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ECONOMIC EFFICIENCY AND EUROPEAN EFFICINECY FACTOR ÎN MODIFING OF SOME RAW MATERIALS PROPORTION IN CHICKEN BROILERS FEEDING

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Abstract

To reduce the import of soy oil cake, which requires a significant financial effort, it is necessary to research opportunities for its partial replacement in broilers feeding. Thus, there were formed two groups (lots): the lot 1(M), considered control lot, where broilers were feed by using corn as energetic forage and soy oil cake as protein forage. In the other group (E), part of the corn was replaced with barley (25%) and soy oil cake was substituted with sunflower oil cake (7%) and fishmeal (2%), and for ensuring the biological protein value there were used different proportions of synthetic amino acids. Introduction of barley, sunflower oil cakes (12%) and fish meal (2%) in the structure of mixed fodder leads to lower final weight, increased specific consumption and increased feed costs for 1 kg weight gain.

Keywords: broiler, soy oil cake, sunflower oil cake, barley, cost of production.

INTODRUCTION

In the last years, researchers are concerned with finding new nutritional solutions regard poultry feeding, solutions that allow achieving high production performance with minimized cost efforts.

Although it is considered a strategic fodder raw material, in many countries in Europe and Asia, soybean oil cake is imported, fact which requires finding alternative vegetable protein sources. This phenomenon is also true for our country, which covers about 30% of the needs from indigenous production (Burciu D-2001). Such an alternative is using barely.

In this context it is necessary to determine the optimal proportion of barely and sunflower oil cake in the structure of mixed fodder for broilers, and how to improve the biological value of protein by using synthetic amino acids and/or fish meal.

MATERIALS AND METHODS

The biological material was represented by the "Ross 308" broiler hybrid.

The experiments were performed on two lots of broilers by 40 head/ lot. It was selected one control group and the other lot was considered experimental lot:

- in the control lot L1 (M) it was used only soy oil cake of as protein fodder and corn as cereal;

- in L2 lot, besides soy oil cake there were introduced in fodder sunflower oil cake at a rate of 7% (% by weight of mixed fodder) and fish meal 2%(% by weight of mixed fodder)and barely 25% (% by weight of mixed fodder).

At the end of the experimental period (42 days) the European Efficiency Factor (EEF) was calculated, based on the age of broilers at sacrifices (days), their average live weight (kg / head), viability (%) and feed conversion index - IC (kg fodder / kg gain):

$$EEF = \frac{[\text{viability (\%)} \times \text{live weight (Kg)}] \times 100}{[\text{age of capitalization (days)} \times \text{specific consumption (Kg)}]}$$

RESULTS AND DISCUTIONS

To determine the economic efficiency of partial substitution of corn with barley (25%) and of soy oil cakes with sunflower oil cake (7%) and fishmeal (2%) (% by weight of mixed fodder) in broilers fodder, feed costs were calculated to obtain one kg weight gain. Thus, compound feed prices were calculated (excluding VAT), taking into account purchase prices of raw materials available in May 2010 (lei / kg): corn - 0.46, barley - 0.39; soybean oil cake – 1.4, fishmeal - 4.12, oil sunflower - 2.82; synthetic methionine - 14.38; synthetic lysine - 6.44, calcium carbonate - 0.1; monocalcium phosphate - 1.58; salt - 0.5, Oil cake sunflower - 0.43; vitamin-mineral premix I-II - 5.7; vitamin-mineral premix III - 4.8.

Price for 1 kg of fodder recorded in the three phases of growth, corresponding to the two lots, is presented in Table 1.

Table 1

Variation of price for 1 Kg combined fodder *

Lot	Phase I (1-21 days)		Phase II (22-35 days)		Phase III (36-42 days)	
	Lei/Kg	%	Lei/Kg	%	Lei/Kg	%
L1 – M	0,982	100,00	0,967	100,00	0,915	100,00
L2 - E	1,005	102,3	0,997	103,1	0,949	103,7

*- price without VAT.

In all three experimental phases, partial substitution of corn with barley and of soy oil cakes with sunflower oil cake and fish meal increased the price of one kg of fodder with 2.3 - 3.7%, due to high price of fish meal and sunflower oil that has been built in higher proportions in the diet to ensure izoenergetic compound fodder.

Results on combined fodder costs to achieve a kg live weight gain (Table 2) in the starter phase (1-21 days) shows much higher values for broilers in the experimental group (L2-E) in whose food corn has been

partially replaced with barley (25%) and soy oil cakes with sunflower oil cake (7%) and fishmeal (2%), compared with control lot.

During the growing phase and finishing, feed costs per one kg weight gain were higher for broilers in the experimental lot versus control lot. This also was registered in the average cost of combined fodder consumed to achieve a kg body weight, reported to the whole experimental period (1-42 days).

Table 2

Feed expenses made to obtain a kg weight gain

Period	Lot	Specific consumption (Kg C.F./Kg weight gain)	Price C.F. (lei/Kg)	Feed expenses (lei/Kg weight gain)
Phase I starter (1-21 days)	L1 – M	1,576	0,982	1,547
	L2 - E	1,715	1,005	1,723
Phase II growth (22-35 days)	L1 – M	2,046	0,967	1,978
	L2 - E	2,216	0,997	2,209
Phase III finishing (36-42 days)	L1 – M	1,935	0,915	1,770
	L2 - E	2,088	0,949	1,981
Average for total period (1-42 days)	L1 – M	1,870	0,956	1,787
	L2 - E	2,026	0,985	1,996

