



Backyard Egg Production

A how-to guide for safe, healthy hens



The way that poultry, including backyard poultry, is managed and regulated is different in each State and Territory. You should familiarise yourself with the food safety, biosecurity, environmental and animal welfare regulations and processes in your State or Territory and always comply with these.

For more information follow the relevant links below:

Australian Capital Territory

www.accesscanberra.act.gov.au/s/article/keeping-poultry-in-the-act-tab-overview

New South Wales

www.dpi.nsw.gov.au/animals-and-livestock/poultry-and-birds

Queensland

www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/livestock/poultry

South Australia

pir.sa.gov.au/biosecurity/animal_health/poultry

Tasmania

www.nre.tas.gov.au/biosecurity-tasmania/animal-biosecurity/animal-health/poultry-and-pigeons/biosecurity-poultry-and-pet-birds

Victoria

www.agriculture.vic.gov.au/livestock-and-animals/poultry-and-eggs

Western Australia

www.agric.wa.gov.au/livestock-animals/livestock-species/poultry-birds

Please note, sale and preparation of eggs are outlined in the Australian and New Zealand Food Standards Code 4.2.5, which includes handling and quality guidelines for eggs. Access the Code at www.foodstandards.gov.au/code/Pages/default.aspx

For more information on poultry care, nutrition, egg recipes, posters and more, visit the Australian Eggs website: www.australianeggs.org.au

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Keeping egg layers

The purpose of this booklet is to help you understand and improve the quality of eggs produced by your backyard chickens. This can be achieved through improvement in overall practices to maximise nutrition, husbandry, health, welfare, and biosecurity practices for your flock.

The process of raising a chicken to produce eggs is not as easy as it seems. This guide will help you make sure your chickens are healthy, eating a nutritious diet, and producing high quality eggs that are safe for human consumption.



Biosecurity

Biosecurity is an extremely important factor in raising healthy backyard hens in a safe environment. It is the system used to prevent and control the introduction of infectious diseases that negatively affect but also decrease egg production. The aim is to stop the introduction of infectious diseases to birds and prevent the spread of diseases from infected areas to uninfected areas.

If your animals begin to show signs of disease, it is important to have management practice in place to reduce the risk of disease impact. Ensure you follow a disease management protocol.

PROCEDURE	PRACTICE
ISOLATION	Isolate from the source of infection e.g.: 1. Other farms. 2. Wild birds, people, pets, rodents, vehicles, equipment, feed bags and other poultry.
SELECTION	Select for healthy birds through a reputable breeder.
VACCINATION	Ensure the correct program for your hens.
SANITATION	Quarantine new and sick birds and clean the hen's environment regularly.
INVESTIGATION	Observe and report changes in the flock. Investigate and act on this as soon as possible. Use routine monitoring if necessary (e.g., serology).
MEDICATION	Medicate for prevention (e.g., multivitamins and electrolytes) and when a disease is present.
ERADICATION	Remove the disease causing organism.

SAFE & HEALTHY HENS CHECKLIST

INTERNAL & EXTERNAL FACTORS

Recommendations to prevent eggshell problems:

- Well-formulated diet, fed to the correct age group.
- Appropriate selection of strains of birds.
- Regulate and minimise environmental factors e.g. temperature, ventilation, water availability, noise, handling, and lighting.
- Good management practices and disease protocols related to Isolation, genetic selection, vaccination and sanitation.

Recommendations to prevent internal egg problems:

- Consider the age of hen
- Appropriate diet
- Egg storage time and temperature
- Prevention of disease
- Prevention of ingestion of contaminants.



What is a Good Egg?

The egg and eggshell quality are influenced by the condition of the freshly laid egg, plus the time period and handling procedures that the egg experiences prior to storage and eating.

When describing an egg, it can be broken down into internal factors and external factors. Knowing what the function of each of these are and how to know if there is a problem is important. You can place your eggs in front of a light source to easily view the internal and external features of your egg, checking for any irregularities, issues with the shell and even if the egg is fertilised. This process is called candling.

What should I be looking for in my eggs?

Everything visible on the outside of the egg is an external feature a healthy egg will be an oval shape, have a smooth and strong egg, and be a uniform colour. Further information on external egg quality can be found in *Table 1*.

Good quality chicken eggs have specific characteristics:

External factors: clean oval shape, smooth strong shell and uniformity of shell colour.

Internal factors: yolk colour, yolk centrally held, firm and round, distinct thick inner albumen.

