



FÓRUM  
NACIONAL DE  
PROTEÇÃO E  
DEFESA ANIMAL

TINY  
BEAM  
FUND

# THE HEN AND THE EGG: OPINIONS OF BRAZILIAN CONSUMERS ON THE IMPORTANCE OF ANIMAL WELFARE IN THE QUALITY OF THE EGG PRODUCED

Maria Cristina Yunes



# ABOUT THE FORUM

The **Fórum Animal** was born out of Sônia Peralli Fonseca's empathy and compassion for animals. Icon in the history of Brazilian animal protection, the biologist began to structure the entity in 1998, registered two years later, with a group of partners of the cause in São Paulo. Since then, we have acted to ensure important advances for animals. Some examples are national legislation setting standards for humane slaughter; a nationwide ban on the practice of keeping marine mammals captive for entertainment; and the inclusion of animal cruelty or abuse as an environmental crime in Law 9.605/98 and in the Federal Constitution itself.

Our multidisciplinary team is made up of veterinarians, lawyers, marketing and communication professionals, geographers and researchers, who support the development of animal protection and defense actions.

In addition to working with our 114 affiliates, which promote direct care for animals, we maintain a strong presence in the National Congress and Legislative Assemblies to influence the development of Brazilian public policies in favor of animals.

---

✉ [info@forumanimal.org](mailto:info@forumanimal.org)

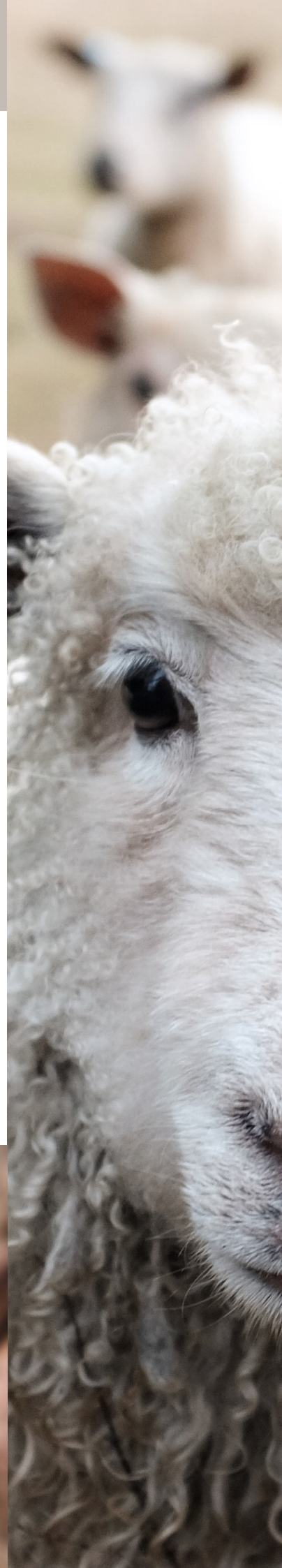
---

🌐 [forumanimal.org](http://forumanimal.org)

---

📷 [forum.animal](https://www.instagram.com/forum.animal)

This material was reviewed and approved by Taylison Santos - Executive Director and Elizabeth MacGregor - President, both from Fórum Animal.



# ABSTRACT

Despite the importance of animal production for Brazilian society, and the changes that can be observed around the world in the relationship between the public and animal industry regarding animal welfare, there is still little information on the perceptions of the Brazilian consumer of the relations between the egg production system, hens' welfare and egg quality. Recent studies indicate that criticisms like those that have led to major changes in animal production legislation and practices in several countries can be expressed by Brazilian citizens as they become more aware of the systems and breeding practices used in food production. In addition, several studies have shown that consumers prioritize food safety at the time of purchase. The type of system can define the quality of life of the animal, productivity and the quality of the food produced. However, conventional and industrial systems, such as battery cages for laying hens in egg production, are still the most common in Brazil. If not heard, the public disquietude may find a vacuum and express itself in arenas as the political sphere, without regard for the interests or needs of producers. In this project we proposed to collaborate in the construction of a dialogue between stakeholders in animal production (citizens, consumers, industry, and farmers), providing the views (and underlying reasons) of egg consumers regarding the systems and practices frequently used for egg production used in Brazil (cages) and its alternative (cage-free and free-range), the laying hen's welfare and its relationship with the final quality of the egg. Brazilian egg consumers relate the productive system to animal welfare and the quality of the food produced. Eggs from systems where chickens are perceived with good welfare and with access to the outdoors are considered to be of higher quality than eggs from conventional systems.