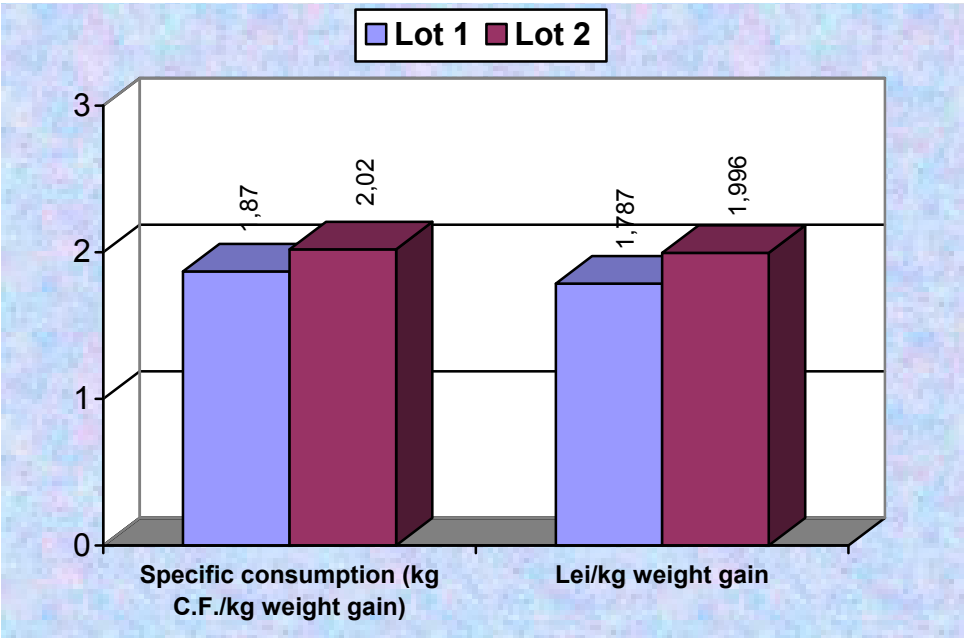

Fig. 1. Changes in feed costs per kg weight gain throughout the experimental period (1-42 days)

The cost of necessary fodder to obtain one kg weight gain relative to the entire experimental period was 1.787 lei/kg for broilers in the control lot (L1 - M) and 1.996 lei/kg (11.69% higher) for those in the experimental lot, where corn was partially substituted with barley (25%) and soy oil cakes with sunflower oil cake (7%) and fishmeal (2%) (Fig. 1.)

Table 3

European Efficiency Factor (EEF)

Lot	Age (days)	Average body weight (Kg)	Viability (%)	I.C. (Kg C.F.) Kg weight gain	EEF	
					Absolute	Relative
L1 – M	42	2,380	95,0	1,870	287,8	100,0
L2 - E	42	2,246	95,0	2,026	250,7	87,1

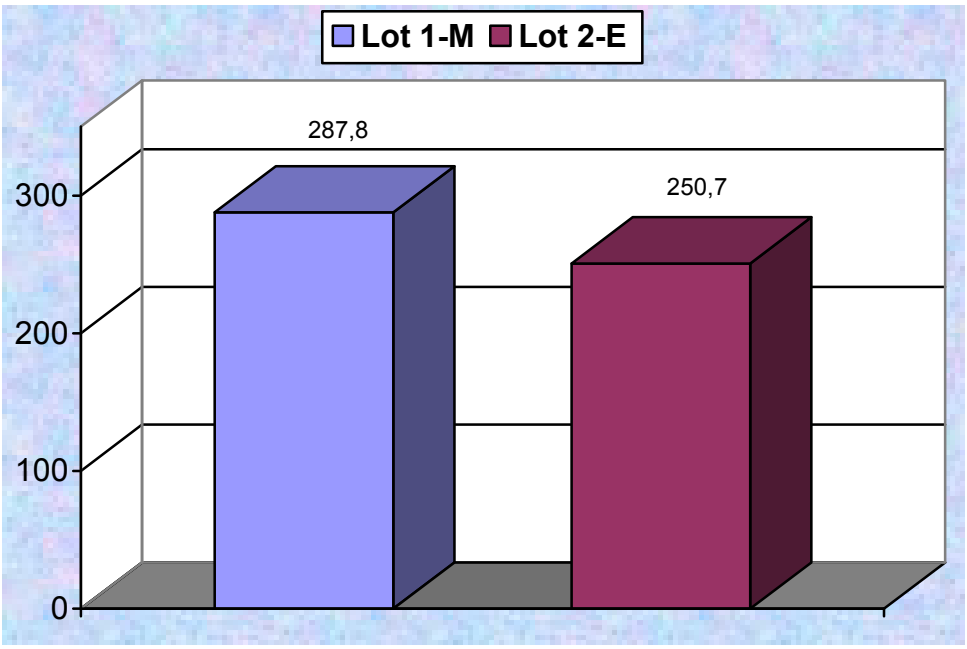

Fig. 2. European Efficiency Factor (EEF)

By analyzing the calculated values for EEF (Table 3) it can be seen that the best value was recorded in broilers in the control lot (L1 - M).

Partial substitution of corn with barley, respectively soy oil cakes with sunflower oil cake and fish meal from fodder had negative effects on European Efficiency Factor (Fig. 2).

CONCLUSIONS

Average body weight of broilers fed only with corn as raw material for energy and soy oil cake as raw protein was higher than average body weight of broilers in whose fodder there were also introduced barley as energy matters, and sunflower oil cake and fish meal as a raw protein.

Feed cost was higher in the lot where raw protein material was provided by soybean oil cake with sunflower oil cake and fish meal as raw energy material was provided by corn with barley.

Economic Efficiency Factor (EEF) was higher in the lot where raw energy material was corn and raw protein material was the soy oil cake.

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