INFLUENCE OF THE FEEDING SYSTEM ON THE ECONOMIC RESULTS IN THE PRODUCTION OF FATTY POULTRY

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Aviculture enables acquiring significant amounts of highly valuable products such as meat and eggs, in the relatively short period of time. Production of fatty poultry practically presents the most intensive branch of the animal husbandry. The reproduction process is relatively short, which enables faster turnover of the engaged resources. Consequently, products which are cheaper compared to other kinds of meat are obtained, considering production expenses have a very important role. One of the ways to influence economic results is the use of extruded feed. This way enables the achievement of lower wastage and better production results, influencing directly the economic results of the production in such a way. Research of the economic results of the production of fatty poultry is based on the determination of the total production cost, value of the production and the financial result. Calculation of these economic categories is based on the data gathered on the selected households. The results obtained show measurable differences in the use of the extruded feed compared to the classic feeding system

Key words: fatty poultry production; extruded feed; price

ВЛИЈАНИЕ НА СИСТЕМОТ НА ИСХРАНА ВРЗ ЕКОНОМСКИТЕ РЕЗУЛТАТИ ВО ПРОИЗВОДСТВОТО НА ТОВНИ ПИЛИЊА

Живинарството овозможува во релативно краток временски период да се добијат значителни количини високовредни производи: месо и јајца. Производството на товни пилиња практично претставува најинтензивна гранка на сточарството. Процесот на репродукција е релативно краток, што овозможува брз обрт на ангажираните средства. Покрај тоа се добиваат производи кои се парично поевтини во однос на другите видови месо, согласно со тоа што трошоците на производство имаат доста значајна улога. Еден од начините да се влијае врз економските резултати е користење на екструдирана храна. На тој начин е можно да се остварат помал трошок за храна и подобри производни резултати, со што директно се влијае на економските ефекти на производството. Истражувањето на економските резултати во производството на товните пилиња се заснова на одредување на вкупните производни трошоци, вредноста на производството и финансискиот резултат. Пресметката на овие економски категории се заснова на податоците добиени од одбраните домаќинства. Добиените резултати ги покажуваат мерливите разлики при користење на екструдирана храна во однос на класичниот систем на исхрана.

Клучни зборови: производство на товни пилиња; екструдирана храна; цена на чинење

1. INTRODUCTION

Animal husbandry presents the most intensive branch of agriculture and has multiple significances for both producers and consumers. The increase in the production of the meat, milk, eggs, among others is the foundation for the improvement of the nutrition structure of the population with highly valuable animal proteins.

Animal husbandry production is a foundation for the increase of the intensity in the agricultural production, and its development gives basis for building a wide range of processing capacities.

Although the base for the development of the animal husbandry is herbaceous production, cattle-breeding production as a higher phase of herbaceous production refinement is at the same time the promoter of the herbaceous, as well as of the overall agricultural production. Approximately 75 % of the herbaceous production goes for the cattle feed, where it is finalised into the cattle-breeding products. Apart from the production of highly valuable products for nutrition and refinement, the importance of animal husbandry production is enabling the more downright consumption of agricultural resources. Production of the fatty poultry presents a form of agricultural production, which is, by its nature, closest to the industrial production. Accordingly, great work productivity and control of production processes are achieved.

Food production is very significant business, in developed and underdeveloped parts of the world equally. Lack of food for people, whose number is increasing steadily, makes the existing problems even more significant.

The solution of increased food production for people and animals is appliance and usage of new technologies in biotechnology, e.g. bio industry (Lazarević et al., 2005). The main orientation is presented by new technological processes which aim at the increase of nutritive value of the food for people and animals, as well as the valorisation of the by products of the alimentary and primary agricultural production. Nowadays, many ways of thermal processing of oilseeds and cereals are used in the world such as toasting, hydrothermal refinement, micronisation, microwave treatment, bielectrical heat treating (Marsman et al., 1998), but in Serbia the most often used are the process of extrusion and the hydrothermal process (Sakač et al., 2001; Filipović et al. 2008).

