

Laying hen rearing systems: a review of chemical composition and hygienic conditions of eggs

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Alternative laying hen rearing systems have been rapidly introduced into poultry production in an effort to harmonise poultry health and welfare with consumer, producer, industry and environmental demands. They are an integral part of modern egg production. Husbandry systems for keeping laying hens have an impact on, *inter alia*, the chemical composition of eggs. The subject matter of this study is a comparative review of the results obtained by different authors on the effect of rearing system on chemical composition (proteins, lipids, cholesterol, vitamins and fatty acids content) and hygienic conditions of eggs from different rearing systems of laying hens. Eggs from these laying hen rearing systems have been proven by a large body of literature data to have better nutritional properties. Moreover, the results analysed also indicate differences within rearing systems. Rearing systems also have an influence on hygienic and microbiological quality of eggs. In view of the above, this comparable 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; chemical composition; hygienic condition

Introduction

The main characteristics of commercial egg production in industrial systems include confinement facilities, artificial lighting and ventilation, a large number of highly productive hybrid layers kept in limited space (mostly in battery cages), intensive feeding, and use of many hygiene and maintenance products. These factors have contributed to battery farming becoming the most common table egg production system in the world (Matt *et al.*, 2011).

More recently, alternative laying hen rearing systems have been introduced to