Internal Egg Factors

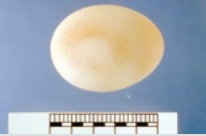

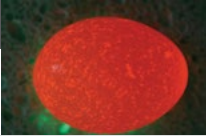
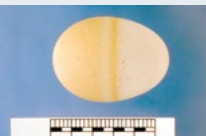

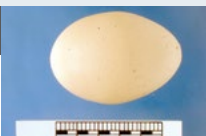

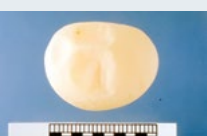







Everything visible on the inside of the egg is in internal factor. You should look at the yolk and albumen as key indicators of hen health. The albumen should be white and feel thick. The yolk should be in the centre of the egg, be round and feel firm. The yolk colour is an important indicator of nutrients in a hen's diet and can be measured on a Roche scale, by a colourimeter or a yolk fan.



Measurement of yolk colour using a yolk colour fan

Table 1. External and eggshell quality problems

POSSIBLE CAUSE ORIGINATION KEY – M = MANAGEMENT D = DISEASE F = FEED

<p>EGGSHELL DEFECT</p> <p>White banded eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Slab-sided eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Translucent eggs</p> 
<p>POSSIBLE CAUSES</p> <p>Stress from disturbances M</p> <p>Changes in lighting M</p> <p>Infection D</p>	<p>POSSIBLE CAUSES</p> <p>Stress from disturbances M</p> <p>Changes in lighting M</p> <p>Infection D</p>	<p>POSSIBLE CAUSES</p> <p>Structural irregularities M</p> <p>High humidity in the shed M</p> <p>Overcrowding M Disease D</p>
<p>EGGSHELL DEFECT</p> <p>Calcium coated eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Misshapen eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Body-checked eggs</p> 
<p>POSSIBLE CAUSES</p> <p>Stress from disturbances M</p> <p>Incorrect level of calcium in the diet F</p> <p>Defective shell gland D</p>	<p>POSSIBLE CAUSES</p> <p>Immature shell gland, disease D</p> <p>Stress from disturbances M</p> <p>Bird age M Overcrowding M</p>	<p>POSSIBLE CAUSES</p> <p>Incorrect lighting M Stress M</p> <p>Bird age M Overcrowding M</p>
<p>EGGSHELL DEFECT</p> <p>Cracked eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Soft-shelled eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Pimpled eggs</p> 
<p>POSSIBLE CAUSES</p> <p>Heat stress M</p> <p>Saline water M</p> <p>Bird age M</p> <p>Poor nutrition F</p>	<p>POSSIBLE CAUSES</p> <p>Immature shell gland, Inadequate nutrition F</p> <p>Saline water M Stress M Bird age M</p> <p>Diseases like EDS and AI D</p>	<p>POSSIBLE CAUSES</p> <p>Foreign materials during calcification M</p> <p>Bird age M Strain M</p> <p>Nutritional status F Disease D</p>
<p>EGGSHELL DEFECT</p> <p>Calcium deposits</p> 	<p>EGGSHELL DEFECT</p> <p>Corrugated eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Wrinkled eggs</p> 
<p>POSSIBLE CAUSES</p> <p>Defective shell gland, disturbances that cause stress during calcification M</p> <p>Incorrect speckled and nutrition such as excessive calcium in the feed F</p>	<p>POSSIBLE CAUSES</p> <p>Defective shell gland and disease D</p>	<p>POSSIBLE CAUSES</p> <p>Stress M</p> <p>Defective shell gland, over crowding M</p> <p>Nutritional deficiencies such as magnesium deficiency F</p> <p>Diseases such as IB and EDS D</p>
<p>EGGSHELL DEFECT</p> <p>Brown speckled eggs</p> 	<p>EGGSHELL DEFECT</p> <p>White speckled eggs</p> 	<p>EGGSHELL DEFECT</p> <p>Lilac eggs</p> 
<p>POSSIBLE CAUSES</p> <p>Defective shell gland, disturbances that cause stress during calcification M</p> <p>Incorrect speckled and nutrition such as excessive calcium in the feed F</p>	<p>POSSIBLE CAUSES</p> <p>Defective shell gland, disturbances that cause stress during calcification M</p> <p>Incorrect speckled and nutrition such as excessive calcium in the feed F</p>	<p>POSSIBLE CAUSES</p> <p>Defective shell gland, disturbances that cause stress during calcification M</p> <p>Incorrect speckled and nutrition such as excessive calcium in the feed F</p>

A guide to addressing eggshell quality problems

As you can see from the information below, the best way to improve egg quality is to maintain effective and sustainable **biosecurity, husbandry, nutrition** and **welfare practices**. The following table will provide you with the information you need to ensure your backyard layer practices produce quality eggs.