# INDEX



Page  
**05** Egg production, animal welfare  
and product quality

---

Page  
**07** Aim of the study

---

Page  
**08** Awareness about some egg  
production practices and systems

---

Page  
**09** Egg consumption and  
purchasing habits in Brazil

---

Page  
**11** Egg production system  
and animal welfare

---

Page  
**12** Egg quality and  
production system

---

Page  
**13** Willingness to pay more for eggs  
produced under alternative systems

---

Page  
**15** What's expected from  
animal welfare certified eggs

---

Page  
**17** How Brazilian consumers  
see the egg labeling

---

Page  
**18** Brazilian consumers,  
trust in the institutions

---

Page  
**19** Take home message

---

Page  
**21** References

---





# EGG PRODUCTION, ANIMAL WELFARE AND PRODUCT QUALITY



The growth of animal production in intensive confinement systems, motivated by the maximization of productivity, has brought consequences for the welfare of the animals involved. Animals reared in confined systems have been genetically modified and are fed and housed in systems that cause them to develop at faster growth rates, in smaller spaces and in greater numbers than they would be in less intensive circumstances (Hötzel, 2014). These conditions increase the incidence of death and disease among animals and decrease or even eliminate their access to natural environments, as well as their possibility of expressing their natural behaviors.

Many of the current livestock production practices and systems have been increasingly questioned by the public. One of the major concerns of the lay public in relation to production systems is the limitation of the movement of the animal, and therefore the great opposition to confined systems. In addition, consumers tend to express preferences for systems that they consider “natural”, which includes outdoor systems and family-run small-scale farmers that allow the producer to build a relationship with their animals. Consumers also consider these systems, together with natural feeding practices such as pasture, as better for human health and the environment.

Different farm animal rearing systems have been introduced over the last years in an effort to balance animal health and welfare with consumer, producer, industry and environmental demands and possibilities. Just like consumers around the world, Brazilian consumers show concerns with the quality of life of farm animals and also associate farm production systems that consider animal welfare with a resulting product of better quality. However, conventional, industrial systems such as the battery cages for laying hens in egg production, are still the most common in Brazil. It is estimated that 95% of Brazilian egg production is in battery-cages.

Laying hens can be reared in different systems (battery cages, enriched cages, cage-free, free-range, organic) and the type of system can define the quality of life of the animal, productivity and the quality of the food produced. According to Meng et al. (2014) chickens housed in conventional cages produce more eggs, but with lower quality than chickens housed in alternative systems. Several authors found that eggs produced in alternative systems have better quality traits, as egg weight, yolk percentage, yolk color and carotenoids, etc., than eggs produced in caged systems (Ozbey & Esen, 2007; Hidalgo et al., 2008; Radu-Rusu et al., 2014). However, others did not find differences in quality traits among different systems, attributing this result to the fact that egg quality may be affected by the type of production system but also influenced by hens' age, genotype, nutrition (Rizzi et al., 2006; Krawczyk et al., 2009).



The nutritional quality of food has become an issue of growing importance for consumers around the world and although there is no scientific consensus relating better egg quality traits to alternative production systems, consumers tend to relate it, which shows that the improvement in animal welfare is perceived as an attribute capable of producing a food of higher quality, even if subjectively, than the nutritional values itself.





# AIM OF THE STUDY

The aim of this study was to provide a better understanding of how egg consumers in Brazil view the relation among egg production systems, animal welfare and egg quality. It explores:

- Views and attitudes of Brazilian egg consumers to 3 different egg production systems: caged, cage-free, and free-range.
- Views and attitudes of Brazilian egg consumers regarding the egg quality and its relation to different production systems and animal welfare.
- Awareness of egg production practices and systems.
- Brazilian egg consumers' habits and purchasing behavior, willingness to pay more for eggs produced under alternative systems.

A study<sup>1</sup> was conducted through an online survey<sup>2</sup> undertaken in 2022 specifically to gather the views of these consumers. The study aimed exclusively to egg consumers<sup>3</sup>.

---

**1** The project was approved by the Ethics Committee on Research with Human Beings of the Federal University of Santa Catarina (CEPSH-UFSC), P. 57877422.4.0000.0121.

**2** The questionnaire was composed of closed and open questions. It was spread through social medias. The respondents were from all five regions of Brazil with 18 years old or more.

**3** 286 egg consumers answered the questionnaire. Approximately 11% of the total number of respondents that started answering the questionnaire (322) affirmed not eating eggs at all, and therefore were forwarded to the end without responding.



