

REPRODUCTION PERFORMANCE OF THE ADULT PHEASANTS, BRED UNDER THE INTENSIVE SYSTEM

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ABSTRACT – *Although pheasant breeding under the intensive system is an ancient practice, the morpho-productive performance achieved until now is limited by certain biological peculiarities, typical of this species, and because the scientific research focused less on this field of activity. In this paper, our goal was to study the performance registered by breeding and exploiting a stock of reproduction adult pheasants, belonging to the common hunting pheasant subspecies (ssp. Phasianus colchicus colchicus L). The management of the 1397 studied pheasants was done according to the principles of the intensive breeding system, under conditions ensured by one of the most efficient pheasant farms from Moldavia. Our results have shown that the intensively bred females could achieve mean yields of 40, 60 eggs/head, under conditions of a food conversion index of 204.54 g mixed fodder/egg. The viability of the studied flock was good and the rate of mortality was of only 2.59%, very close to the internal norms, established for pheasant farms from Romania, which is 2%.*

Key words: pheasant, husbandry, captivity, performance

REZUMAT - *Performanțele fazanilor adulți de reproducție, crescuți în sistem intensiv. Deși creșterea fazanilor în sistem intensiv este o practică destul de veche, performanțele morfo-productive realizate până în prezent sunt oarecum limitate de anumite particularități biologice specifice acestei specii, dar și datorită faptului că cercetarea științifică de profil s-a axat mai puțin pe acest domeniu de activitate. Din considerentele amintite, prin prezenta lucrare ne-am propus să studiem performanțele înregistrate în urma creșterii și exploatării unui efectiv de fazani adulți de reproducție, aparținând subspeciei „Fazanul comun de vânătoare” (ssp. Phasianus colchicus colchicus L). Întreținerea celor 1397 păsări studiate s-a realizat după principiile sistemului intensiv de creștere, în condițiile asigurate de una dintre cele mai eficiente fâzănării din Moldova. Rezultatele obținute de noi au indicat faptul că fâzănările crescute pe baze intensive pot realiza producții medii de 40,60 ouă/cap, în condițiile unui indice de conversie a hranei de 204,54 g nutreț combinat/ou.*

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Viabilitatea efectivului studiat a fost bună, rata mortalității fiind de numai 2,59%, foarte apropiată de normele interne stabilite pentru fâzănările din țara noastră și care este de 2%.

Cuvinte cheie: fazani, creștere, captivitate, performanțe

INTRODUCTION

For the Romanian hunting breeds of poultry, the common pheasant for hunting (*Phasianus colchicus colchicus* L) is one of the most important breeds, because of its numerical percentage and spreading area, and of the favorable perspective for this species breeding under intensive system (Scărlătescu, 1977).

Although, the intensive breeding system allows the achievement of satisfactory morpho-productive indices, the level of information, which refers to the biological features of pheasants and their requests for breeding and feeding conditions are quite restricted. All these aspects are necessary for breeding pheasants in captivity, in order to increase the stock, for covering the high consumers' requests for pheasant meat and eggs and for hunting, too (Vacaru-Opriș et al., 2002).

MATERIALS AND METHODS

This study was set up at the Cornești pheasant farm, Iasi County. The reproductive flock of the farm has provided the biological material, which belongs to the common hunting pheasant subspecies (*Phasianus colchicus colchicus* L). The pheasants were observed during the entire laying cycle.

The shelters used for husbandry were made of wire nets, protected with asbestos-cement waved panels. The shelters (75.0 x 7.5 m) have a central corridor, allowing the access into the laying compartments, of 3 x 3 m, each; the main central way and the 50 laying compartments are surrounded with wired-net walls. Each laying compartment is opened and allows the access to a square pheasant mew paddock of 3.0 m long and 3.0 m large. The paddocks of 2.5 m high are made of wired net. Their roof is made of the same material; the wired net walls are buried 50 cm below the ground, in order to prevent the intrusion of predator animals. The laying compartments are provided with some facilities, such as nests (one nest for three females), tronconic feeders, semiautomatic watering devices, dust baths and resting poles.

The ratio between genders has observed the recommendations from literature (Göransson et al., 1990), being of one male to six females, a total capacity of 350 pheasants /shelter being achieved. The density in the laying compartments was of 0.78 pheasants /m², equal to the one in the pheasant mew paddocks; totally, an area of 2.57 m²/reproduction pheasant was ensured.