EGGSHELL QUALITY PROBLEMS	POSSIBLE CAUSE	SOLUTION
<ul style="list-style-type: none"> ■ Shell thickness ■ Size ■ Weight ■ Colour ■ Predisposition to a specific defect such as shell-less or soft-shelled eggs 	<p>The influence of genetics and strain</p> <p>The information held within the genes of the animal is responsible for controlling its basic appearance and metabolic functions.</p>	<p>Breeding programs that select for desired eggshell quality characteristics are the only method of changing the genetic influence.</p>
<ul style="list-style-type: none"> ■ Egg weight increases ■ Shell colour generally becomes lighter ■ Shell breaking strength decreases ■ Shell thickness may decline ■ Increased incidence of soft-shelled and shell-less eggs ■ Increased number of cracks 	<p>Hen age</p> <p>As the bird ages, their metabolic processes change slightly and, as a result, so do their dietary requirements.</p> <p>The bird's ability to produce as many eggs and eggs of the same quality decreases over time.</p>	<p>Catering for changed dietary needs does help but will not solve the problem completely.</p> <p>A well-known solution is the practice of induced moulting.</p>
<p>Changes in eggshell colour</p> <p>If the change in pigmentation is the result of stress, other eggshell defects may also be present in the flock.</p>	<ul style="list-style-type: none"> ■ Age ■ Disease ■ Medication ■ Stress ■ Defective shell gland 	<p>Check for any changes in weather, visitors, or any signs of a disease. Once you have isolated the cause, address the issue.</p> <p>There is no solution to the decline in shell colour as the bird ages.</p>
<ul style="list-style-type: none"> ■ Bodychecked and misshapen shells as a result of the egg being squeezed in the shell gland by contraction of the uterine muscles during the initial fright ■ Calcium-coated eggs are also common 	<p>Stress</p> <ul style="list-style-type: none"> ■ Unfamiliar objects (other animals) ■ Unfamiliar actions ■ Food deprivation ■ Extreme temperature ■ Overcrowding 	<p>A management strategy to minimise the cause and the amount of stress.</p>
<ul style="list-style-type: none"> ■ Consume less food and produce fewer eggs ■ Overall reduction in eggshell quality that is displayed in a variety of eggshell defects ■ Smaller eggs and lighter in colour 	<p>Temperature Stress</p> <p>There is a range of ambient temperatures across which the rate of metabolism of the hen remains relatively constant. If the ambient temperature falls below or above this range, metabolic rate increases. When the metabolic rate increases, so does the amount of heat produced by the hen. Hens experience stress in these situations because they are trying to maintain a constant body temperature to function normally.</p>	<ul style="list-style-type: none"> ■ Mist spraying ■ Evaporative cooling ■ Increased ventilation/fa ■ Water available for head immersion ■ Dietary manipulation including both the type of food and time of feeding ■ Dietary supplements such as sodium zeolite ■ Cool/chilled or carbonated drinking water
<ul style="list-style-type: none"> ■ Decreased shell thickness ■ Increase in the number of thin/shell-less and cracked shells 	<p>Imbalance of calcium to phosphorus</p> <p>The levels of phosphorus and calcium absorbed into the body are closely related. The absorption of either compound is directly influenced by the concentration of the other.</p> <p>The balance of calcium to phosphorus is different between pre-layer and layer diets and changing too early may result in the development of kidney damage.</p>	<p>Ensure that the diet contains the correct balance of calcium to available phosphorus.</p>