# AWARENESS ABOUT SOME EGG PRODUCTION PRACTICES AND SYSTEMS

In Brazil, different types of eggs are found. “Farm” eggs are those produced in the conventional system by caged chickens. The “caipira” eggs are those produced by chickens of rustic breeds, with free range in pasture, with a plant-based diet free of antibiotic growth promoters or other added chemicals, all production must be according to a Brazilian Technical Standard ABNT NBR 16437 (ABNT, 2016). “Cage-free” eggs are those produced by cage-free chickens, housed in a shed with no outdoor access and “free-range” eggs are those produced by cage-free chickens with outdoor access, which might be or not pasture. “Organic eggs” come from hens that are fed only organic feed (without added drugs or chemicals), are kept free-range in pasture, receive no antibiotics, and produced under the Brazilian Normative Instruction nº 46/11 (MAPA, 2011).

In this survey, most participants (~ 75%) showed awareness of the egg production system known in Brazil as caipira. They are aware that caipira eggs are produced by chickens of rustic breeds, raised free-range and with vegetable feed and without chemical supplies; that farm egg is not the same as caipira egg and that not all red shell eggs are caipira.

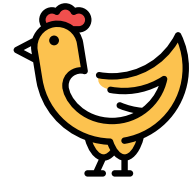
Just half of the participants are aware that the so-called farm eggs are actually produced by hens housed in cages in the conventional system and that the color of the egg yolk does not always indicate that the hens’ feed is natural. Less than half are aware that chickens raised in cages may receive antibiotics to prevent diseases and that chickens raised in organic systems are fed with a transgenic-free diet.

Few participants (~19%) are aware that free-range eggs are produced by chickens with access to the outdoors; that cage-free eggs can be produced by chickens without outdoor access and that it is not true that chickens receive hormones in their feed.





# EGG CONSUMPTION AND PURCHASING HABITS IN BRAZIL



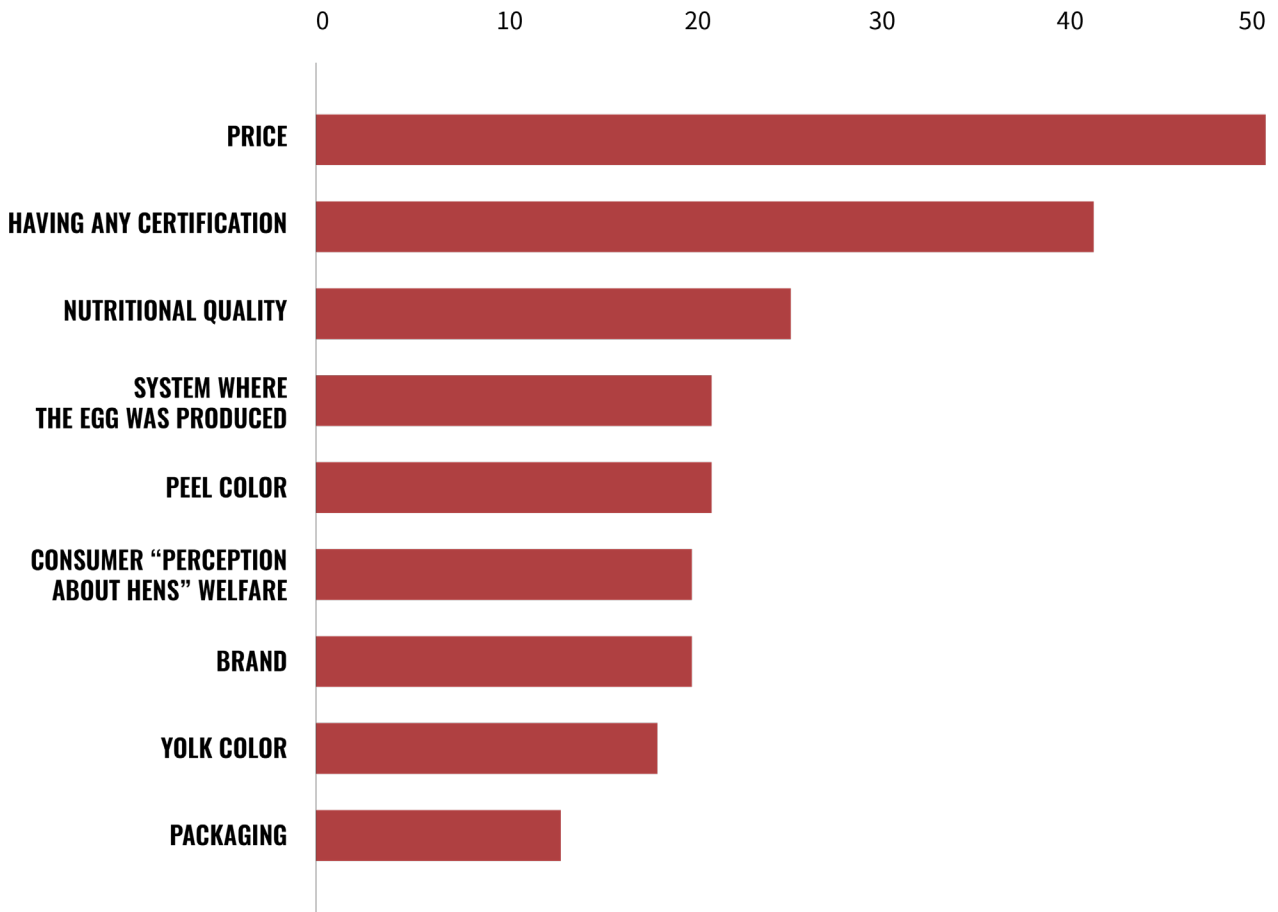
The increase in egg consumption due to the change in the Brazilian's diet, the versatility of the egg and the increase in the price of other proteins has been moving aviculture and stimulating its growth. Currently, the consumption of eggs in Brazil is 257 units per inhabitant per year and although the country exports eggs to 82 countries, about 99.5% of Brazilian production is to meet the domestic market (ABPA, 2022).