The compartments used for breeding the reproduction pheasants are not built with closed walls; therefore, the microclimate factors are not easy to drive, because they depend on external atmospheric conditions.

For pheasant feeding, we have used mixed fodder, obtained from the F-200 feed receipt, ensuring 85 g/head /day, completed with germinated barley, 15 g/head /day, and

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fresh green mass *ad-libitum*, since the vegetation period began. As concerns its quality properties, the mixed fodder (m.f.) was characterized by an energetic value of 2552.75 kcal/kg m.f., a protein content of 20.55%, while the gross fiber had a 4.588% level and the percentage of raw fat was of 3.119%; the calcium level was of 3.154% and the total phosphorus had a value of 0.846%.

The mixed fodder was given only one time per day, in the morning, ensuring an individual feeding space of 4.5 cm/head. Watering was done *ad-libitum*, ensuring an individual watering space of 3.0 cm/head.

During these investigations, a series of morpho-productive indices was observed, as it follows:

- *Dynamics of the body weight gain*, established according to the weighing set up in males and females from the control compartments (approx. 10% of the entire flock). Controlling weight was done at the beginning of each week, in the morning;
- *Egg production* was recorded daily and cumulated for each laying week. The pheasants' laying curve was obtained by reporting the weekly egg production to the mean flock;
- *The losses from the flock and their causes* concerned the mortality and imposed necessity reforms;
- *Feed intake* consisted in establishing the daily mean intake (g/head /day) and the specific consumption rate (g/egg).

RESULTS AND DISCUSSION

1. The dynamics of body weight gain. It is proved that the highest egg productions were obtained from poultry presenting a body weight that corresponded to the mean weight of the population. The obese poultry had a lower egg production, even lower than of those with a body weight below the mean weight of the population.

The dynamics of the poultry body weight was characterized by an ascending evolution until they reached the peak of laying curve. After that moment, the rate of the body weight gain was insignificant (*Table 1 and Figure 1*).

During the first laying week, the male body weight was of 1317.24±54.89 g, and that of females, of 931.12±15.17 g, considering a good uniformity of this trait, the computed V being of 13.17% in males and of 12.61% in females.

During the fifth laying week, corresponding to the peak of laying period, the mean body weight of males represented 1339.68±81.99 g, and of females, 983.28±28.51 g. This time, the genetic variability of the male body weight was average (V=19.34%), as compared with the higher one recorded by females (V=22.44%). We suggest that the higher variability has issued from the differences between females, concerning the laying intensity, affecting, in the same time, the body weight gain. In the eighth laying week (laying plateau), the mean body weight has reached the level of 1389.72±79.34 g in males and of

995.18±25.89 g in females; in the thirteenth laying week (end of laying), the mean body weight reached 1435.35±89.71 g in males and 1014.61±22.87 g in females.

Table 1 - The dynamics of body weight gain (g) in the studied pheasants

Laying week	Males			Females		
	n	$\bar{X} \pm s_{\bar{X}}$	V (%)	N	$\bar{X} \pm s_{\bar{X}}$	V (%)
1	10	1317.24±54.89	13.17	60	931.12±15.17	12.61
2	10	1320.20±77.62	18.58	60	948.63±23.02	18.78
3	10	1324.61±83.92	20.02	60	968.04±25.16	20.12
4	10	1331.75±87.95	20.87	60	975.86±26.21	20.79
5	10	1339.68±81.99	19.34	60	983.28±28.51	22.44
6	10	1347.13±81.13	19.03	60	986.31±27.64	21.69
7	10	1361.25±80.17	18.61	60	991.77±27.19	21.22
8	10	1389.72±79.34	18.04	60	995.18±25.89	20.14
9	10	1394.66±75.96	17.21	60	998.03±25.37	19.68
10	10	1402.18±79.87	18.00	60	1002.41±25.05	19.34
11	10	1419.62±83.60	18.61	60	1006.37±24.34	18.72
12	10	1428.33±86.33	19.10	60	1010.38±23.51	18.01
13	10	1435.35±89.71	19.75	60	1014.61±22.87	17.45

