

Laying hen rearing systems: a review of major production results and egg quality traits

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Laying hen rearing systems have been the focus of scientific research for many years. Over the last few decades, new laying hen rearing systems have been rapidly introduced in an effort to harmonise poultry health and welfare with consumer, producer, industry and environmental demands. Given the above situation, the subject matter of this paper was a comparative review of the results obtained by different authors on the effect of rearing system on productive traits (egg production and mortality) and egg quality characteristics (egg weight, proportions of main egg parts, Haugh units, yolk colour and carotenoids) in laying hens. Although productive performance in alternative systems is often lower compared to conventional, intensive layers, eggs from alternative systems have been proven in numerous studies to have better nutritional properties. Moreover, research results indicate differences within rearing systems. In view of this, this overview of the literature on the use of different rearing systems in table egg production can serve as a tool in determining the future direction of research as well as an indicator of its practical application.

Keywords: laying hen; rearing systems; productive traits; egg quality

Introduction

Commercial egg production in industrial systems began to expand develop rapidly in the USA after World War II, and soon after in Western Europe. Its main characteristics include confinement facilities, artificial lighting and ventilation, a large number of highly productive hybrid laying hens kept mostly in battery cages that provide a limited amount of space, use of complete feeds (that may contain antibiotics, stimulants, hormones, artificial colourants, etc.), use of many farm hygiene and maintenance products. This type of production provides a ready supply of eggs for consumers throughout the year in large amounts and at a relatively low price (Pavlovski *et al.*, 2010), due to which the