In the domestic production of forage mixtures, the corn has the leading position compared to other cereals, because of high energy contents (16.2 MJ/kg), starch, comparably big contents of oil I low level of cellulose. It is considered that the corn, apart from the best digestibility, has also the best taste compared to other grains (Bekrić, 1999).

Proper conduction of the thermal process provides the reduction of thermo labile antinutrients to an acceptable level, increase of digestibility of some nutrients (proteins, oil, carbohydrates), as well as the improvement of sensory features and the microbiological picture of the final product (Kormanjoš et al., 2007). Parallel with the

reduction of the contents of the antinutrients it is necessary to preserve nutritionally valuable thermo labile components, so the process requires finding a compromise between the two efforts.

The extrusion process brings to changes on the carbohydrate complex of the corn cattle flour, e.g. to the decrease of the starch contents due to its decomposition to dextrine. Such changes condition increase of in vitro and in vivo digestibility of the starch, since the gelatinisation of the starch provides increased availability to the starch decomposing enzymes to the water and the inactivation of amylase inhibitors (Douglas et al., 1992; Filipović et al., 2003).

2. MATERIAL AND METHODS

Estimation of production expenses of fattening poultry in case of extruded and non extruded corn in forage mixtures is based on natural indicators determined based on the research conducted at the examined farm. It is an individual household which has its own food production for animals, with a farm capacity of 3000 fattening chicken in turnus. During the fattening, feeding of one half of chicken was practiced with the food that contained extruded corn (experiment E), while the other half was fed with a mixture in which the corn has not been treated (control C). Calculation of the expenses for food has been derived according to the standard of expenses for the preparation of animal food, based on market prices of certain kinds of food and experience normative. The expense for other material has been calculated according to the expenditure made on the observed farm and market prices. Investments into buildings and the equipment have been calculated based on the performed investments on the observed household. Expenses of the buildings and equipment amortisation have been derived based on the assumed lifetime of the utilised means (Marko et al., 1998). Expenses for salaries have been calculated in accordance with realised expenses. Expenses for the energy consumption have been calculated on the basis of realised expenditure of the electrical power and fuel. Apart from that, the calculation includes expenses of veterinary and selection services. Calculation of the income is based on clarification of the total income from the above mentioned production, whereby the financial result presents the income from the overall production (Andrić, 1998).

3. RESULTS AND DISCUSSION

During the analysis of the observed production, production results for both groups have been followed closely. The follow up was conducted on a weekly level. It is extended fattening in duration of seven weeks. Since the feeding regime has different effects depending on the age of the poultry, better insight into the overall effects of the food with extruded corn was enabled. The main production indicators are given in Table 1.

T a b l e 1

Basic production indicators of poultry fattening

Period (days)	Experiment (E)				Control (C)			
	Body weight (g)	Total food consumption (kg)	Mortality (pcs.)	Number of the flock in the fattening (pcs)	Body weight (g)	Total food consumption (kg)	Mortality (pcs.)	Number of the flock in the fattening (pcs)
0	44.2			1,500	44,2			1,500
0–7	127.5	200	6	1,494	111.5	215	10	1,490
0–21	565.0	1,250	8	1,486	519.0	1,265	53	1,437
0–28	966.0	2,250	2	1,484	907.0	2,255	23	1,414
0–35	1,490.0	3,650	1	1,483	1,420.0	3,645	3	1,411
0–42	1,985.0	5,250	2	1,481	1,940.0	5,210	3	1,408
0–49	2,760.0	8,350	1	1,480	2,780.0	8,330	4	1,404

Lower mortality rate could be pointed as the most obvious result of the usage of extruded corn in feeding. In case of feeding with forage mixture with addition of non extruded corn, 96 chickens have died in total. If this is compared to the mortality in case of feeding with the mixture with extruded corn (20 chickens), it is possible to draw a conclusion about the great advantages to the usage of extruded corn in food for maintaining health condition of the poultry. Besides, provided results are specially expressed in the first four weeks of the fattening (Fig. 1).