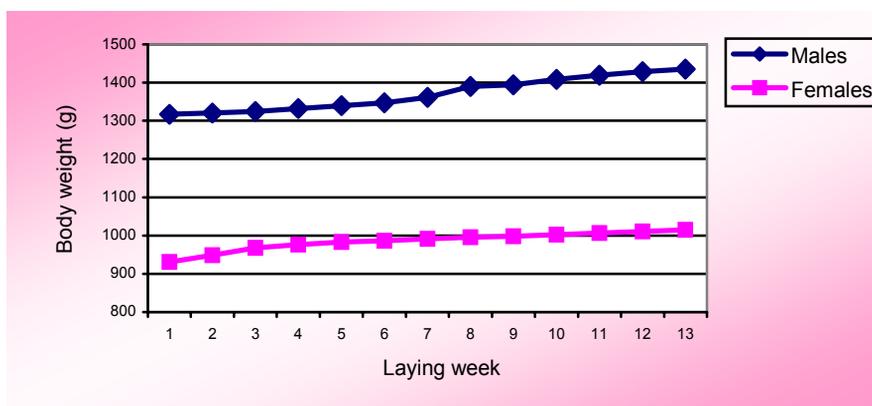


Fig. 1 - Dynamics of body weight (g) in the studied pheasants

In these last laying periods, a different variability of the analysed character was observed for each gender: at the end of the laying period, variability has increased in males, due to sexual exhausting reasons, while it decreased in females, because of the diminution of laying intensity.

2. Egg production and laying intensity. During the 13 laying weeks, 47300 eggs were obtained from 1184 females, this meaning an average production of 40, 60 eggs/female (*Table 2*).

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The laying intensity (*Table 2 and Figure 2*) was of 2.84% at the beginning of the laying period, of 77.97% at the peak of the laying period (the fifth week), of 74.27% during the laying plateau period (the eighth week) and about 12.31% at the end of the laying period (the thirteenth week). The mean laying intensity was of 44.35%.

Table 2 - Egg production and laying intensity in the studied pheasants

Laying week	Average flock (head)	Egg production		Laying intensity (%)
		Total (eggs/week)	Average eggs/head/week cumulated	
1	1191.5	237	0.20	2.84
2	1182.5	886	0.75	10.70
3	1175.5	2171	1.85	26.38
4	1174.5	4352	3.71	52.93
5	1173.0	6402	5.46	77.97
6	1173.0	6264	5.34	76.29
7	1173.0	6214	5.30	75.68
8	1173.0	6098	5.20	74.27
9	1172.5	5222	4.45	63.63
10	1172.5	3620	3.09	44.12
11	1172.0	3135	2.67	38.21
12	1171.5	1740	1.48	21.22
13	1170.5	1009	0.86	12.31

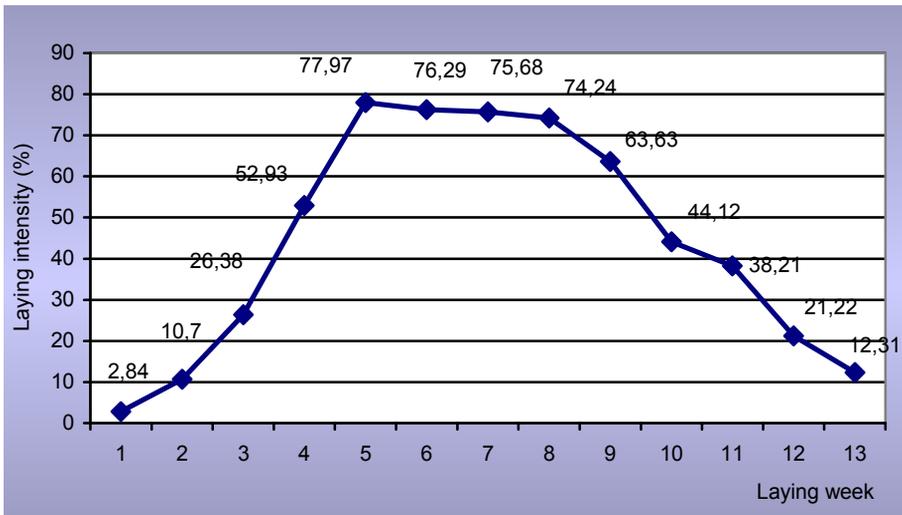


Fig. 2 - Laying intensity (%) in the studied pheasants

The good egg production and high laying intensity, especially during the peak of laying period, could be related to the superior quality of the biological material and to the proper husbandry conditions.

