

Pocket Guide

**Hatching
Egg Shell
Quality**

Assessing
Abnormalities





HATCHING EGG SHELL QUALITY: Floor Eggs

Causes	Solutions
Insufficient nest space	Allow 4 birds per nest or 40 birds per linear meter (12 birds per linear foot) of nest space
Birds are not using nest boxes	Introduce perches at 28d in rear Ensure that there are no barriers to the nests, such as feeder or drinker lines Have a suitable perching rail on nest boxes Uniform light distribution of 60 lux (6 foot candles) or more Walk the house frequently (6-12 times per day) to collect floor eggs; frequency can be reduced after peak
Birds are cautious of nests with electrical charges	Ensure all electrical equipment is properly maintained
Aggressive behavior; birds fighting for nest space due to inappropriate stocking density	Bird density should be 3.5-5.5 birds per m ² (2.0 - 3.1 ft ² /bird)
Birds are having to choose between eating and going to the nest	Feeding times should be 30 minutes after lights on or 5-6 hours after lights on Ensure correct feeder space of 15 cm (6 in)/bird

- **Very high risk of bacterial contamination.**
- **Moderate risk of reduced hatchability.**



HATCHING EGG SHELL QUALITY: Blood on the Shell

Causes	Solutions
Birds display signs of prolapse or damage to the cloaca due to sexual immaturity or over-stimulation	Use recommended lighting and feeding programs
Aggressive behavior	Use recommended stocking densities Ensure proper feeder space Male to female ratio – too many males may cause over-mating and damage to the females
Birds are laying first eggs too early	Use recommended lighting and feeding programs

- **Low risk of contamination.**
- **Low risk to hatch.**

HATCHING EGG SHELL QUALITY: Small Eggs



HATCHING EGG SHELL QUALITY: Small Eggs

Causes	Solutions
Moving birds too early to open sided houses	Delay transfer or use blackout or brownout curtains Birds should not be transferred before 18 weeks
Lighting too early	Delay transfer Delay light stimulation until birds are sexually mature
Poor flock uniformity	Use flock grading to establish a CV of less than 10%
Uneven egg size due to poor feed distribution	Ensure that feed is distributed evenly throughout the house and that there is sufficient feeder space

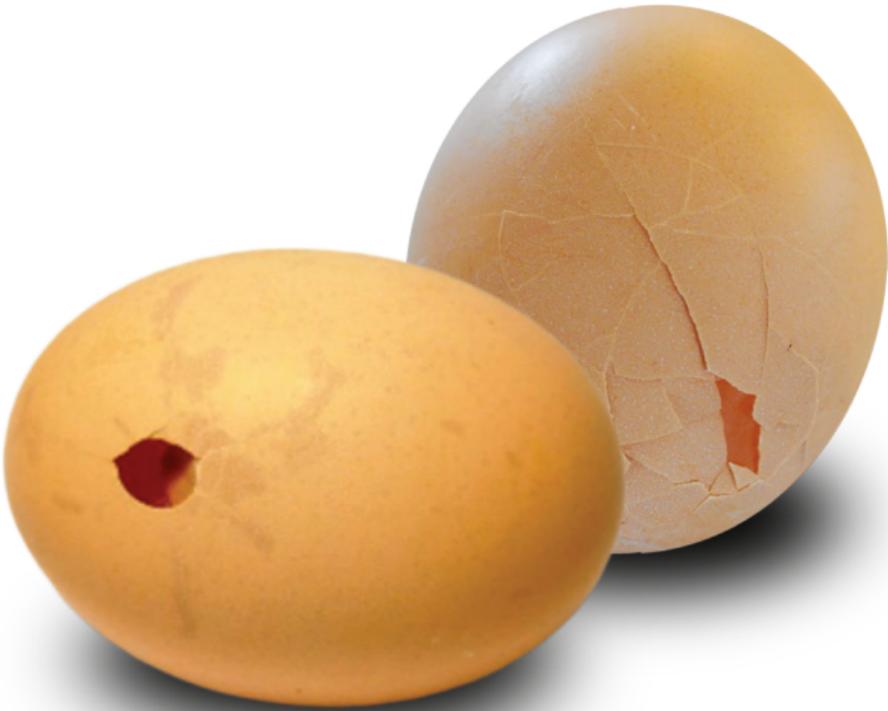
- **Low risk of reduced hatch.**
- **Results in small chicks and reduced broiler performance.**