The second factor of significance for the overall production and the achieved economic result is the conversion of food. The calculation of the achieved conversion shows that the group fed with the extruded corn achieves better conversion whereby, on the level of the overall fattening makes 2.04 g of forage mixture per kilogram of weight gain. Feeding with the forage mixture, the achieved conversion of the food is 2.13 kg per kilogram of the weight gain. The overview of the conversion change during the fattening gives a better insight into the food conversion. The overview has been made according to the available data and is given on the Figure 2.
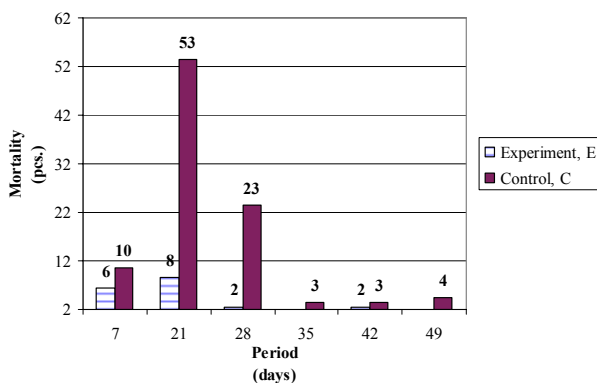

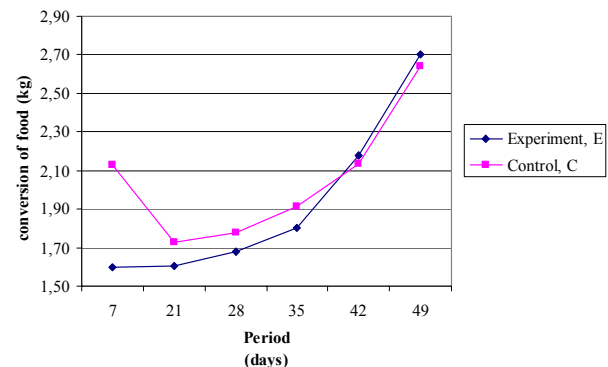**Fig. 1.** Mortality of chicken during the fattening

Fig. 2. Conversion of food during the fattening of poultry

It is obvious from the Figure that feeding chickens with extruded corn gives better results at the beginning of the fattening, whereby very beneficial effects on younger categories of poultry are shown once again. If we take a look at Table 1 in the previous part of the paper, one can draw a conclusion about the almost same expenditure of food in both groups observed. Also, the group fed with food with the addition of extruded corn has bigger number of fattening chickens at the end of the fattening and achieves higher value of the production.

The total cost of the food makes RSD 296,100.00 for the group fed with the food with addition of extruded corn, or RSD 295,560.00 for the group fed in the standard way. Accordingly, the cost of feeding per chicken has been calculated and it presents RSD 200.07 for the first group, and 210.51 for the second group, which is 5.22 % higher value that directly influences the growth of the overall cost.

The analysis of the overall economic indicators of the observed production starts from the assessed investment into the farm, in other words investment into the buildings for breading with the following equipment. According to the assessment, the investment into the buildings and equipment amount to 135.000.00 €, or RSD 12,825,000.00. Calculation of the amortisation is based on the stated data and the average rate of 5% on the annual level by the method of time amortisation (Slović, 2002). In this way, it is possible to come to annual amortisation expenses of RSD 641,250.00 per year, or RSD 128,250.00 per turnus. Calculation of other expenses (energy, work

and additional materials) of the production, has been derived per turnus and is given in Table 2.

