

# Analysis of chicken egg shell alterations

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Poultry farming is one of the most important livestock sectors in Spain, where about 210 eggs are consumed per person per year, a fact that reflects the great social importance of this food. The consumer is more and more aware of the quality and food safety of the products.

CENSUS OF HENS BY BREEDING SYSTEM IN SPAIN EVOLUTION 2007-2016				
YEAR	CAGE	IN SOIL	CAMP	ECOLOGICAL
2007	45.163.809	754.375	805.800	96.871
2010	44.225.696	1.465.696	860.532	39.924
2013	35.686.441	953.714	1.640.509	128.116
2016	40.534.923	1.053.315	1.756.462	367.276

Source: own elaboration based on MAPAMA data (2016)

The quality of the egg is determined by the control of its internal quality and by the absence of external defects on the shell. The alterations of the shell will depend on several factors: age of the hen, handling and situations of stress, nutrition, pathologies. These factors are going to have an influence on the external appearance of the egg and on its food security, which, in short, can mean its withdrawal from the consumption chain.



Large breaks. small breaks. cracks

The quality of the eggshell is based on different factors: texture, color, shape, cleanliness and strength. The shell should be soft, clean and free of tears, even in color, shape and size.

The following most frequent alterations are considered: large breaks (due to large impacts or fragile shell impacts, frequency between 1 and 5%), longitudinal microcracks (cracks not visible, can vary between 1 and 3%), cracks in star (produced by impacts, frequency between 1 and 2%), shell-less eggs (between 0.5 and 6%); rough eggs (frequency between 0 and 1%), wrinkled eggs (incidence between 0 and 2%), ringed eggs (between 1 and 9 %), dirty eggs of blood, feces or by cage markings.



Wrinkled eggs



Shell-less eggs



Ringed eggs



Dirty eggs

References: Couetts J.A., Wilson G.C. Optimum Egg Quality: A practical approach. Sheffield (Great Britain): 5M Publishing, 2007

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