

## STUDY ABOUT THE PRODUCTIVE CHARACTERISTICS OF QUAILS FROM THE "BALOTEȘTI" POPULATION

Lucian IONIȚĂ, Elena POPESCU MICLOȘANU, Ioan CUSTURĂ,  
Minodora TUDORACHE

<sup>1</sup>Universitatea de Științe Agronomice și Medicină Veterinară București, Facultatea de Zootehnie

*Corresponding author email:* ionita\_luc@yahoo.com

### **Abstract**

*Raising Japanese quails for eggs and meat production has seen great development in recent decades because on the one hand of quail eggs and meat quality (rich and well balanced nutritionally, good taste), and the other hand due to natural medicine recommendations to consume these products with proven therapeutic effect. The aim of this paper was to determine the current average characteristics of incubation, the medium productive performances of youth and hens quails of egg-meat mixed population "Balotești", important population for raising quails in Romania and in which is applying consistently an amelioration program. The research has established the following production data: the average percentage of hatching is  $66.34 \pm 0.22\%$ , average weight is  $8.94 \pm 0.56$  g at 1 day of age, and  $210.45 \pm 2.29$  g at the age of 42 days, average gain between 1 and 6 weeks of youth raising is  $201.51$  g / head / period, average daily consumption of fodder during 1-6 weeks of raising is  $19.85 \pm 1.23$  g. The average laying between 1 and 40 weeks of hens is  $74.45 \pm 1.03\%$ , the average feed consumption during 1 to 40 weeks of laying is  $32.25 \pm 0.78$  g, while the average yield at slaughter is  $73.43 \pm 0.44\%$ . Productive characteristics of Balotesti quails such as: high weight of the chick at one day of age, fast-growing to 42 days, high performance at slaughter, average percentage of laying up to the age of 40 weeks of laying make this quail population recommended both for the eggs and meat production. An advantageous feature is that males resulting from sexing in using for egg production can successfully valorised for meat as complementary production. Remain to be improved the incubation results of this population by applying proper egg storage conditions (temperature, humidity), using the incubation technology and incubators being constructed following studies strictly conducted on quail eggs.*

**Keywords:** quails, productive parameters, youth, hens

### **MATERIAL AND METHOD**

The results have been determined in experiments on biological material represented by the Balotesti quail performed in Bucharest IONIȚĂ T.LUCIAN Individual Enterprise, in the working point located in the of Gherghița commune, Ungureni village. To establish the hatching results of the studied population was organized an experiment in 1500 introduced hatching eggs, eggs incubated from a breeding flock of 5 months age. Environmental conditions in the hatchery were those employed in the specialized literature provided. Expected results were: percentage of hatching, eclosionability, clear eggs, dried egg percentage, percentage of dead chicken in eggshell during hatching and the average water loss after 15 days incubation. To establish productive parameters in young mixed population of quail egg-meat "of

Balotesti" was organized an experiment on 995 chicken of one day age. Environmental conditions in which the experiment that took place were within those provided in the literature. Results from the experiment set refers to the evolution of live weight at ages of 1 day, 7 days, 14, 21, 28, 35 and 42 days to determine average daily gain of each week of growth and then average weekly gain, average daily combined feed on week consumption, average specific consumption and mortality rate for the entire period of growth.

To establish production parameters in laying quails of eggs - meat mixed population "of Balotesti" was organized an experiment on an initial number of 400 quail hens, sexed from the initial series of chicken. Environmental conditions in which the experiment took place were within those provided in the literature. Hatching eggs were 8 days old, preserved at a storage temperature of 15°C and a relative humidity of 65%.

The results set refers to the average laying rate for the 1- 40 weeks period of laying, per week and cumulative egg production, live weight during 1- 40 weeks of lay, egg weight between 1-35 weeks of laying, daily feed consumption for the period 1- 40 weeks of laying, specific consumption and mortality for the period 1-40 weeks of laying. For setting results in the slaughter of quail egg-meat mixed population "of Balotesti", carcasses were analyzed in a number of 100 males sexed from the initial series of quail chicks of the mentioned population. Expected results from the experiment were live weight before slaughter, the average proportion of blood, flakes, organs and intestines, the average proportion of the chest, legs, back, wings, the average weight of the breast, the average proportion of meat, skin and bone from the breast.