In this survey, 36% of participants eat eggs from 5 to 7 days a week, 31% 3 to 4 days a week and 33% 1 or 2 days a week.

Price is the main attribute that influences the consumers' choice when buying eggs. Having some kind of certification (e.g., organic or animal welfare) and the nutritional quality are also cited as important reasons for choosing eggs (**Figure 1**).



**Figure 1:** The main attributes required when buying eggs for the 286 participants of this survey.



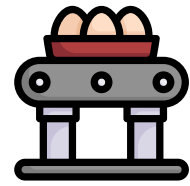
Among eggs produced under alternative systems, the caipira eggs are the consumers' main choice when purchasing eggs. When asked which eggs they usually buy, 32% say buying caipira; 6% animal welfare certified; 6% cage-free; 4% organic eggs and 7% all types except the conventional eggs. However, 26% of consumers buy all type of eggs including the conventional ones and 19% usually buy conventional eggs.

Key message → **Egg is an important food in the diet of Brazilians. Consumers are interested in eggs produced under alternative systems, but price is the most important factor that affects their buying decision.**





# EGG PRODUCTION SYSTEM AND ANIMAL WELFARE



When asked to briefly consider the quality of life of the farm animals that are used in food production in Brazil, 46% of respondents say they consider it as bad or very bad, 32% says it is neither good nor bad and only 22% consider it good or very good.

Most participants consider the quality of life of caged hens bad or very bad and consider free-range hens as having a good or very good quality of life. It is worth noting that more participants consider cage-free hens (i.e., hens that are free inside barns but have no access to the outdoors), as having a bad or very bad than good or very good quality of life (**Table 1**).

**Table 1:** Brazilian consumers' evaluation of the laying hen's welfare on three different production systems: caged, cage-free and free-range.

<b>PROD. SYSTEM/ HEN WELFARE</b>	<b>BAD/VERY BAD</b>	<b>INTERMEDIARY</b>	<b>GOOD/ VERY GOOD</b>
caged	76%	10%	14%
cage-free	40%	22%	38%
free-range	12%	7%	81%



# EGG QUALITY AND PRODUCTION SYSTEM

Most participants agree that the quality of the egg depends on the system where it is produced (74%), and that eggs produced under alternative production systems are of better nutritional quality (63%). For half of the participants the quality of the eggs from the caged system are bad or very bad, while 81% consider the quality of the eggs from free-range systems as good or very good. In addition, 78% of the respondents perceive eggs from laying hens reared with good animal welfare as being healthier than eggs from caged hens fed with enriched feed.

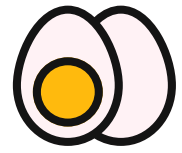
Among reasons given by participants to justify their perception and the relation between production system and better egg quality are, a) naturalness (“Everything produced naturally has more benefits”); b) animal sentience (“If the animal is happy, it will produce better quality eggs”); c) biological functioning (“Caged hens that are kept in an environment with artificial lights lay more eggs and I believe that this weakened their organism e then they lay those watery eggs”); d) health and behavior expression (“Alternative systems allow hens to live under less stress and perform more behaviors, which can positively influence their physiology and, consequently, improve egg quality”); e) freedom (“The more hens are loose and free of cage, the healthier they are; and they will lay eggs of higher quality”), f) natural feeding (“Her diet is more natural”). For others the quality of the egg was not necessary to justify their support to alternative egg production systems: “The quality of the egg does not matter to me as much as the quality of life of the animals”.

