

## BIOLOGICAL FACTORS DETERMINING EGG PRODUCTION IN EGG LAYING HEN

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**Abstract :** *Egg production in egg laying hen depends on the action and interaction of hereditary and environmental factors. The number and nature of these factors, the physiological factors of their action, and their share of the egg production, though not enough known yet, raise a series of questions for aviculturists concerning the continuous improvement of poultry improvement technologies and of raising and exploiting poultry. Individual egg production varies within very broad limits, being determined partially by the functioning of the reproductive tract in females (under neuro-hormonal control and strongly influenced by outer environmental conditions). Besides all this, the number of eggs is also influenced by other factors.*

**Keywords:** *factors, production, eggs, poultry*

### INTRODUCTION

The main biological factors involved in the moulding of egg production in poultry are species, breed, individual and line, age, egg laying precocity, egg laying intensity and cycle, hatching instinct, moulting, and poultry weight [1,5,9].

If wild birds that are the ancestors of domestic fowl are characterised by excessive seasonality of egg laying and by the small number of eggs, poultry produce far more eggs and, in many of them, the seasonal character of egg laying has disappeared. In poultry, the number of eggs differentiates depending on the species and/or breed: 180-250 eggs/year in pure breed chickens, 280-320 eggs/year in hybrid chicken, 60-80 eggs/year in turkeys, 40-60 eggs/year in geese, and 180-200 eggs/year in ducks. Another important factor in egg laying is the breed, which determines the differentiation and main direction of egg production in the different species [3,6,10].

Individual analysis of egg production shows that there are, in a lot of poultry, individuals with low, medium, or high egg productions. This points out the individual influence on egg production depending on the categories of chickens mentioned above [2,7].

In chickens, the highest egg production is in the first egg-laying year, followed by a decreasing production in the years to follow. It is worth noting that the decrease is more intense in the chickens with higher egg productions in the first year and slower in the chickens with lower egg productions in the first year. However, there are also situations when egg production reaches high levels over longer periods (several years) [8].

In Romania, chickens are exploited for periods between 60 and 77 weeks, depending on the technology, on the production target, and on the egg laying percentage.

### MATERIAL AND METHOD

Literature abounds in documentary materials by both Romanian and foreign authors that we have studied to analyse the main factors involved in egg production in hybrid chickens.

## RESULTS AND DISCUSSION

Research pointed out positive correlations between the age of the first egg and total egg production. We can say that this feature is specific to light chicken breeds, and then to mixed and heavy chicken breeds. The age of the first egg differs depending on species and breed: hybrid chickens reared on Romanian poultry farms start egg laying at the age of 20-22 weeks.

Egg laying intensity is a factor that can be assessed through the number of eggs produced over a given period. Thus, in industrial chicken rearing, this period consists, with the current technologies, of 59 weeks. In semi-intensive chicken rearing, winter months are also taken into account in the assessment of egg laying intensity.

The egg laying cycle consists of such elements as sequences and pauses. An egg laying cycle consists of a period of sequences and pauses in which pauses count no more than 10 days. An egg-laying period consists, therefore, of a variable number of egg laying cycles: in chickens with high egg productions, these cycles are few and long. The less improved the chicken breeds are, the more and shorter the cycles are. It is worth noting that each new cycle produces less eggs.

Maximum egg production occurs in mean weight chickens of a breed. However, we should also take into account the negative correlation between under- and over-weight, on the one hand, and the number of eggs produced, on the other hand. To also note the fact that under-weight chickens (in relation to age) produce less eggs.

We have analysed some of the biological factors impacting the number of eggs produced by a chicken starting from the large number of factors influencing the production and valorisation of eggs in egg laying chicken hybrids.

## CONCLUSIONS

Monitoring the distribution of the chickens depending on their annual egg productions, we can draw an asymmetric curve that seems to characterise all chicken breeds. There is a decrease of the egg production with age in hybrid chickens.

As for the ratio between growth and development, and between egg laying precocity and body weight, we can see that the first egg in chickens is laid before the growth ends.

Egg laying intensity can be assessed through the number of eggs produced by a chicken during a given period. In industrial chicken rearing for table eggs, this period lasts, in the current technologies, 59 weeks.

Starting egg laying in under-weight hybrid chicken has a negative impact on egg production.

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