## RESULTS AND DISCUSSIONS

### 1. The results obtained from incubation of quail eggs in egg-meat mixed population "of Balotesti"

Table 1. Results from incubation of quail eggs in egg-meat mixed population "Balotesti"

Specifications	X±Sx
Hatching, %	66.34 ± 0.22
Clear eggs, %	15.14 ± 0.15
Dry eggs, %	1.30 ± 0.21
Dead chicken in the shell during the eclosion, %	17.22 ± 0.11
Water loss after 15 days of incubation, %	14.25 ± 0.45
Proportion of shell after the eclosion	9.06 ± 0.23
Proportion of chicken weight compared to the egg weight	74.37 ± 1.34

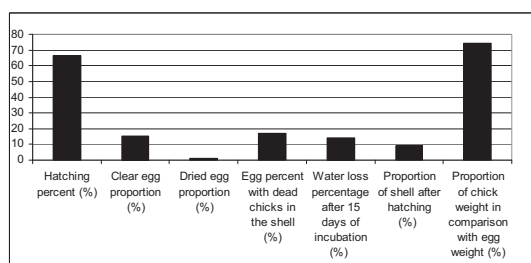


Fig. 1: The average results of hatching the analyzed batches of eggs from Balotesti population.

In a study conducted in Brazil, researchers Josue M. Romao et al. (2009, Brazil) set a weight ratio of 74.25% between the chick of

one day old and the initial weight of egg if incubated in a humidity level of 36%. Weight loss during incubation in this case was 11.96 %. In addition, Soliman et al. (1994) showed a weight loss of 11.32% of the egg in Japanese quail eggs incubated at a temperature of 37.5° C and a relative humidity of 56%.

In a study by Garip M. and Dere S. (Turkey, 2011), were determined minimum percentages of hatching, between 35.2% in eggs stored for 15 days at 21°C and 54.2% in eggs stored for 10 days at a temperature of 27°C. The maximum hatching percentages were between 79.4% in eggs stored for 15 days at 11°C and 84.2% in those stored for one day at 11°C.

Incubation results in this experiment are similar to those of Abdel-Azeem A., Abdel-Azeem F. (Egypt, 2009), who obtained 61.3% percent of hatching eggs stored for 2 days and 60.3% in eggs stored for 6 days.

### 2. Production parameters of young quails eggs - meat mixed population "of Balotesti" during raising between 1-6 weeks

Table 2. Production parameters of young quails eggs - meat mixed population "of Balotesti" during 1-6 weeks of growth

Specifications	X±Sx
Chicken weight at age of 1 day (g)	8.94 ± 0.56
Live weight at age of 42 days (g)	210.45 ± 2.29
Daily increase in the period of 1-6 weeks of growth (g/capita/period)	201.51
Daily consumption in the period of 1-6 weeks of growth (g combined fodder/capita/day)	19.85 ± 1.23
Cumulated daily consumption of fodder in the period of 1-42 days (g/capita)	834.00 ± 7.86
Specific consumption in the period growth of 1-6 weeks (g combined fodder/g gain)	4.14
Mortality in the period of 1-6 weeks of growth (%)	5.5

Researchers Abdel-Azeem A., Abdel-Azeem F. (Egypt, 2009) have established an average weight at age 1 day of 9.88 g (higher than that determined in this experiment) for eggs stored for 2 day. The same authors determined an average weight of the chicks at day one of 8.87 g in the case of eggs stored for 4 days and 8.30 g for eggs stored for 6 days, having similar weights to those in this experiment. Was established a gain of 186.42 g / 42 days

of raising period, a combined average fodder consumption of 536 g fodder/ capita/ period, specific fodder consumption of 2.87 kg feed / kg gain for chickens originated from eggs stored for 2 days and a mortality rate of 6.5% in 42 days for chickens that came from eggs stored for 6 days.

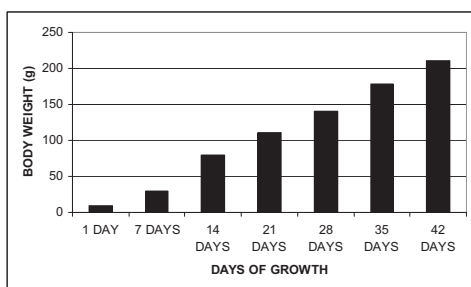


Fig. 2: Change in average live weight of young quail population Balotesti analyzed during 1-42 days

### 3. Production parameters in laying quails eggs - meat mixed population "of Balotesti" in the period 1-40 weeks of laying

Table 3. Production parameters in laying quails eggs - meat mixed population "of Balotesti" in the period 1-40 weeks of laying

