[a]	145.392	5.42	2605.790[a]	299.737	11.50	2621.360[a]	326.05	12.44
Daily feed consumption (g)									
1 wk	14.201[a]	1.252	8.82	14.179[a]	1.983	13.99	14.202[a]	1.812	12.76
2 wk	47.692[a]	3.550	7.44	45.501[a]	5.882	12.93	38.369[b]	6.445	16.80
3 wk	64.766[a]	5.985	9.24	69.058[ab]	8.946	12.95	74.546[b]	10.028	13.45
0-3 wk	42.217[a]	2.354	5.58	42.898[a]	5.171	12.06	42.374[a]	5.935	14.01
4 wk	122.698[a]	6.831	5.57	107.518[b]	12.683	11.79	107.824[b]	12.868	11.93
5 wk	133.819[a]	8.764	6.55	135.992[a]	17.274	12.70	140.035[a]	17.879	12.77
4-5 wk	128.260[a]	7.568	5.90	121.626[a]	14.707	12.09	123.679[a]	15.160	12.26
0-5 wk	76.679[a]	4.108	5.36	74.401[a]	8.562	11.51	74.896[a]	9.316	12.44
Energy consumption (MJ)									
0-3 wk	10.636[a]	0.594	5.58	10.812[a]	1.303	12.06	10.665[a]	1.498	14.05
4-5 wk	21.685[a]	1.279	5.90	20.564[a]	2.487	12.09	20.911[a]	2.563	12.26
0-5 wk	32.322[a]	1.754	5.43	31.376[a]	3.612	11.51	31.576[a]	3.928	12.44
Nitrogenous proteins consumption (g)									
0-3 wk	186.526[a]	10.401	5.57	189.600[a]	22.853	12.05	187.213[a]	26.219	14.01
4-5 wk	344.249[a]	19.747	5.74	326.033[a]	39.424	12.09	331.058[a]	41.242	12.46
0-5 wk	530.774[a]	28.229	5.32	515.664[a]	59.313	11.50	518.270[a]	65.215	12.58
Feed conversion ($kg.kg^{-1}$)									
0-3 wk	1.380[a]	0.057	4.16	1.431[b]	0.051	3.56	1.476[c]	0.037	2.55
4-5 wk	1.923[a]	0.072	3.78	1.809[b]	0.193	10.68	1.752[b]	0.137	7.82
0-5 wk	1.700[a]	0.039	2.29	1.658[ab]	0.094	5.69	1.644[b]	0.078	4.74
Conversion ME_N ($MJ.kg^{-1}$)									
0-3 wk	16.565[a]	0.689	4.16	17.169[b]	0.611	3.56	17.716[c]	0.452	2.55
4-5 wk	23.219[a]	0.877	3.78	21.846[b]	2.332	10.68	21.162[b]	1.654	7.82
0-5 wk	20.469[a]	0.468	2.29	19.955[ab]	1.139	5.71	19.787[b]	0.937	4.74
Conversion nitrogenous proteins ($g.kg^{-1}$)									
0-3 wk	291.972[a]	16.882	5.78	301.075[b]	10.722	3.56	310.659[c]	7.933	2.55
4-5 wk	368.135[a]	13.908	3.78	346.355[b]	36.977	10.68	335.508[b]	26.228	7.82
0-5 wk	341.682a	7.822	2.29	333.172[ab]	18.971	5.69	330.347[b]	15.481	4.69

[a-c]Value within a row with no common superscripts are significantly different ($p \leq 0.05$).

[1]Average, [2]Standard deviation, [3]Coefficient of variation, [4]Week

to the demands of different combinations of hybrid chickens (Olugbemi *et al.*, 2010). Most commercially produced compound poultry feed is produced in granular form because of increased body weight and a reduction in feed consumption, but often they are used for feed and compound feed in powdery form (Choi *et al.*, 1986; Cutlip *et al.*, 2006; Cutlip *et al.*, 2008). Nutritive value of compound feed used for feeding of chickens affects both those realized their usefulness as well as the overall economics of poultry meat and ensuring uniformity of flock in feeding (Koelkebeck *et al.*, 1993). The production of compound feed is a reasonable and required content of metabolizable energy and protein levels where the level of protein in feed should be at the start of feeding 23% (Olomu and Offiong, 1980). Bregendahl *et al.* (2002) note that low protein diet, respectively compound feed has an impact on the deterioration in growth performance as well as lean production and yield of broilers. Shalmany and Shivazad (2006), Kamran *et al.* (2008) and Seven *et al.* (2008) in their experiments used feedstuff, which has the content of metabolizable energy in feeding starter phase was from 12.70-12.95 MJ/kg, nitrogenous proteins content of 23-23.20%, lysine content from 1.10-1.17%, the calcium content from 0.92-1.01% and content of non-phytate phosphorus from 0.40-0.50%. Those cited authors in the growing and final phase of feeding chickens used compound containing metabolizable energy from

12.97-13.33 MJ/kg, protein was from 20.00-22%, lysine content from 0.90-0.97%, the calcium content from 0.89-1.01% and non-phytate phosphorus content was from 0.40-0.50%. Compared with the nutritional value of feed mixtures used in our verification experiment (Table 1), we found that the addition of lysine content (1.17% - starter compound and 0.99% - a growth compound) we have less value as declared in the content metabolized energy (11.99 to 12.07 MJ/kg), nitrogenous proteins (19.14-21.03%), calcium (0.71-0.82%) as well as non-phytate phosphorus (0.31-0.37%).

