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EVOLUTION OF MORPHOPRODUCTIVE PERFORMANCE OF LAYING HENS EXPLOITED IN AUTHORIZED BREEDING SYSTEMS

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Abstract

Public perception about the nutritional qualities of table eggs obtaining from alternative systems compared to conventional one is based on the idea that eggs produced in alternative systems are superior in quality to those obtained in growth batteries. In the foreground but falls to assure the welfare of laying hens in battery cages adoption 'improved' , which provides ethological needs of laying hens during production . The purpose of this study is to analyze the impact of the welfare on the performance as body weight, egg production and laying intensity ,at Lohmann Brown laying hens during 50 weeks of operation. The determination of performance indicators was performed using specific methods weighing scales Weighmate regular Junior , records and intensity of egg production of laying computerized system Touch Viper Climate and Production. The research was conducted on two groups of hens exploited in classic system as improved battery and alternative system free range. Performance indicators were recorded and the data were statistically processed , establishing systems impact on body weight , egg production , and the intensity of laying. Compared to conventional systems where body weight of birds at the age of 20 weeks was 1545.571 ± 15 369 g, in alternative one the body weight was 1652.429 ± 29.663 g ;in terms of egg production was 1.17 % lower than the production standard for free range system and 0.03 % in group battery operated, about laying intensity was 97.14 % at week 34,in the free range group and 97.43 % at week 29 in the group operated batteries. Alernative systems has multiple benefit on the health of laying hens but not on their productivity , morphological and productive performance of the hybrid , both classical system and free range one is due to genetic stability and environmental factors .

Key words:*eggs, laying hen, performance, free range, improved battery.*

INTRODUCTION

Alternative systems of growth, such as free range have increased in recent years not only to meet the latest consumer food changes, and respond to their concerns about the of well-being condition of laying hens during the productive life (Anderson K.E., 2009).

Growing system is a very important external factor influencing both morphological and productive performance of laying hens and quality characteristics eggs obtained (Englmaierová et al., 2014) .

Productions and their quality are related to physiological status of laying hens, which is the best indicator that expresses the condition of welfare (Travel et al., 2011).

In this context with the ban in the European Union in 2012, was allowed classical battery operation only caged hens improved or alternative systems, such as systems with loft and outdoor access, improve quality of productive life of laying hens (Tauson et al., 1999; Leyendecker et al., 2001a).

In conventional systems is achieved notable performances, including higher eggs production, index improved of feed conversion and lower mortality (Voslarova et al., 2006; Valkonen et al., 2010), but high production of eggs occurred when small groups of chickens were housed in cages improved, but feed intake was higher (Appleby et al., 2002).

The results of Tanaka and Hurnik (1992) indicate that egg production of hens is similar, and relatively high in both systems, conventional and free range, but alternative systems provides a more comfortable environment for birds than batteries .

Therefore poultry specialists are forced to focus on growing alternative systems that replicate the natural environment of life of the hens, but must ensure conditions for a while externalizing the productive potential they possess (Usturoi, 2004).

In this context, the aim of this study is to analyze the impact of the welfare provided in the 2 systems increase the performances as:

body weight, egg production and laying intensity, of Lohmann Brown laying hens during 50 weeks of operation.

MATERIALS AND METHODS

The biological material studied was the Lohmann Brown laying hens, in the period April 2012 - March 2013 distributed as follows: free range system operated (group FR) and improved battery (group B) (Table 1).

Table.1 Experimental research scheme

Specification	Experience groups	
	Group FR	Group B
Hybrid used	Lohmann Brown	
Growth system	Free – range 7000 hens	Improved battery 32000 hens
Insured surface	in hall = 7 hen/ m² in paddock = 4 m²/ hen	750 cm²/hen
Followed indicators	- body weight	
	- egg production	
	- laying intensity	

The determination of performance indicators was made by using specific methods weighing scales Weighmate regular Junior, records and intensity of egg production of laying computerized system Viper Touch Climate and Production .

The investigations were carried out over a 50 weeks of the production period of laying hens.

On the 2 groups of hens exploited - improved batteries - conventional system and free-range-alternative system weighings were performed every 10 weeks, aiming their body weight in the two systems. The other two parameters that were recorded was egg production number and intensity of laying.

The recorded data were statistically processed (arithmetic mean, standard deviation and coefficient of variation average V%).

