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Trends in eggs production and consumption

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Abstract

The objective of this study was to identify the main trends in the production and consumption of eggs and omega-3 fatty acid-enriched eggs. Egg producers are turning to the production of eggs with different intrinsic and extrinsic characteristics to meet the growing demands of consumers. Consumers are showing a growing interest in eggs from alternative production systems, but price, egg size and origin are also very important to them. There will be an increase in the share of alternative eggs production systems, as well as a greater emphasis on animal welfare. The obtained results are useful for egg producers for production planning, for consumers who will be additionally informed about egg market trends and the benefits of consuming omega-3 enriched eggs, and for marketing experts to develop strategies to increase eggs demand.

Key words: eggs, omega-3 enriched eggs, trends

Global trends in eggs production and consumption

Eggs are a very important source of protein, fat, and microelements (Kralik and Lovreković, 2018) and represent a food that is affordable and frequently consumed all over the world (Lesnierowski and Stangierski, 2018). According to Martinez-Michel et al. (2011) consumers prefer eggs because they are safe to eat, easy to prepare, versatile, and cheap comparee with other sources of animal protein.

However, in the last 10 years, egg production has experienced a number of challenges that have had a major impact on the cost-effectiveness of egg production. Consumer demand for healthier, more environmentally friendly, and animal welfare-friendly foods is steadily increasing (Rahmani et al., 2019), which has also led to increased demand for alternative production systems (organic eggs, free-range eggs, and floor rearing eggs). Organic eggs come from free range laying hens raised according to organic production standards. Free-range eggs are produced in a rearing system where the laying hens have constant access to outdoor run during the day. Eggs from floor-raised hens are produced in a rearing system where the laying hens are housed in a barn on the floor (litter). It is worth mentioning the growing world population, which points to the challenge of increasing egg production while respecting the principles of sustainability (FAO, 2017). Moreover, egg production generates high greenhouse gas emissions (Abín et al., 2018) because it relies on a large number of natural resources, such as land, water, and energy, as well as cereals for animal feed, while modern consumers show a growing interest in sustainable products. In addition, in the last 10 years, we have frequently witnessed food scandals related to salmonella or the contamination of eggs with pesticides (Li et al., 2017, Li et al., 2019), which negatively affects the demand for eggs. It is also worth mentioning numerous diseases of modern society related to the nutritional properties of eggs, such as allergies (Loh and Tang, 2018) and high cholesterol (Zhu et al., 2018), which also affects consumer preferences. For these reasons, egg producers are forced to turn to egg production with different improved intrinsic and extrinsic characteristics (organic eggs, free-range eggs, eggs enriched with functional

ingredients such as omega-3 fatty acids, lutein, vitamins A and E, etc.). Knowing egg consumers' preferences is critical to market success. According to the authors Rondoni et al. (2020.), the most important characteristics for consumers when buying eggs are the so-called sensory characteristics (size, eggshell color, yolk appearance and color) and nutritional characteristics (omega-3 enriched), while for Baba et al. (2017) the most important characteristics are price, egg size, origin and production method. Consumers prefer larger eggs (Baba et al., 2017) and eggs of local origin (Gracia et al., 2014). Berkhoff et al. (2020) noted that consumers prefer to consume farm eggs rather than industrial eggs. The proportion of white and brown shell eggs consumed is about 50:50 worldwide, but significant differences have been found between continents. In Europe, Africa, and the Far East, consumers prefer eggs with brown shells, while in the Americas and the Middle East, they prefer eggs with white shells (Cavero et al., 2012). Consumers prefer deep yellow color of the egg yolk (Ayim-Akonor and Akonor, 2014). According to previous research, price is the most important determinant in eggs purchase (Baba et al., 2017) and consumers are not willing to pay a higher price for enriched eggs (Güney and Giraldo, 2019). However, consumers are willing to pay a higher price for cage-free eggs because they associate such production with greater animal welfare (Doyon et al., 2016) and higher food safety standards (Yang, 2018). Moreover, modern consumers demand sustainable products. Nevertheless, Rahmani et al. (2019) concluded that consumers in Spain are not willing to pay a premium price for eggs produced with lower greenhouse gas emissions and reduced water consumption.

Global trends in production and consumption of omega-3-enriched eggs

Functional foods are foods that have been shown to have a beneficial effect on human health in addition to their basic nutritional function (Alongi and Anese, 2021). One of the functional products for which there is a growing demand are eggs enriched with essential nutrients such as omega-3 fatty acids, vitamins or selenium. Omega-3 enriched eggs help reduce the risk of heart disease and maintain normal blood cholesterol levels (Baba et al., 2017) and consumers associated omega-3 enriched eggs with health benefits (Sass et al., 2021). To produce omega-3 enriched eggs, producers need to modify the hens diet. Typically, they feed laying hens with fish and/or flaxseed oil and flaxseed, but they also use antioxidants in the animal feed. According to Transparency Market Research's 2017-2025 forecasts, demand for omega-3 products, including omega-3 enriched eggs, will increase in developed economies, especially among consumers who care about health and believe that food has a significant impact on health. One potential problem for the omega-3-enriched egg market is the perception that consumers are unwilling to pay a higher price for omega-3 enriched eggs. The main reason for this is limited knowledge about the benefits of consuming such eggs (Sass et al., 2018). This is supported by the results of a study conducted in Croatia, which showed that only half of the study participants were aware of omega-3 enriched eggs (Kralik et al., 2020). However, research in Italy shows that unmarried women and consumers with higher economic status are more willing to pay a higher price for omega-3 enriched eggs, but also that willingness to pay a higher price for omega-3 enriched eggs is higher among consumers who place more value on the size of the eggs, the rearing conditions and feeding of the hens, the origin and brand of the eggs (Palmieri et al., 2022). According to Sass et al. (2021) omega-3 eggs are categorized as expensive, so their buyer is described as a “person with high purchasing power”.

Conclusion

According to previous research, it can be concluded that several factors influence the demand for eggs, which producers should consider when planning their production policies.

In addition to intrinsic characteristics such as the appearance and color of the yolk, extrinsic characteristics such as price, egg size, origin, and production method are also extremely important when purchasing eggs. Socioeconomic characteristics of consumers and cultural factors play an important role in egg consumption behavior, which is reflected in different preferences for brown and white eggshells, egg size, and willingness to pay. It is therefore important to consider different segmentation variables (e.g., place of residence, lifestyle, income level) to help producers find their target consumer group.

Previous research results can help marketers to develop better communication policies to final consumers, for example, by highlighting the production method or egg size in promotions. Since consumers are not willing to pay a higher price for enriched eggs or eggs with lower GHG emissions, primarily due to their limited knowledge, it is necessary to educate consumers about the benefits of purchasing and consuming such eggs.

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