3. Losses from the flock and their causes. According to data presented in *Table 3 and Figure 3*, it resulted that, on the entire laying period, a percentage of 2.59% total losses from the flock were recorded, because of the mechanical mortality (accidents and fights) and the necessity reforms. Contagious maladies were not recorded.

Table 3 - Situation of losses from the flock (%) in the studied pheasants

Laying week	Flock situation at		Losses/week	
	Beginning of the week (heads)	End of the week (heads)	Heads	%
1	1197	1186	11	0.92
2	1186	1179	7	0.59
3	1179	1172	7	0.59
4	1176	1173	3	0.25
5	1173	1173	-	-
6	1173	1173	-	-
7	1173	1173	-	-
8	1173	1173	-	-
9	1173	1172	1	0.08
10	1172	1172	-	-
11	1172	1172	-	-
12	1172	1171	1	0.08
13	1171	1170	1	0.08
TOTAL			31	2.59

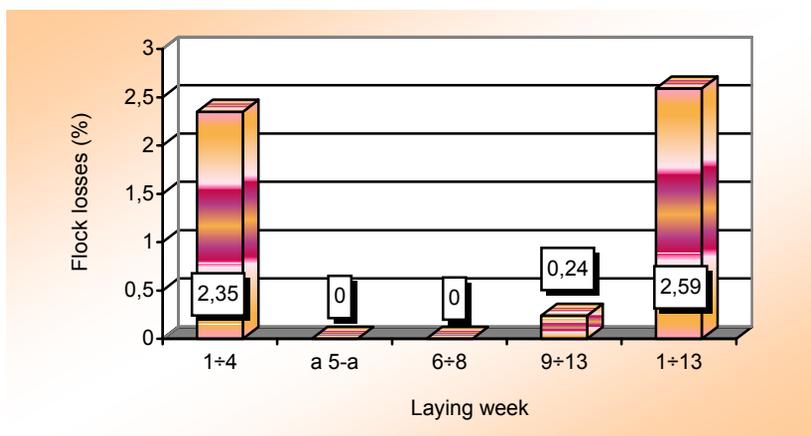


Fig. 3 - Flock loss situation (%) in the studied pheasants

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During the period before reaching the laying peak (weeks 1-4), the highest rate of flock losses (2.35%) was recorded. During the first laying week, 11 pheasant females (0.92%) were lost because of the fights for establishing the social hierarchy, and during the second laying week, seven heads (0.59%) were lost. In the third laying week, seven heads (0.59%) were also lost; six of them represented reformatted males, subsequently replaced with other six males from the reserve flock. The low egg fertility in the first hatching series has resulted in the replacement of the six males.

The losses from the flock were not recorded during the peak-laying period (the fifth week) or during the plateau laying period (weeks 6-8). During the last week observed (the ninth-thirteenth laying weeks), three samples (0.24% of the flock) died, because of some mechanical accidents.

4. Feed intake. The fodder consumption was established on the four phases of the laying curve, specific to the female pheasants, studied in this experimental series (Larbier and Leclercq, 1994) (*Table 4 and Figure 4*).

Thus, at the beginning of the laying period (weeks 1-4), 3097 Kg of mixed fodder was consumed, which resulted in obtaining a mean value of the intake about 93.34 g/head/day and a specific consumption of 405.05 g mixed fodder/egg. At the laying peak (the fifth week), the mean flock of 1173 heads have consumed 627 Kg feed, resulting a mean feed intake of 76.36 g/head/day. That week, which has recorded the highest egg production (6402 eggs), was characterized by the lowest specific consumption rate, of only 94.94 g/egg.

During the next period, of the plateau laying curve (weeks 6-8), the mean daily consumption was of 88.13 g/head and the specific one, of 116.87 g/egg. At the end of the laying period (weeks 9-13), the mean feed intake was of 92.43 g/head/day, while the specific consumption was of 257.37 g/egg.