The live weight of chickens (Table 2) after 35 days of feeding was highest in chickens Ross 308 (1644.70 g), lower in Cobb 500 (1629.15 g) and lowest in Hubbard JV (1627.25 g), without statistical differences between hybrids ($p \geq 0.05$). Values of body weight observed hybrids confirmed that the nutritional value of compound feed produced commercially is less than the required value as declared by breeding companies, which are hybrid combinations of the breeder chickens. The recommended composition of compound mixtures according to the breeders of hybrids should hybrid Ross 308, without distinction of sex for 35 days of feeding to reach a live weight of 2013.00 g, hybrid Hubbard JV at 1830.00 g and Cobb 500 at 2017.00 g.

Lower values of body weight at the age of 35 days like we do in our experiment with different hybrids chickens for feeding fed feed mixtures of different composition and thus a different nutritional value reached (Ng´ambi *et al*., 2009; Abd El-Hakim *et al*., 2009; Kumar *et al*., 2010; Khosravi *et al*., 2010; Makram *et al*., 2010). A number of studies including our results show that regardless of the diet components of broiler chickens may come to a final weight 2.0-2.2 kg after 42 days of feeding (Rutkowski *et al*., 2000; Swierczewska *et al*., 2000; Osek *et al*., 2001, Pawlak *et al*., 2005) as the last phase, i.e. last seven days of feeding increased the weight of chickens by an average of 23% and more.

Live weight is closely related to daily increase of weight, which according to breeders at the age of 35 days to be in hybrid Ross 308 57.51 g, hybrid Hubbard JV 52.28 g and hybrid Cobb 500 57.62 g. Values of daily increase of weight in feeding experiment under review (Table 2) in the feeding of commercially produced feed mixtures (Table 1) were in the hybrid Ross 308 45.64g, in hybrid Cobb 500 45.11 g and in hybrid Hubbard JV 45.08 g without statistically significant differences between scheduled hybrids of chickens ($p \geq 0.05$). Daily increase of weight in hybrid Ross 308, Cobb 500 and Hubbard JV in accordance with the results of Shalmany and Shivazad (2006), Seven *et al*. (2008), Onyimonyi *et al*. (2009) and Kumar *et al*. (2010). Lower daily increase of weight of broilers in different hybrids reported Wang *et al*. (2007) at 28.38-32.34 g, Iheukwumere *et al*. (2007) at 40.50 grams etc.

The use of feed is the most frequently expressed Feed Conversion (FCR) as feed consumption per kilogram increase in body mass, which is under review for the whole feeding experiment (Table 3) were the lowest by chickens Ross 308 (1.644), higher in chickens Hubbard JV (1.66) and the highest by Cobb 500 chickens (1.70 kg). Breeding companies recommend 35 days of age in chickens Ross 308 FCR at level 1.62, with Hubbard JV chickens 1.57 and Cobb 500 chickens 1.61, which is consistent with the values of our experiment. Kamran *et al*. (2008) found by chickens Hubbard FCR from 1.97-2.54 and Seven *et al*. (2008) by Ross 308 (2.0) at 35 days old chickens, Novel *et al*. (2009) found FCR from 2.20-2.30 and Kumar *et al*. (2010) found by Cobb 400 FCR from 1.53-1.59 at 42 days old chickens. On the basis of the reached results of the experiment of feeding a commercially produced complete feed mixture as well as results of other authors we found that the composition of compound feed, including protein, energy and their ratio is clearly the relationship of conversion and the performance attained by chickens, which is consistent with arguments of Donaldson *et al*. (1957), Combs and Nicholson (1964), Bregendahl *et al*. (2002) and Saleh *et al*. (2004), but contrariety to Osek *et al*. (2004), Pawlak *et al*. (2005), Barteczko and Lasek (2008), which found that low protein content in the diet of chickens has no effect on their performance and final body weight.

In terms of performance results we found that the combination of hybrid Ross 308 chickens responded most positively to the fed commercially manufactured compound that is manufactured according to requirements of the breeding business for the hybrids, which ultimately resulted in reaching the highest body weight at the end of feeding and low feed conversion. For this reason, the production of poultry meat using a commercially manufactured compound feed is recommended as the best and the most adaptable for breeding hybrid combination Ross 308 chickens.

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