EGGSHELL QUALITY PROBLEMS	POSSIBLE CAUSE	SOLUTION
<ul style="list-style-type: none"> ■ The size of the egg ■ Shell thickness ■ The number of thin/shell-less eggs ■ Number of cracked shells 	<p>Inadequate calcium</p> <p>The amount of calcium present is influenced by environmental conditions, the physiological state of the bird, age and the diet. The cause of inadequate calcium is usually low levels in the feed.</p>	<p>Ensure that the diet is adequate in calcium, and that the calcium is provided at the appropriate particle size.</p>
<ul style="list-style-type: none"> ■ Decreased egg production and egg weight ■ Hatchability of fertile eggs is reduced 	<p>Mycotoxins in the feed</p> <p>Incorrect methods of harvesting, storage, processing and handling of raw feed ingredients and finished feeds can lead to the presence of fungi and mycotoxins. In particular, hot and damp conditions provide the perfect environment for fungal growth.</p>	<p>Maintaining dry feed with only fresh uncontaminated ingredients reduces the risk of fungal growth and therefore the presence of mycotoxins. Emphasis must also be placed on the condition of your silos. Ensure that proper turnover is achieved so that feed is not retained in the silo for an excessive amount of time.</p>
<ul style="list-style-type: none"> ■ An increase in plasma calcium and phosphorus. ■ The number of damaged and shell-less eggs ■ Decrease in shell weight, thickness, shell calcium and breaking strength ■ Decrease in the number of eggs suitable for setting 	<p>Saline drinking water</p> <p>The salts that have been shown to cause problems with eggshell quality are sodium chloride, potassium chloride, calcium chloride and copper sulphate.</p>	<p>Desalination of the water. Supplementation with ascorbic acid and supplementation with a zinc compound.</p>
<ul style="list-style-type: none"> ■ Increased number of thin, weak, fragile and cracked shells ■ Increased shell defects including rough shells, discolouration of the shell and calcium splashes or coatings ■ Loss of shell colour ■ Increased bacterial load on the eggs, soiled/dirty eggs ■ Bird behaviour such as feather pecking, cannibalism, thin eggshells and broodiness 	<p>Alternative egg production systems</p> <ul style="list-style-type: none"> ■ Hierarchy development ■ Bullying by more dominant members. ■ Insufficient and/or incorrect nest sites/ space ■ Increased freedom ■ Lack of separation of the egg from the hens' excreta 	<ul style="list-style-type: none"> ■ Calcium supplement or calcium enriched feed ■ Minimising stress ■ Biosecure fences ■ Shutting the flock in the sheds at night. ■ A specially trained dog to protect the flock ■ Adequate number of nest boxes and nesting space ■ Correct duration of light in a uniform manner ■ Training the birds not to nest in deep litter or on slats ■ Culling any continuously broody hens and breaking up broody hens using broody pens. ■ Frequent egg collection
<ul style="list-style-type: none"> ■ Partial or total loss of egg production ■ Different eggshell defects or none depending on disease 	<p>Disease</p> <ul style="list-style-type: none"> ■ Pathogen ■ Viruses ■ Chlamydia ■ Mycoplasma ■ Bacteria ■ Fungi ■ Protozoa ■ Internal and external parasites ■ Genetic influence ■ Environmental pressures 	<ul style="list-style-type: none"> ■ Maintaining good hygiene ■ Separating young birds from older birds ■ Supplying birds with dry/fresh/ uncontaminated feed ■ Strict quarantine measures ■ Vaccination

SAFE & HEALTHY HENS CHECKLIST

MANAGEMENT

Rearing Period

Rearing conditions are very important and problems in rearing may affect the birds throughout their laying life. Rearing conditions may also affect the suitability of birds for different production systems. Consider implementing the following for rearing:

- Feeding regime
- Lighting program
- Vaccination program

Lay Period

Shell quality problems may be caused by a variety of factors including:

- Feeding regime
- Temperature stress (temperatures below 13°C or above 29°C).
- Unfamiliar personnel
- Storms and other disturbances
- Predators in the vicinity
- Vaccination programs
- Lighting
- Age of birds

Getting started

What are the best egg laying chickens?

The best egg laying chickens in Australia include the Rhode Island Red chicken, which is perhaps among the most famous breeds of laying hens on the planet. Also, the Isa Brown, known for its affectionate and charming appearance, is known to produce as much as 350 eggs in a year.

There are more than 400 breeds of chickens in Australia, so you need to decide on what type of chicken you want. Think about:

- Do you want chickens solely for their eggs?
- Are your chickens to be friendly pets for your children?
- Will they thrive in your local climate?

How many egg laying chickens should I keep?

Chickens are social birds so you should have more than two birds: three or four is a good minimum number. Council regulations and your available space will limit most residential chicken owners.

Chickens need their own space and overcrowding will cause problems, so think carefully about how much available space you have. Although, chickens are highly social flock animals and should not be kept without a companion.

