

# 20 COMMON EGG SHELL QUALITY PROBLEMS



## Pale-shelled Eggs

The degree of brown color in the egg shell is determined by the quality of deposited pigment in the cuticle.

### Causes:

- Infectious bronchitis
- Bird age (older hen)
- High stress in the flock
- Egg Drop Syndrome 76
- Use of chemotherapeutic agents (i.e. sulfonamides and nicarbazin)



## Lilac Eggs/Pink Eggs

The egg appears to be pink or lilac due to the association between the cuticle and an extra calcium layer.

### Causes:

- Excess calcium in the feed



## Dirty Eggs

If the egg shell is stained by feces, it is important to avoid feed ingredients which cause wet and sticky droppings.

### Causes:

- Wet droppings
- Large amounts of indigestible compounds in the feed
- Poor gut health
- Electrolyte imbalance/saline water



## Blood Stained Eggs

Usually from pullets in early lay, eggs are contaminated by smears of blood from a prolapsed cloaca, vent pecking, or cannibalism.

### Causes:

- Overweight pullets
- Disease: Avian Influenza NDV, infectious bronchitis, Egg Drop Syndrome 76
- Inadequate nutrition: Calcium, phosphorus, manganese, or vitamin D3
- Poor hygiene: Cage, trays, belt pick-up system



## Shell-less Eggs

Laid without a shell layer, these eggs are protected only by the shell membrane.

### Causes:

- Immature shell gland
- Disease: Avian Influenza NDV, infectious bronchitis, Egg Drop Syndrome 76
- Inadequate nutrition: Calcium, phosphorus, manganese, or vitamin D3



## Soft-shelled Eggs

Laid with an incomplete shell, only a thin layer of calcium is deposited on the shell membrane.

### Causes:

- Excessive phosphorus consumption
- Heat stress
- Pullets coming into lay
- Sudden, large increases in day length
- Poor hygiene: Cage, trays, belt pick-up system



## Cracks

This problem includes hair line cracks, star cracks, or large cracks that result in a hole in the shell.

### Causes:

- Heat stress
- Saline water
- Bird age (older hen)
- Inadequate nutrition: Calcium and vitamin D3
- Mycotoxins



## Corrugated Eggs

Characterized by a very rough, corrugated surface, these eggs are produced when plumping is not controlled and terminated.

### Causes:

- Heat stress
- Saline water
- Bird age (older hen)
- Poor nutrition, especially calcium and vitamin D3
- Mycotoxins



## Wrinkled Eggs

Eggs with thinly creased and wrinkled surfaces.

### Causes:

- Stress
- Infectious bronchitis
- Defective shell gland
- Overcrowding



## Pimpled Eggs

Classified by small lumps of calcified material on the egg shell, the severity of pimples depends on the foreign material present during the calcification process.

### Causes:

- Bird age
- Strain of bird
- Inadequate nutrition



## Calcium Coated Eggs

An extra layer of calcium can be seen all over the egg or on just one end.

### Causes:

- Defective shell gland
- Disturbances during calcification
- Excess calcium in the diet



## Calcium Deposits

These eggs are classified by white, irregularly shaped spots deposited on the external surface of the shell.

### Causes:

- Defective shell gland
- Disturbances during calcification
- Excess calcium in the diet



## White/Brown Speckled

With smaller speckles than calcium deposits, these eggs may be laid down before or after the cuticle is formed.

### Causes:

- Defective shell gland
- Disturbances during calcification
- Excess calcium in the diet



## Mottled Shells

When placed in front of a light, the translucent areas appear mottled or glassy as a result of the shell's failure to dry out quickly.

### Causes:

- High humidity in the shed
- Disease and mycotoxins
- Manganese deficiency
- Overcrowding



## Body-Checked Eggs

The egg is cracked in the shell gland pouch and then repaired before lay.

### Causes:

- Incorrect lighting
- Stress
- Bird age (older hen)
- Overcrowding



## Broken and Mended

A diagonal break occurs during formation and is mended again before lay.

### Causes:

- Stress during calcification



## Misshapen Eggs

These eggs are too small or large, round instead of oval, or differ from normal shapes.

### Causes:

- Immature shell gland
- Disease: Avian Influenza NDV, infectious bronchitis, Egg Drop Syndrome 76
- Stress
- Overcrowding



## White Banded Eggs

If two eggs come into contact with each other in the shell gland pouch, normal calcification is interrupted. The first egg retained in the pouch will have an extra layer of calcium seen as the white band marking.

### Causes:

- Stress
- Changes in lighting



## Slab-sided Eggs

The second egg that enters the shell gland pouch is not as complete as the first egg and is flattened where the eggs made contact.

### Causes:

- Stress
- Changes in lighting
- Disease

## TUBULAR SHELL GLAND

A process called "plumping" occurs where water rich with electrolytes enters the albumen and the formation of the mammillary cores commence.

5 hours

## SHELL GLAND POUCH

The egg shell is formed and the pigmentation process occurs.

15 hours



The process of egg formation in a hen's oviduct and the time an egg spends in each section

## OVARY (left)

The ovulation process, begins with the release of the yolk (or ova) into the left oviduct.

## INFUNDIBULUM

The yolk is captured and the formation of the perivitelline membrane and chalazae occurs. In breeder birds, fertilization occurs in this section.

15 minutes

## MAGNUM

The egg white protein (albumen) is produced here.

3 hours

## ISTHMUS

The isthmus produces the fibers that make up the inner and outer shell membranes.

1 hour

## VAGINA/ CLOACA

The egg is laid via this section.

1 minute

Acknowledgement: Some information has been extracted from the book "Egg Shell Quality Problems: Causes and Solutions" published by University of New England, Australia. We thank the Australia Egg Corporation Limited and the University of New England for their permission to use the oviduct photo.

