The role of laying hen productivity in determining the frequency of shell defects and their impact on the biological and technological value of eggs

The shell of chicken eggs is the primary barrier separating the external environment from the egg contents. Proper shell quality is important not only in terms of consumer evaluation, but also as an important production factor. Shell strength deterioration contributes to significant losses of egg raw material at each stage of its production. The quality of shells is influenced by a number of factors related primarily to the birds' nutrition or the age and physiological state of the flock. Stress, e.g. noise or too big stock density in the hen house, is also important as a factor disturbing birds' welfare, which may cause soft and thin shells and corrugations during egg forming process.

In terms of flock age, it is difficult to identify a clear trend. Although shell quality deteriorates after the highest laying period, the introduction of appropriate mineral supplementation can reduce the negative effects of the birds' age. However, the role of productivity of laying hens in shaping the frequency of shell defects and their influence on biological and technological value of eggs has not been analyzed yet.

The most common shell defects include shells cracked (internal and external), marbled, chalky, wavy, having so-called "weak ends" and the already mentioned roughness or marks. There are also defects associated with missing shells or excessive calcification

The picture shows weak ends, pimpels and marbled egg shell.

Therefore, the material for the study will consist of Leghorn hens, typical high-producing layers, as well as Greenlegged Partridge hens, one of the oldest Polish breeds on which no breeding work has been carried out to improve laying performance. In the course of the study, the frequencyand type of shell defects occurring during the entire laying cycle, their effect on morphological traits, chemical composition and distribution of mineral components on the shell surface, the quality of chicks obtained, and egg quality traits will be examined.