Different breeds of chickens or different ages groups can usually be kept together. It is normal for hens to peck each other when establishing a pecking order, which is particularly noticeable when new additions are added to a flock and during spring. Occasionally a hen will need to be separated from the rest of the flock if it has been particularly singled out and injured.

Council Regulations

It is important that you check with your local council about the regulations for keeping chickens in your area prior to starting your flock. Most suburban councils will limit the number of birds that you can keep and will not allow residences to keep a rooster. Most rural and semi-rural areas will allow households to keep poultry for domestic purposes without restrictions.



Husbandry practices for excellent eggs

As a chicken owner, you have the responsibility of controlling the environment in which your birds live. You need to ensure all their husbandry needs are met, they are protected from weather, and they have a safe place to perch and lay. Birds are sensitive to disruption in their environment, which results in stress. To minimise environmental stress, consider:

- Some birds become stressed with new handlers and even different clothing. It is important to train others on animal handling, keep them calm and only handle birds when necessary (e.g., egg collection).
- Predation is also a major cause of stress for your hens, ensure your enclosure minimises the risk of predator entry and that birds have a safe resting place at night.
- Layer hens become stressed in temperatures outside of 13-29°C. Consider the temperature range when designing your coop to minimise temperature fluctuations.

Chicken Coop and Run

Keeping your chickens safely within your well-fenced backyard is imperative for four reasons:

- To stay within the law
- Protecting your chickens from predators
- Protecting your chickens from disease and other biosecurity threats
- Providing a safe, stress-free environment to ensure quality egg production.

You must create a coop for the birds to seek shelter and perch in at night. The coop must be predator and weatherproof and can be a converted shed, custom building, or a flat pack purchased from a pet store. Your birds will need a perch to sleep on set at around 30cm off the ground and straw nesting boxes to lay their eggs in. Straw is the best choice of padding for a nesting box as it is easily replaced and keeps eggs clean.

SAFE & HEALTHY HENS CHECKLIST

BIOSECURITY

- Always wash hands after handling chickens or eggs
- Keep chickens away from ponds and rivers as water birds are known carriers of avian influenza
- Ensure that wild birds cannot access the chickens' feed or water
- Keep other animals like domestic geese or turkeys, well away as they can bring disease
- Use safe water sources such as town water, quality bore water or sanitised surface water for chickens to drink
- Provide a secure rodent-proof enclosure for poultry, as rodents are known carriers of disease
- Any kitchen scraps fed to chickens must be meat and animal free
- Check hens regularly for anything unusual such as coughing, diarrhoea or swollen eyes
- If a chicken is showing signs of sickness, isolate the sick animal from others and seek veterinary advice in a timely manner



SAFE & HEALTHY HENS CHECKLIST

BIRD BEHAVIOUR

Always monitor bird behaviour to maintain a healthy environment and their welfare.

- Watch and listen carefully
- Make sure birds do not pack into shed corners
- Try to find the cause of abnormal behaviour and fix it if possible
- It may be necessary to postpone vaccination if a serious problem can't be fixed
- Identify and separate birds with serious problems

Penning Birds

- Never overcrowd a pen.
- Check for suffocation and overheating and adjust the number of birds in the pen.
- Position and size of pens vary according to the age of the birds, the weather and the number of catchers.
- Minimise bird-handling time to reduce bird stress
- Choose a stable position on level, dry litter or concrete. Always avoid wet patches of litter.
- Reduce light intensity where possible to keep birds calm.
- If wire pens are used, cover the wire with hessian as this reduces the risk of birds packing into corners.

Re-using old egg cartons is a disease risk

Farm fresh eggs can become contaminated with *Salmonella* before their shells even develop. The bacteria on and within eggs can pass into a cardboard egg carton and, from there, onto the next set of eggs placed inside. Re-using cartons also means the expiration and packing dates on cartons will not be correct for the new eggs.



Nutrition practices for edible eggs

The diet of your animals is important at all stages of life – their feed needs to be high quality and formulated for their needs to ensure bird health and egg quality. Nutrition problems can occur because of a deficiency in nutrients, an excess of nutrients or an imbalance. Animals fed inappropriate diets, such as just food scraps will have many health issues, and their egg production and shell quality will decrease. You can use shell quality or production changes as a good early sign that bird nutrition is lacking.