RESULTS AND DISCUSSIONS

Data analysis performed on the 3 parameters investigated in the 50 weeks, there was a higher weight to free range laying hens compared with the improved battery system where body weight of birds at the age of 20 weeks was 1545.571±15.369 g, the weight of the hybrid Lohmann Brown was 1652.429±29.663 g in alternative system, with an ascent that weight at 70 weeks was 2051.286±27 970 in alternative system compare to 2032.000±25 430 g in the conventional one.

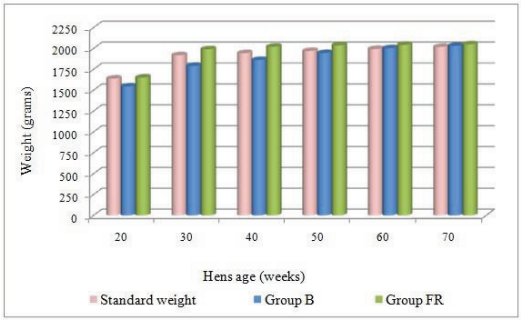

Figure 1. Evolution of body weight of the Lohman Brown hybrid in operated agreed systems

Regarding the evolution of this parameter, regular individual weighings were performed on individual samples from each group, body weight scales measuring with the Weighmate Junior .

Rise in body weight in laying hens is due to access to the paddock outside the hall for the free range, and recipe management.

Production parameters were determined was eggs production and laying intensity exploited in the 2 growthing systems .

Cumulative egg production was 1.17% lower than the production standard for free range system in week 70 of productive life of birds, and 0.03% in group of improved battery operated, as confirmed by the literature .

The Golden J.B. in 2012 states that egg production registered a productive cycle is 357 eggs/hen in conventional system and 304 eggs/hen in free range system, but environmental factors and genetic stability of the hybrid, contribute to achieving these productions .

The peak of laying was reached in week 34, the group free range, laying intensity was 97.14% compared to 97.43% at week 29 in the group operated batteries. In 2009, Arbona, said that in the 65 weeks of the hybrid operation Lohmann Brown in the two systems it was 81.9% battery, and 77.7% for the free range system.

Table 2. Egg production in the two systems agreed (eggs/hen)

Groups of experience	Hens age	Eggs/hen		Standard (eggs/hen)
		weekly	cumulative	
B	20	3.1	3.10	3.9
	30	6.78	66.16	65.8
	40	6.60	132.70	130.7
	50	6.17	197.10	193.1
	60	5.45	252.60	252.1
	70	5.50	306.80	306.9
FR	20	2.26	2.26	1.4
	30	6.7	61.6	58.3
	40	6.6	128.7	122.3
	50	5.7	190.2	183.7
	60	5	242.9	241.1
	70	4.4	289.7	293.1

Table 3 . Intensity of laying in the two systems agreed (%)

Groups of experience	Hen age	Total production (no.)	Laying intensity (%)	
			Realized	Standard
B	20	99200	44.29	45.0
	30	216210	96.81	94.8
	40	209850	94.23	93.3
	50	195694	88.14	89.8
	60	172460	77.86	85.1
	70	173547	78.57	79.4
FR	20	15820	32.29	20.0
	30	46599	95.71	93.7
	40	45791	94.29	91.8
	50	39438	81.43	88.1
	60	34505	71.43	82.2
	70	30188	62.86	73.8

CONCLUSIONS

Alternative systems provide multiple benefits on the health of laying hens but not on their productivity, morphological and productive performance of the hybrid, the improved battery and free range is due both welfare conditions, environmental factors and genetic stability of the hybrid .

The body weight of hens exploited this dynamics for during the 50 weeks, due the good bioconversion of food but also additional sources provided by outside paddock with grass from free range system.

Egg production in the two systems has increased from one stage to another, to guide, but both free range system and the improved batteries in week 70 it was lower than that of technological guide with 1.17% in free range system and 0.3% in the improved battery.

Regarding the intensity of laying, at the age of 40 weeks was 0.9% higher in the improved battery, than 2.7% in free range system. Generaly , the morpho-productive performance of laying hens, in the two systems approved, may not be assigned to a particular operating system .

Battery system brings an improvement in production due to the well-being improved batteries, balanced consumption, and better feed conversion.

The alternative system as free range offers the possibility of manifesting all the instincts (pecking, scratching) at the expense of higher food consumption to ensure both productivity and ethological specific activities, but not least products with superior nutritional qualities.

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