

## **THE INFLUENCE of PROTEIC FEED TYPE on GROWTH PERFORMANCE of BROILERS**

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**Abstract.** An experiment was conducted in order to assess the effects of supplementation traditional recipes with different forage meals from oil processing industry, in particular biofuels. Experiments were conducted on broilers, divided into four groups: a control group (fed with commercial feed), group 2 (fed with supplement of soybean meal), group 3 (fed with rapeseed meal supplement), and group 4 (fed with sunflower meal supplement). Ratios were then balanced regarding energy-protein by adding oil. Food supplementation has favorable effects on productive performance of broilers. Lots 2, 3 and 4 recorded higher average body weight up to 5.57% compared to the control group. Rapeseed meal in the first 4 weeks of life, determined similar average body weight evolution as soybean meal, demonstrating the possibility of substitution. In the first two weeks of life sunflower meal determines backlogs of growth, but during the finishing period, its effects are closely after those of soybean meal. The most irregular lot is that fed with sunflower supplement effect observed from the first period of growth, possibly due to the influence of ration higher cellulosic level. The aim of the study was to assess the effects it has on broilers, supplementation of traditional recipes with different meals from the oil processing industry. These meals are produced in increasing amounts with the development of biofuels industry.

**Keywords:** biofuels, broilers, nutrition, soy, rape, sunflower.

Alternative fuels are more and more important due to increasing oil prices environmental concerns and their potential for developing agriculture. Some by-products of that industry may come back and complete the animal diets due a relative low prices and a high protein level.

### **MATERIALS AND METHODS**

Experiments were conducted on 360 broilers, Ross 308 hybrids, which were bayed at the age of one day. Chickens were divided into 4 homogeneous groups and were fed differently as follows:

- Lot 1 considered the control group;
- Lot 2, which received the soybean meal feed supplement;
- Lot 3, which received rapeseed meal feed supplement;
- Lot 4, which received feed supplement of sunflower meal.

The animals were fed with commercial feed (group 1 - group 4), to which were added supplements meals in quantity between 3-5% (groups 2-4). (9) Ratios were calculated and then balanced so that the animals were fed with ratios very close to each other, from energy-protein point of view. Balancing of ratios was made by the addition of energy feed (oil) so that energy-protein ratio recorded values of  $145.54 \pm 0.8\%$  for starter feed,  $158.1 \pm 0.5\%$  for growing feed, and respectively  $193.7 \pm 1\%$  for finishing feed in broilers from all experimental groups. (2)

Broilers were kept in cages, and the temperature was continuously monitored. They were weighed weekly, when also rotation was made between the groups, so that to eliminate any influence of other variables from the system. (4)

## RESULTS AND DISCUSSIONS

In Tables 1 and 2 is shown the average body weight of broilers and statistical interpretation of the results compared with control group in the first 4 weeks of life.

Analyzing the data presented in Table 1 reveals a linear evolution of chickens, with small differences, according to statistical calculation proved to be insignificant ( $p > 0.05$ ). However, at the age of four weeks, we can say that the lowest value was recorded in the control group and the highest value in group 3 (whose diet was supplemented with rape).

In the first two weeks of life, the higher cellulosic level in the group fed with sunflower meal causes backlogs of growth, and the highest standard deviation (190.42g, compared with other groups, whose values are around 150g), showing a irregularity of the lot.

Table 1.

Evolution of the average body weight of broilers

Lot	Initial	Week 1	Week 2	Week 3	Week 4	Week 5
Lot 1	88,43	140,86	387,86	848,62	1311,64	1735,1
Lot 2	88,3	144,5	386,96	873,16	1340,16	1831,89
Lot 3	87,8	143,48	387,29	868,67	1345,58	1777,25
Lot 4	87,03	139,22	369,61	863,96	1333,13	1797,8

Table 2.