Key message → **Brazilian egg consumers perceive hens’ welfare as an important attribute, capable of providing better quality to the egg. Systems that allow the hens more freedom and access to outdoors are perceived as producing eggs of better quality.**



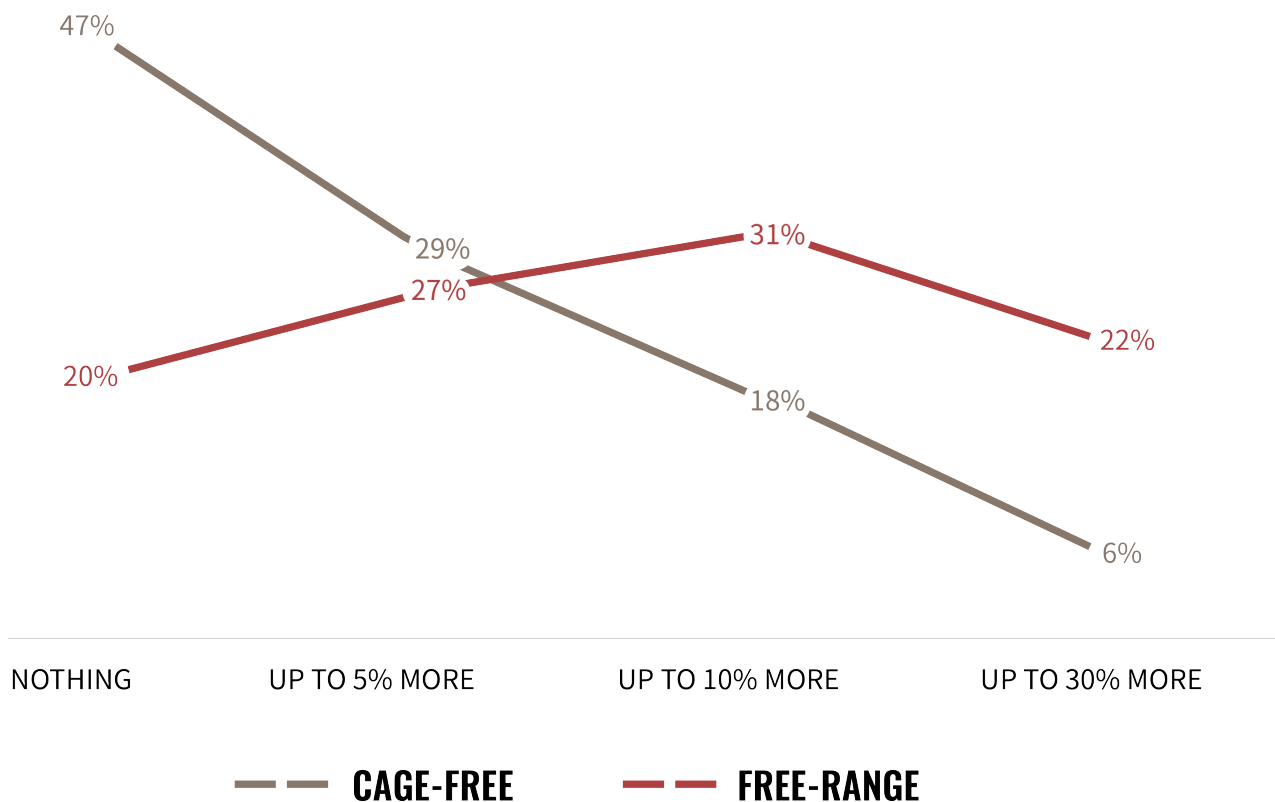


# WILLINGNESS TO PAY MORE FOR EGGS PRODUCED UNDER ALTERNATIVE SYSTEMS



Participants are unwilling to pay much more for eggs produced in cage-free systems without access to outdoor areas; however, they are willing to pay more for eggs produced in free-range systems when compared to eggs produced by caged hens (Figure 2).

**Figure 2:** Brazilian eggs consumers' willingness to pay for eggs produced in cage-free and free-range systems, compared to eggs produced in caged systems.



The main reasons presented by participants for buying eggs from alternative systems are that they are aware of how hens are treated in conventional systems, or somebody told them about it; that they perceive, or somebody told them these eggs are healthier; and that they consider these eggs tastier than conventionally produced eggs. Participants that buy eggs from conventional systems said they did so because of the price or because they have never thought about this question.