Specifications	X±Sx
Laying percentage (%)	74.45 % ± 1.03
Cumulated production per capita in the period of 1-40 weeks of egg laying (no. eggs/ capita)	208.46
Live weight (g/capita)	255.76 ± 1.58
Egg weight (g/egg)	11.67 ± 0.42
Combined fodder consumption (g /capita/day)	32.25 ± 0.78
Specific consumption (g/egg)	43.32 ± 0.93
Mortality rate (%)	0.15 ± 0.03

In a study conducted in Poland (Tarasiewicz Z. et al., 2006) an average lay between 1-29 weeks of laying of 81.60% was established which is similar to that found in this study in population quail of Balotesti for the same period (78.68%).

To a flock of quail hens in Turkey some researchers (Okan F., 1999) have determined an average consumption of fodder (31.33 g fodder / capita) similar to that determined in the quail population of Balotesti (32.25g fodder / capita).

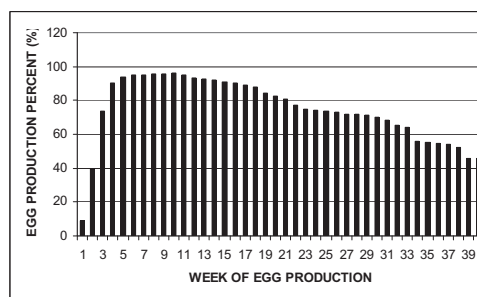


Fig. 3: Evolution of the average percentage of laying in the Balotesti quails from analyzed group between 1-40 weeks of laying.

### 4. Results of slaughtering egg-meat mixed quails population "of Balotesti" at 6 weeks of age

Table 4. Results of slaughtering egg-meat mixed quails population "of Balotesti" at 6 weeks of age

Specifications	X±Sx
Live weight at the age of 6 weeks (g)	210.45 ± 2.29
Proportion of blood (%)	5.34 ± 0.11
Proportion of feathers (%)	6.45 ± 0.34
Proportion of organs and intestines (%)	16.78 ± 0.65
Yield of carcass (%) (carcass weight / live weight)	73.43 ± 0.44
Breast proportion (breast weight / carcass weight) (%)	41.00 ± 0.41
Proportion of the thighs (thighs weight / carcass weight) (%)	24.12 ± 0.19
Proportion of the back (back weight / carcass weight) (%)	25.78 ± 0.62
Proportion of the wings (wings weight/carcass weight) (%)	9.76 ± 0.38
Breast weight (g)	58.65 ± 0.67
Proportion of breast meat (breast meat weight /breast weight) (%)	70.55 ± 0.44
Proportion of breast bones (breast bone weight / breast weight) (%)	16.65 ± 0.27
Proportion of breast skin (chest skin weight / breast weight) (%)	13.78 ± 0.54

In a study conducted in Nigeria by Raji A. O. (2006) on a flock of males Japanese quails, aged 10 weeks, he established a 67.82% return of the carcass, a proportion of 34.41% of the breast and of 24.02% legs, data similar to those found in population "Balotesti" in this study. Live weight and average carcass weight were significantly lower than in population in this study (113.16 g and 76.91 g respectively).

A study conducted in Iran (Vali, N. et al., 2005) on youth quail indicated an average carcass weight of 121.89 g, a carcass yield of 70.58%, an average weight of the breast of 47.45 g, corresponding to a proportion of 38.98% and a weight of legs of 26.72 g,

corresponding to 22.94%. These features are similar to those determined in this experiment in Balotești population.

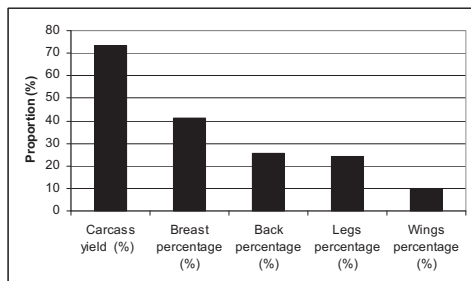


Fig. 4. The average yield of carcass and average proportions of breast, back, legs and wings of quail carcasses of the analyzed population Balotești

## DISCUSSIONS

### The results obtained in incubation of egg-meat mixed quail population “of Balotesti”

Weight loss of eggs during incubation is usually in the acceptable limits for hen eggs of 14.25 % in “Balotești” quails.