HATCHING EGG SHELL QUALITY: Fecal Contamination

Causes	Solutions
Nests are not clean	Ensure the nesting material is changed or topped up on a regular basis – at least every 10 days Nest mats should be cleaned regularly - typically every 6 weeks
Infrequent egg collection	Collect eggs at least 4 times a day
Automatic egg collection systems are contaminated with fecal material	Clean or sanitize egg collection belt regularly – at least weekly
Feed contaminated with drugs or toxins	Monitor feed samples for contaminants (e.g. sulphur drugs and mycotoxins)
Water sodium level is not correct	Monitor water quality to maintain a level of 50-300 ppm depending on the chloride level
High dietary fiber content in the feed	Monitor the amount and type of fiber used in the feed

- **Moderate risk of contamination.**
- **Moderate effect on hatch.**



HATCHING EGG SHELL QUALITY: Cracked or Punctured Eggs

Causes	Solutions
Automatic egg collection/ packing system is causing cracks	Check for rough transfer points within the automatic collection/ packing system
Too many birds per nest box	Allow 4 birds per nest or 40 birds per linear meter (12 birds per linear foot) of nest space
Mechanical nests are not run often enough	Run mechanical nests at least 3 times per day to ensure eggs do not collect in the nests
Rough handling after egg collection	Be gentle when transporting eggs on the farm

- **High risk of contamination.**
- **Unlikely to hatch.**



HATCHING EGG SHELL QUALITY: Abnormally Shaped or Wrinkled Eggs

Causes	Solutions
Possible influence of disease	Check for diseases such as Newcastle Disease (ND), Infectious Bronchitis (IB) and Egg Drop Syndrome (EDS)
Incorrect vaccination program for the area	Ensure that the proper vaccination program is being followed for the specific area
Good biosecurity is not being practiced	Train employees in good biosecurity practices such as implementing foot baths, wearing clean or disposable coveralls, being aware of visiting houses with older birds and then visiting younger birds, washing hands and complying with shower policies

- **Unlikely to hatch.**



HATCHING EGG SHELL QUALITY: Thin Shelled or Shell-less Eggs

Causes	Solutions
Feed nutrient levels are incorrect	Take feed samples and analyze for levels of Calcium, Phosphorus, and Vitamin D
Possibility of disease	Check for diseases such as Mycoplasma, ND, AI (Avian Influenza), EDS, and IB
Large egg size	Ensure correct lighting and feeding programs are being used

- **Unlikely to hatch.**



HATCHING EGG SHELL QUALITY: Double Yolk Eggs

Causes	Solutions
Lighting program inside the laying house is not appropriate	Use recommended lighting and feeding programs
Light stimulation has occurred too early	Delay transfer Delay light stimulation until birds are sexually mature
Overfeeding into peak	Follow the recommended feeding program

- **Unlikely to hatch.**



HATCHING EGG SHELL QUALITY: Pale or White Eggs

Causes	Solutions
Possible influence of disease	Check flocks for signs of IB, ND, Mycoplasma, EDS, AI, and Avian Pneumovirus (APV) and monitor titer levels throughout production Follow the recommended vaccination program
Excessive flock disturbance	Maintain recommended male:female ratio Maintain recommended stocking density Ensure recommended feeder and drinker space
Feed contamination (deflourinated phosphorous, Nicarbazine)	Monitor feed samples Prevent cross-contamination in the feedmill Additional Vitamin C

- **Low risk to hatch from pale eggs.**
- **Moderate risk to hatch from white eggs.**



Causes	Solutions
Calcium levels in the diet are too high	Check calcium levels in the diet and ensure that recommendations are followed
Possible influence of disease	Check flock for signs of IB and monitor titer levels of IB throughout production
Defective shell gland	Unknown

- **Low risk to hatch depending on the degree of calcium deposits.**



Causes	Solutions
Older age flocks	Keep the flock age as low as economically possible
Excessive flock disturbance	Minimize activity and loud noises around the laying house
Improper lighting program being used	There should be no sudden increases in daylength when birds are coming into lay
Incorrect stocking density	Always follow the recommended stocking densities, especially as the birds age. Overcrowding may cause undue stress and aggression
Possible influence of disease	Use a recommended vaccination program and monitor the flock for IB

- **Unlikely to hatch.**



HATCHING EGG SHELL QUALITY: Mottled Shell Eggs

Causes	Solutions
Slight separation of the underlying shell membrane from the shell itself	Unknown

- **No effect on hatch.**

For further information consult the Ross Parent Stock Handbook and current breed nutrition specifications.



Every attempt has been made to ensure the accuracy and relevance of the information presented. However, Aviagen accepts no liability for the consequences of using the information for the management of chickens.

For further information please contact your local Technical Service Manager.

Newbridge
Midlothian, EH28 8SZ
Scotland, UK

t. +44 (0) 131 333 1056
f. +44 (0) 131 333 3296
infoworldwide@aviagen.com

Cummings Research Park
5015 Bradford Drive
Huntsville, Alabama 35805, USA

t. +1 256 890 3800
f. +1 256 890 3919
info@aviagen.com

www.aviagen.com