You need to consider the age, weight, activity level and laying frequency of your bird to ensure you have the correct diet for them that contains:

- Correct energy content
- Protein and amino acids
- Fatty acids (e.g., linoleic acid)
- Calcium and Phosphorous (and the correct ratio for your bird)
- Vitamins (including Vitamin D for Calcium absorption and Vitamin C and E for stress)
- Trace elements (including Copper, Zinc and Manganese for shell membrane development)
- Enzymes (e.g., phytase, xylanase).

Also consider the amount, the particle size for your bird, the number of whole grains and fresh food, as well as when you should feed your birds.

Water

Fresh drinking water needs to be always available. You need to be careful of salt content in water, organic matter in water, microbiological contamination, and temperature extremes on water. It is best to provide water in a covered container that reduces the risk of contamination, and this water container should be cleaned daily.

SAFE & HEALTHY HENS CHECKLIST

NUTRITION

Feed

- Adequate feed always available
- If there has been a recent change in feed, check for the following:
 - The formulation is correct for your strain and age of bird
 - The formulation is correct for the time of year
 - The diet meets formulated specifications
 - Are premix levels correct?
 - Are calcium levels correct?
 - Does feed contain anti-nutritional factors or toxins?
- If you are mixing your own feed, do you consult with a poultry nutritionist and/or have your feed analysed?

Water

- Fresh drinking water always available
- Is there a problem with your water quality, e.g:
 - Saline drinking water
 - Too much organic matter in the water
 - Has water been effectively sanitised?
 - Microbiological contamination
 - Temperature of the water



SAFE & HEALTHY HENS CHECKLIST

REDUCE PESTS AND DISEASES

- Implement good hygiene and biosecurity to help safeguard against unwanted diseases.
- Always wash your hands after handling chickens or eggs.
- Poultry housing hygiene is critical
- Don't let feed or water become contaminated by faeces or other waste products.
- Avoid visiting places with other birds if you have your own.
- Limit visitors to your chickens or ask visitors to wear clean boots and clothing.
- Avoid contact between your chickens and wild birds.
- Prior to purchase, check which vaccinations the chickens have received.



Welfare practices for keeping eggs in shape

Disease

Animals need to be regularly monitored for signs of disease, the earliest sign of disease can be a drop in production, also monitor for any signs of:

- General disease – lethargy, ill thrift
- Diarrhoea and other faecal irregularities
- Respiratory problems
- Food intake problems (increased or reduced)
- Water intake problems (increased or reduced)
- Issues with feathers and skin
- Obvious issues with eyes and beak
- Discharge from the beak, cloaca, eyes, or ears
- Changes in internal and external features of the egg.

You need to ensure you reduce the risk of disease as much as possible through regular cleaning of the animal's environment, providing protection from both external and internal parasites, promoting biosecurity practices, and vaccinating your birds.

One of the largest risks to your system is bacterial infection, such as *Salmonella*. Bacteria can enter an egg either internally (via infected ovaries or oviducts), or through the shell from the environment.

Vaccination

The age of the birds when vaccinated is critical for most vaccines to work effectively. The first vaccinations are given in the hatchery, then at other stages of the rearing period as required. Birds are sometimes re-vaccinated when they are older (e.g., during lay or moulting).

The method chosen depends on the age of the bird, the cost of the vaccination, the vaccine being used, and on veterinary advice. Do not vaccinate flocks while they are exhibiting clinical signs of disease. Vaccines can be given via:

- drinking water
- sprays (coarse droplet sprays),
- drops or squirts (eye, nasal),
- injection (intramuscular or subcutaneous),
- the egg ('in ovo') in the hatchery
- gel droplet spray in the hatchery.

SAFE & HEALTHY HENS CHECKLIST

REDUCE THE CHANCE OF SALMONELLA IN HENS

To reduce the incidence and spread of *Salmonella*, you must complete a proper shed cleanout after a batch of birds:

1. Remove all feed stock
2. Remove all manure and organic material
3. Apply detergent to remove organic material from surfaces
4. Rinse detergent
5. Apply sanitiser
6. Flush drinker lines with sanitiser
7. Apply insecticide/beetle control product, replace rodent baits
8. Drain and sanitise any cooling pads – Bromide capsule
9. Disinfect egg handling rooms or areas

You should always follow manufacturers instructions and consult a veterinarian before distributing vaccinations to your birds.

Bird-handling

Birds are easily injured if they are not handled correctly:

- Handle birds according to the Welfare Code of Practice
- Do not rush handling activities
- Use smooth, unhurried movements.