The proportion of clear eggs (without embryos or dead embryos in the first stage of incubation) in the quail population “of Balotesti” was  $15.14 \pm 0.15\%$ .

The proportion of eggs with dead chicken in the shell in the quail population “Balotesti” was of  $17.22 \pm 0.11\%$ .

Percentage of hatching registered in the quail eggs-meat population “of Balotesti” was in average of  $66.34 \pm 0.22\%$ .

### Production parameters of young quails egg-meat mixed population “of Balotesti” during 1-6 weeks of raising

Average body weight at age 1 day of quail chicks of Balotesti was  $8.94 \pm 0.56$  g and at age of 42 days was  $210.45 \pm 2.29$  g.

Average gain of weight recorded was of 201.51 g/ head/ period of 6 weeks in Balotești quail rising.

Combined fodder average daily consumption was  $19.85 \pm 1.23$  g / head / day during 6 weeks of growth.

The specific consumption was 4.14 kg fodder /kg gain in chicks during 0-6 weeks of Balotesti quails growth.

Viability of Balotesti quail during 0-6 weeks was 94.5%.

### Production parameters in laying quails eggs – meat mixed population “of Balotesti” in the period 1-40 weeks of laying

Production performances recorded in the batch of egg-meat mixed quail population “of Balotesti” during 1-40 weeks of laying are:

The average percentage of laying for the period 1-40 weeks of laying was  $74.45 \% \pm 1.03$ ;

The average production of eggs cumulated during 1-40 weeks of laying was 208.46 eggs /head;

The average percentage of mortality during 1-40 weeks of laying was  $0.15 \pm 0.03\%$  on week;

The average weight of egg during 1-40 weeks laying was  $11.67 \pm 0.42$  g;

Average body weight registered in the period 1-40 weeks of laying was of  $255.76 \pm 1.78$  g per capita;

Average consumption of mixed fodder recorded during 1-40 weeks of laying was  $32.25 \pm 0.78$  g per capita and per day;

Specific average consumption recorded during 1-40 weeks of laying was  $43.32 \pm 0.93$  g per capita and per egg.

### Results from the slaughter of quail egg-meat mixed population “of Balotesti” at 6 weeks of age

The live weight and eviscerated carcass weight in quails "of Balotesti" at the age of 6 weeks

Average live weight at the age of 42 days was  $210.45 \pm 2.29$  g.

The share of blood, flakes, organs and intestines in the carcass.

Average proportion of blood was of  $5.34 \pm 0.11\%$ , the average proportion of flakes was  $6.45\% \pm 0.34$ , while the average proportion of organs and intestines in total carcass was  $16.78\% \pm 0.65$ .

### Carcass yield of quails of "the Balotesti" population

Quail carcass yield at 6 weeks of age averaged  $73.43 \% \pm 0.44$ .

The proportion of carcass parts in the analyzed groups "of Balotesti" population

The average proportion of parts of the carcass at the age of 6 weeks was as follows:  $41.00 \pm 0.41\%$  breast, legs average proportion was

24.12 ± 0.19%, back 25.78 ± 0.62%, while the wings were 0.38 ± 9.76%.

Percentage share of parts of breast of the carcasses of quail in the population "of Balotesti"

From the average weight of the breast (58.65 ± 0.67 g), the breast meat has a high percentage share (70.55 ± 0.45%), the bones having a weight of 16.65 ± 0.27% and the skin 13.78 ± 0.54%.

## CONCLUSSIONS

Following investigations, the best production features of Balotesti quail include:

- High weight at the age of 42 days, which recommend the population for meat production too;
- High viability in the raising period correlated with ensuring proper microclimate factors, under age category, taking into account the very high growth rate of chicks;
- High efficiency carcass (70%);
- High production of eggs, early entry into laying (first egg age at 36 to 42 days), good body weight during the laying period;
- High viability during the laying period correlated with ensuring microclimate factors and avoid possible stress factors (moving cages, regrouping birds in cages etc.);

The weaker features of Balotesti quails may be given by poor results in incubation, but it is more influenced by the technology incubation development in quails, which in our country is still poor (quail eggs incubation is carried out in most of the cases in incubators for hen eggs).

Particular importance in the incubation of quail eggs should be given to the oldness of the hatching eggs (it has to be minimized), and ensuring conditions for preserving eggs (low temperature, high humidity).

By conducting further studies on quail eggs hatching factors (temperature, humidity, turning, optimal carbon dioxide and oxygen levels, etc.), quail hatching technology can be greatly enhanced.

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