Key message → **Brazilian consumers are willing to pay more for eggs if they notice a real improvement in hens' welfare. Knowing that laying hens are allowed access to an outdoor area is important for this decision.**

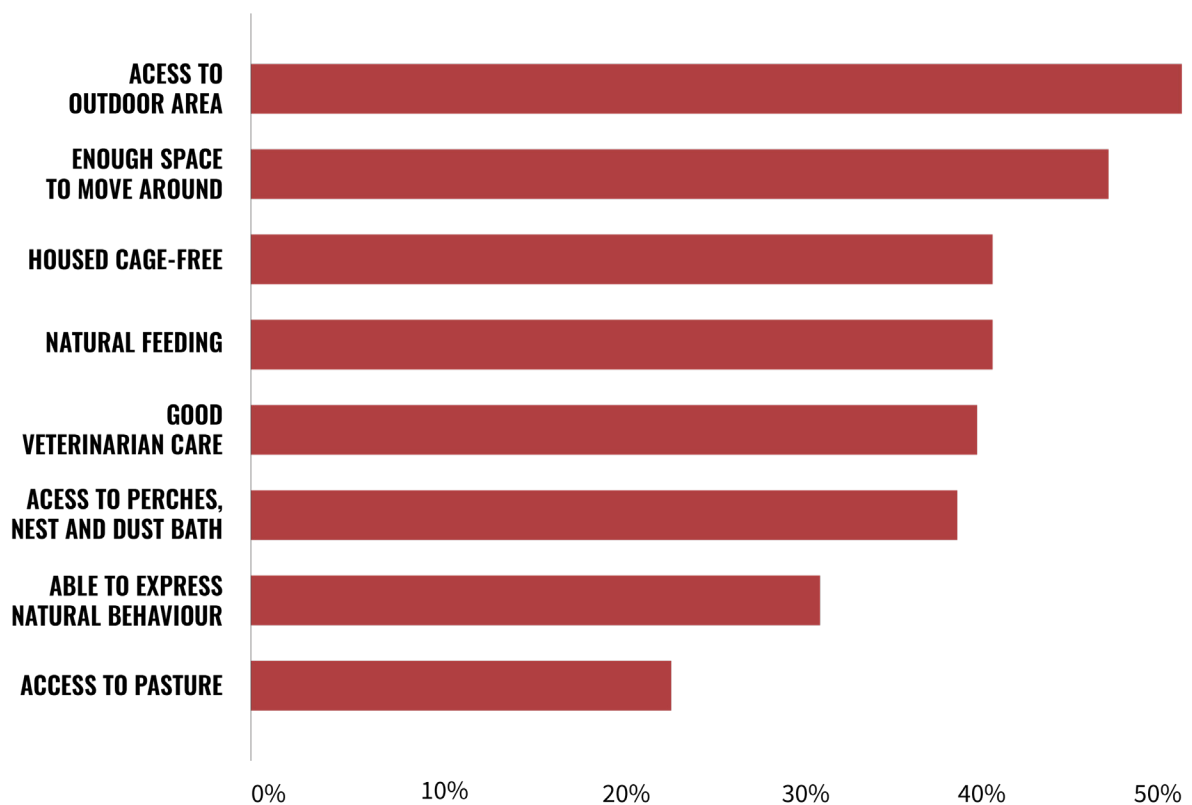


# WHAT'S EXPECTED FROM ANIMAL WELFARE CERTIFIED EGGS

Brazilian consumers' main expectation regarding animal welfare certified eggs is that the laying hens must be allowed to access outdoors and have enough space to move around (**Figure 3**).

**Figure 3:** Brazilian egg consumers' expectations about the laying hens rearing in eggs productions with animal welfare certification.

In animal welfare certified egg production, consumers expect laying hens to be or have:





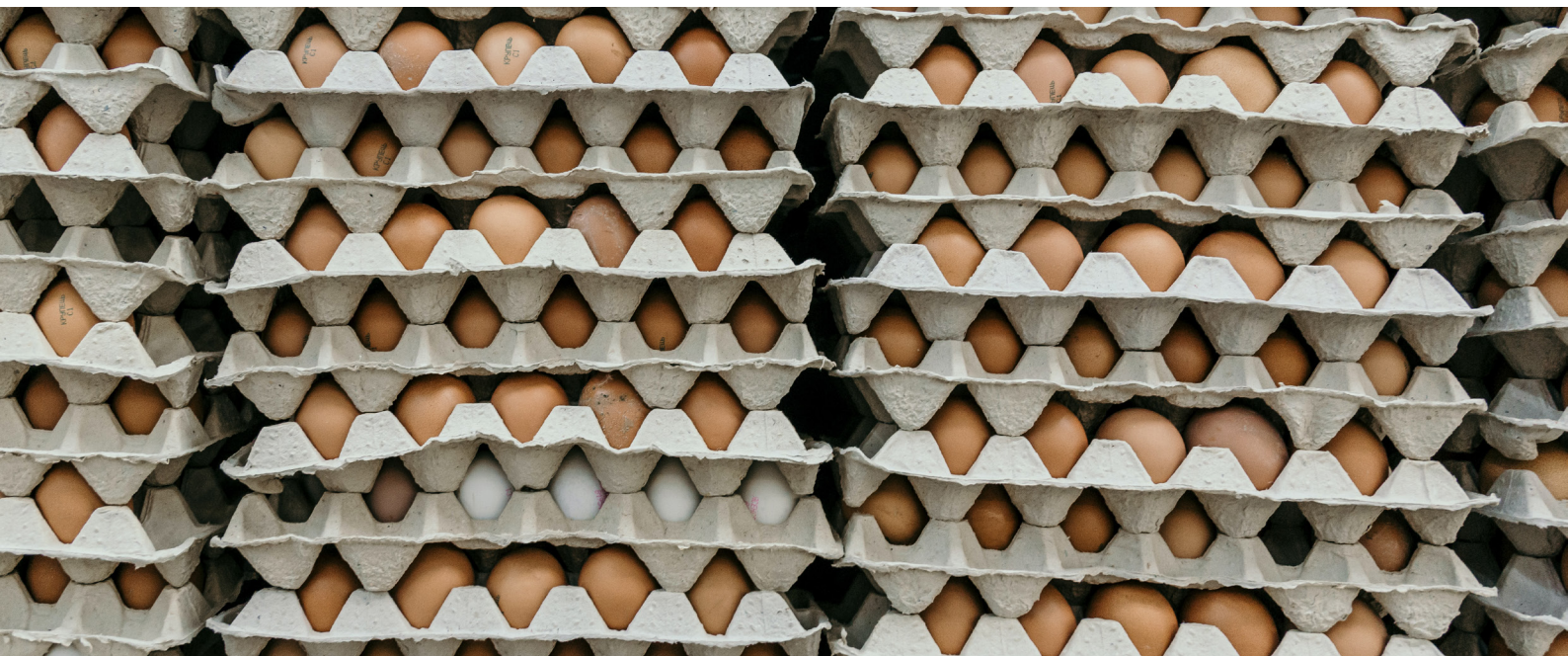
Key message → **For consumers, animal freedom – to go outdoors and move around – is a very important issue to guarantee animal welfare.**



# HOW BRAZILIAN CONSUMERS SEE THE EGG LABELING



Most consumers state that the information in the eggs' carton labels regarding how the eggs are produced is not accurate enough. For few participants the label is clear about the system under which the egg was produced (25%), if chickens have or not access to outdoors (15%), if they have good welfare (13%), in what housing system they are raised (12%), and the products used in chickens' feeding (13%). For 65% of consumers the label is not clear about any of these issues.



Key message → **Producers and retailers should make sure that labels provide clear and accurate information about the laying hens production systems.**

# BRAZILIAN CONSUMERS' TRUST IN THE INSTITUTIONS

Egg consumers evaluate themselves as being well informed regarding egg production systems (42%) or intermediately informed (34%). Their main source of information is the Internet (52%), followed by labels (31%), social media (29%), tv (28%), friends (25%) and university (20%).

When asked how much they trust some entities or groups to obtain information about the relationship between the production system and the nutritional quality of eggs, consumers say that they trust the sanitary vigilance agency, universities and research centers more (see **Table 2**).

**Table 2:** Brazilian consumers' trust in institutions when looking for information on the relationship regarding egg production system and its nutritional quality.

INSTITUTION	HIGH TRUST	INTERMEDIARY TRUST	LOW TRUST
Sanitary Vigilance Agency	62%	21%	17%
Universities and Research Centers	58%	26%	16%
Ministry of Agriculture, Cattle and Supplying	51%	27%	22%
NGO's	51%	25%	24%
Producers and its associations	49%	29%	22%
Consumers' associations	42%	29%	29%
Family doctor or pediatrician	37%	31%	32%
Labels	31%	36%	33%
People who manifest themselves in social media	31%	36%	33%



## TAKE HOME MESSAGE

Eggs have become one of the most accessible sources of protein for most Brazilian consumers, therefore egg is an important food in the Brazilian diet. After price, which is the main attribute when buying eggs, animal welfare or organic certifications and the nutritional value of the egg are the most required attributes, reflecting that Brazilian consumers are looking for eggs produced under alternative egg production systems and care about the quality of the food they consume. For most consumers, the production system where the egg is produced influences its final quality and they consider that alternative systems, with improved hen welfare, produce better quality eggs.

Brazilian consumers are aware of the most common egg production systems in Brazil (i.e., the conventional cages and the “caipira” system) but are less informed about the cage-free and free-range systems. For instance, few know that cage-free hens do not have outdoors access but that free-range hens do. Also, consumers believe that the cage-free systems with space to move around, perches, nests and dust bath does not provide good welfare for the hens, nor produce good quality eggs; in contrast, they believe that the free-range system, with the same resources but also with outdoor access does provides good welfare and produce high quality eggs. In addition, consumers are willing to pay an extra value for free-range eggs but not for cage-free eggs, compared to conventional eggs. This demonstrates that outdoor access is a crucial issue in the public perception of farm animal welfare and consequently in the quality of the egg.