Table 2

Summary overview of other expenses per turnus

Description	Unit	Pcs / kg	Quantity	Total
Bedding	bale	120.00	100.00	12,000.00
Vaccine	pcs.	3,000.00	0.65	1,950.00
Vaccine	pcs.	3,000.00	1.35	4,050.00
Vitamins	pcs.	1.50	2,200.00	3,300.00
Revaccination	pcs.	3,000,00	0.65	1.950,00
Revaccination	pcs.	3,000,00	1.35	4,050.00
Electric power	–	–	18,500.00	18,500.00
Gas	–	–	30,000.00	30,000.00
Salaries	–	–	32,000.00	64,000.00
Total				139,800.00

The expenses presented refer to the both groups of fattening chickens observed. In the distribution, they were divided proportionally to the starting number of chickens, e.g. two equal groups. Accordingly, the given category of expenses amounts to RSD 134,025.00 per observed group, or RSD 44.68 per fattening chicken.

In accordance with the derived calculations, establishing the total expense and the price of the fattening chicken has been derived. Calculation of these indicators is presented in Table 3.

Table 3

Calculation of the total expenses and the price, RSD

Expense category	Experiment (E)			Control (C)		
	Total expenses	Price	%	Total expenses	Price	%
Amortisation	64,125.00	43.33	14.91	64,125.00	45.67	14.93
Food expenses	296,100.00	200.07	68.84	295,560.00	210.51	68.80
Salaries	32,000.00	21.62	7.44	32,000.00	22.79	7.45
Expenses for the energy	24,250.00	16.39	5.64	24,250.00	17.27	5.64
Expenses of other and additional materials	13,650.00	9.22	3.17	13,650.00	9.72	3.18
Total	430,125.00	290.63	100.00	429,585.00	305.97	100.00

Calculation of the income includes the incomes the farm achieves and is based on the sale of fattening chickens. On sale, the price that was achieved was 120 RSD/kg. In accordance with the number of fattening chickens breed, the average weight reached and the sale price, the calculation of the total income has been made. Calculation of the total income is given in Table 4, according to the observed groups, and based on that the benefit has been calculated as the difference between the income and expense.

T a b l e 4

Benefit calculation, RSD

Description	E	C
Total income	490,176.00	468,374.40
Total expense	430,125.00	429,585.00
Benefit	60,051.00	38,789.40

If the realised benefit is calculated per kilogram of produced chickens, we get RSD 14.70/kg for the group fed with the mixture with addition of extruded corn, and RSD 9.94/kg for the group fed with standard forage mixtures. The economy calculated from the ratio of total income and total expenses makes 1.14 for the group fed with the mixture with extruded corn and 1.09 for the group breed by the standard feeding system.

Profitability of the production is obtained from the ratio of realised benefit and total investtment. The total investment includes investments into the buildings and equipment and investment into the unfinished production within the fattening. Thereat, in total five turnuses are foreseen per year. Binding of means in the form of debits has not been calculated; instead the calculation has been derived with an assumption of advance payment. Profitability of the overall production process in the observed case is not hard to establish, since it is concentrated and monophase production. Realised profitability for the group fed with the mixture with addition of extruded corn was 2.30 % and 1.49% for the group fed with standard forage mixtures. In both cases the obtained value is very low.

4. CONCLUSION

Lucrativeness and profitability of the production are the most important principles and the basis

of rational business in the marker economy, which is all and more becoming an imperative for our production, too. Economic results of the production of fatty poultry have in the paper been analysed from the narrower producers' perspective and what can be concluded is the following:

- The profit achieved per one turnus amounts to RSD 60,051.00 for the group fed with the mixture with addition of extruded corn and 38,789.40 for the group breed by standard forage mixtures, e.g. RSD 14.70 /kg and RSD 9.94/kg per kilogram of produced chicken.

- Economy calculated from the ratio of total income and total expense makes 1.14 for the group fed with the mixture with addition of extruded corn and 1.09 for the group breed by standard feeding system.

- The detailed analysis of economic indicators shows very low profitability of the production. The realised profitability of the production makes only 2.30 % for the group fed with the mixture with addition of extruded corn and 1.49% for the group breed by standard forage mixtures. The obtained values in both cases very low and indirectly points to the need for the state subventions of investments in this sphere.

- Regardless of that, all presented indicators point out the justifiability of the usage of extruded corn in the preparation of food for animals.

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