The statistical interpretation of the results

Lot	Week 4		Week 5	
	Standard deviation (St Dev)	p value in comparison with control group	Standard deviation (St Dev)	p value in comparison with control group
Lot 1	195.63		152.24	
Lot 2	194.37	$p < 0.4757$ (NS)	150.15	$p < 0.0494$ (*)
Lot 3	197.96	$p < 0.3875$ (NS)	147.24	$p < 0.4137$ (NS)
Lot 4	261.69	$p < 0.6384$ (NS)	190.42	$p < 0.3075$ (NS)

NS  $p > 0,05$ ; \*  $p < 0,05$ ; \*\*  $p < 0,01$ ; \*\*\*  $p < 0,001$

Compared with data from the literature (10), average body weight of the broilers falls within the standards of hybrid (aprox.1330 g at the age of 4 weeks and 1700-1800 g at the age of 5 weeks)

At the end of the experiment it can be observed that the average recommended value is reached by all groups, control group recorded the lowest average weight (1735.1 g), groups 3 and 4 recorded similar mean values and the group fed with soy recorded the highest value (1831.89 g). This plot shows a significant difference in comparison with control group (\* p <0.05), average weight being 5.57% higher.

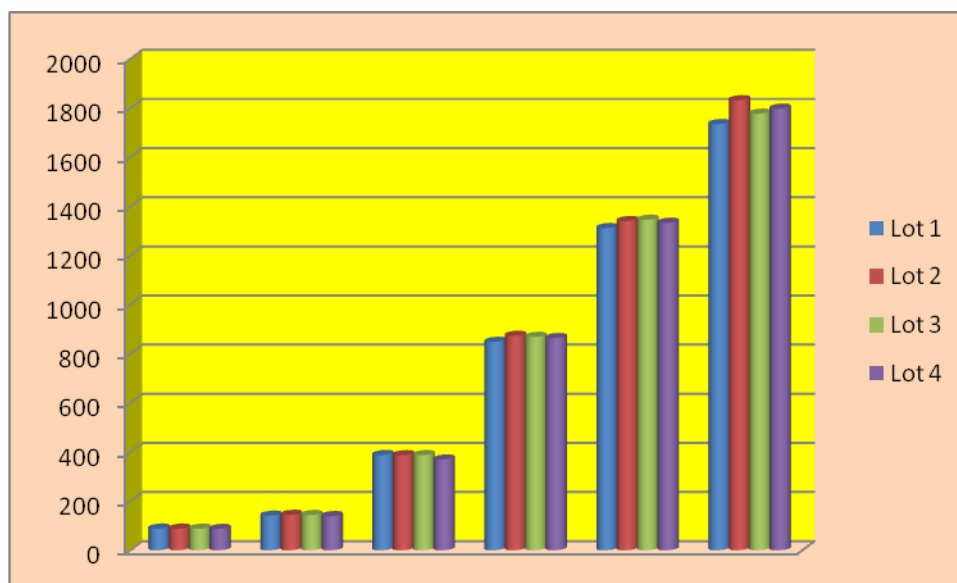


Figure 1. Graphic showing the evolution of average body weights on lots during experimental period

Analyzing the evolution of the presented data it can be concluded that during periods of startup and growth, the addition of soy and rapeseed meal has similar beneficial effects. It seems that in these times of growing rapeseed meal can partially replace soybean meal. Adding sunflower is rather negative effects, explained by the large amount of cellulose which it contains.

During finishing, the best effect it has on broilers is supplement ratios with soybean meal, followed closely by those of Lot 4, fed with sunflower meal.

Data on body mass development of broilers in different periods of growth highlights one of the most important conclusions, namely that rape can successfully replace soybean at least the first four weeks of life, when animals have almost identical average body weight. This allows the use of rape meal feed since rape culture has grown in recent years.

There are other papers that support this idea. (1, 3, 5, 6, 7, 8) These works show that in spite of toxic substances may be present in rapeseed (glycosides, sinapine, erucic acid), the health of the broilers was not significantly affected even if brought feed in different percentages (10, 20, even 30%).

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## CONCLUSIONS

- Supplementing feed with products from the biofuel industry has favorable effects on productive performance of broilers.
- Supplementing ratios with rapeseed meal in the first 4 weeks of life evolve similar average body weight compared with that of soybean meal fed lot, demonstrating the possibility of substitution.
- In the first two weeks of life sunflower meal determines backlogs in growth.
- During finishing, the best effects it has on chickens to supplement rations with soybean meal, followed by those of supplement ratios with sunflower meal.
- Lots 2, 3 and 4 recorded higher average body weight up to 5.57% compared to the control group.
- The batch fed with sunflower supplement is uneven and has the highest standard deviation, which may be due to the influence of ration higher cellulosic level.

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