Willingness to pay more for products produced considering improved farm animal welfare is not a strong trend yet. The economic situation greatly affects the purchasing power of most people and price is a determining factor at the time of purchase. However, the weak relationship between positive attitude towards animal welfare and product quality and purchasing behavior does not necessarily mean that this attitude does not influence other behaviors. For example, in a survey with the Australian public, most stated that although they consider farm animal welfare an important issue, it does not influence their purchase of animal products, but influences their willingness to engage in community behavior, such as working as an activist, donating sums to animal welfare groups, or writing letters to newspapers or politicians (Coleman et al., 2005).



Animal welfare is an attribute of trust, which means that it cannot be observed directly by the consumer at the time of purchase. The consumer depends on external information and needs to rely on the source of this information. Labels are a source of information and an important item to establish open and trustful communication between industry and consumers. However, Brazilian egg consumers do not perceive the information provided in the current labels as clear and accurate. Probably because it is possible to find several labels, brands, slogans and/or images on Brazilian market shelves that cause confusion - such as “happy eggs”, “gramma eggs”, “natural”. These messages do not make clear how the egg was really produced, creating uncertainty and insecurity to the consumer and weakens the relationship of trust with the producer.



Improving animal welfare has become a relevant part of the trusted value commitment of the animal industries. Opposition to caged systems should not be interpreted as support for cage-free in confined systems for laying hens. In order to build a relationship of trust, it is very important that the changes proposed by the animal industry be consistent with what is expected by society, or at the very least, industry should be very honest and clear. Informing consumers on the different egg production systems (i.e., “cage-free” and “free-range”) and how they affect hens’ welfare is essential. Animal industry stakeholders need to establish an open and enlightening communication with the public, so that the consumer can make purchasing decisions without feeling deceived and can trust that improvements in the quality of life of animals are being implemented, even if not as much as desired.





# REFERENCES

ABNT. ABNT NBR 16437: Avicultura – Produção, classificação e identificação do ovo caipira, colonial ou capoeira. Rio de Janeiro: ABNT, 2016. BRASIL.

ABPA - Associação Brasileira de Proteína Animal. Relatório Anual 2022. Disponível em: <https://abpa-br.org/relatorios/>. Accessed in July 2022.

Coleman, G., M. Hay, and S. Toukhsati. 2005. Effects of consumer attitudes and behaviour on the egg and pork industries. Report to Australian Pork Ltd and Australian Egg Corporation Ltd.

Hidalgo et al., 2008 A. Hidalgo, M. Rossi, F. Clerici, S. Ratti. A market study on the quality characteristics of eggs from different housing systems. *Food Chemistry*, 106 (3), 1031-1038. 2008.

Hotzel, M.J. Improving farm animal welfare: is evolution or revolution needed in production systems? In: APPLEBY, M. C.; WEARY, D. M., *et al* (Ed.). **Dilemmas in Animal Welfare**. Oxfordshire, UK: CABI, 2014. cap. 5, p. 67-84. ISBN 9781780642161.

Krawczyk, Józefa & Gornowicz, Ewa. Quality of eggs from hens kept in two different free-range systems in comparison with a barn system. *Archiv fur Geflugelkunde*. 74. 151-157. 2010.

MAPA. Ministério da Agricultura, Pecuária e Abastecimento. Instrução Normativa no 46/11, de 6 de outubro de 2011. Estabelecer o Regulamento Técnico para os Sistemas Orgânicos de Produção, bem como as listas de substâncias e práticas permitidas para uso nos Sistemas Orgânicos de Produção. *Diário Oficial*, 2011.

Meng F, Chen D, Li X, Li J, Bao J. Effects of large of small furnished cages on performance, welfare and eggs quality of laying hens. *Animal Production Science* 55: 793-798. 2014.

Ozbey O., Esen F. The effects of different breeding systems on egg productivity and egg quality characteristics of rock partridges. *Poultry Science*, 86, 782-785. 2007.

Radu-Rusu R.M., Usturoi M.G., Leahu A., Amariei S., Radu-Rusu C.G., Vacaru-Opris, I. Chemical features, cholesterol and energy content of table hen eggs from conventional and alternative farming systems. *South African Journal of Animal Science* 2014, 44, 33-42.

Rizzi, L. et al. Effects of organic farming on egg quality and welfare of laying hens. In: XII European Poultry Conference, Verona. p. 10-14. 2006.







FÓRUM  
NACIONAL DE  
PROTEÇÃO E  
DEFESA ANIMAL

TINY  
BEAM  
FUND