Table 4 - Feed intake in studied pheasants

Specification	Laying period				
	Weeks 1÷4 (28 days)	Week 5 (7 days)	Weeks 6÷8 (21 days)	Weeks 9÷13 (35 days)	Weeks 1÷13 (91 days)
Average flock (heads)	1185.0	1173.0	1173.0	1171.5	1183.5
Feed intake (kg)	3097	627	2171	3790	9685
Mean feed intake (g/head/day)	93.34	76.36	88.13	92.43	89.93
Egg production (pieces)	7646	6402	18572	14726	47350
Consumption index (g/egg)	405.05	94.94	116.87	257.37	204.54

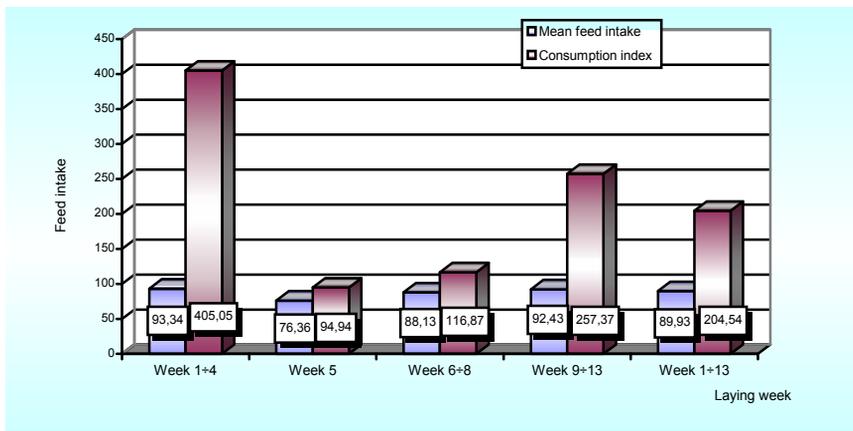


Fig. 4 - The mean feed intake (g/head/day) and the specific consumption (g/egg) in the studied pheasants

During the entire laying period (weeks 1-13), the total fodder consumption was of 9685 kg, reported to a mean flock of 1183.5 pheasants, while the egg production achieved was of 47350 eggs. According to these parameters, the mean consumption was of 89.93 g/head/day and the specific consumption of 205.45 g/egg.

CONCLUSIONS

The technology used in the studied pheasant husbandry systems is characteristic to the intensive exploitation system. Poultry were bred in shelters provided with laying compartments and pheasant mews, with standard facilities; the ratio between sexes was of one male to six females.

The fodder quality was as requirements impose; the quantity of metabolisable energy, crude protein and crude fats were found between the limits provided by the recommendations for the studied category of poultry.

The dynamics of weight gain was ascending during the entire experimental period: the mean body weight in the first experimental week was of 1317.24±54.89 g in males and of 931.12±15.17 g in females; in the last laying week (week 13), the pheasants have reached mean weights of 1435.35±89.71 g in males and 1014.61±22.87 g in females.

Numeric egg production. The sexual maturity has begun at the age of 45 weeks in females. The peak of production curve, of 77.97%, was reached in the fifth laying week. The mean egg production/ female was about 40, 60 eggs, higher

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than the production stipulated by the Romanian internal normative (37-40 eggs/head).

The losses from the flock were caused by mechanical accidents or imposed reforms, being finally situated at 2.59%. This value is a good one, considering that the mortality values, established by the national scientific recommendations for the pheasant farms, are of 2%.

REFERENCES

- Grahn, M., 1993** - *Mortality in the pheasant Phasianus colchicus during the breeding season*. Behavioral Ecology and Sociobiology, no. 32, p. 95-101
- Göransson G. et al., 1990** - *Male characteristics, viability, and harem size in the pheasant Phasianus colchicus*. Animal Behaviour, no. 40, pg. 89-104
- Larbier M., Leclercq B., 1994** - *Nutriția și alimentația păsărilor*. Edit. Alutus-D, București
- Ridley M.W., 1983** - *The mating system of the pheasant Phasianus colchicus*. Ph. D. thesis, University Oxford
- Sauveur B., 1988** - *Reproduction des volailles et production d'œufs*. Institut National de la Recherche Agronomique, Paris
- Scărlătescu G.M., 1977** - *Studiul populațiilor de fazan din principalele făzănării din România*. St. Cerc. Cinegetica, ICAS, vol. 35, ser. I, București, pg. 7-15
- Vacaru-Opriș I. et al., 2002** - *Tratat de avicultură*. Vol II, Edit. Ceres, București