Never:

- Handle the bird roughly
- Lift the bird by the neck, head, wing or tail
- Use crates that are not suitable for holding birds
- Tilt a crate with birds in it.

Egg cleaning

To maintain quality of egg production, discard cracked, damaged or heavily soiled eggs.

Lightly soiled eggs should be cleaned with a dry cloth or a tissue.

Never wash your eggs with water as it makes them porous and can enable bacteria on the surface to penetrate and contaminate the egg.



SAFE & HEALTHY HENS CHECKLIST

REDUCE THE CHANCE OF SALMONELLA IN EGGS

Minimise the ability for *Salmonella* to penetrate eggs by:

- Maintaining clean and hygienic egg equipment.
- Reducing factors that increase the level of cracked and dirty eggs.
- Cleaning nest boxes after depopulation.
- Reducing presence of water / moisture.
- Preventing breakage during transport / storage.
- Maintaining cool room temperature, humidity, air flow and stock rotation.
- Not reusing cardboard fillers.
- Discard cracked and dirty eggs.
- Lightly soiled eggs need to be downgraded to “B” grade eggs.

Quality eggs equals quality food

The Australian egg industry has been responding to a series of detections of *Salmonella* Enteritidis (SE) since September 2018. SE is a notifiable disease under state legislation because it causes significant illness in humans and is not considered endemic in commercial poultry in Australia.

Egg Safety Reminders

When handling eggs and egg products:

- Wash hands before and after with soap and water
- Discard any cracked or dirty eggs
- Keep food at the correct temperature range (less than 5°C or greater than 60°C)
- Clean up spillage and sanitise immediately

If eggs are kept out of the refrigerator after laying:

- Less than 2 hours, they must be refrigerated or used immediately.
- Between 2 hours and 4 hours, they must be used immediately and cannot be returned to the refrigerator.

These things can harbour or spread *Salmonella*:

- Insects
- Animals
- Rodents
- Egg washing and handling equipment
- Untreated drinking or cooling water
- Contaminated feed
- Vehicles and equipment
- Handling dead birds and rejected eggs
- Poor hen health
- People
- Debris and waste.

Factors that reduce the presence and spread of *Salmonella*:

- Limiting cross contamination during feed production, storage and transport.
- Source feed that is feed safe accredited, as this certifies if it has been tested for *Salmonella*.
- Use covered feed storage and clean up feed spillage.
- Minimise time between laying & cold storage of eggs and maintain correct temperature.
- Properly train all people who interact with your birds and eggs.
- Keep storage and transport equipment clean.
- Restrict the movement of people, equipment and vehicles into egg laying and handling areas as much as possible.
- Do not source eggs from other farms, this can lead to contamination of your eggs or property.
- Ensure that visitors have had no contact with other poultry, livestock or backyard birds in the previous 72 hours.
- Wild and domestic animals should be kept away from egg laying and handling areas.
- Robust fencing, wildlife deterrents and removal of surrounding bodies of water is critical Any piles of debris or equipment should be removed from housing surrounds as this can harbour rodents and pests.
- Keep any stored manure, dead hens or waste away from the laying flock.
- Footbaths may be used as well as change zones, or less preferably instead of change zones, as a less effective alternative. Brushes or scrapers should be provided to remove organic matter on footwear, prior to using the footbath.
- Vermin and pest bait stations should be used, particularly in areas close to feed and water, and checked weekly. No poultry feed and water should ever be supplied outside the poultry housing.
- Cardboard fillers should be discarded after every single use as they are absorbent and can retain bacteria for prolonged periods. If necessary to re-use, bake at 70°C for 30 seconds to kill any *Salmonella* bacteria. Plastic trays can be cleaned and disinfected but must be completely dried prior to re-use.



FAQs

How does the breed of my chickens impact my eggs?

Genetic differences have a large impact on egg number and quality. You will notice this if a few your eggs are lower quality despite interventions. To ensure best quality eggs it is important to buy your animals from a reputable layer breeder, who selects for egg quality.

Will a larger chicken lay larger eggs?

Egg size is related to hen weight, however a larger hen will have increased dietary requirements and take up more space, so it is important to consider the importance of egg size.

What are the changes in egg production in older hens?

You should expect to see some changes in eggs as your hens age, this can include eggshells cracking, deformation changes and shells becoming lighter. It is important to remember as hens age their diet will need to change. Make sure you are keeping track of egg deformations and using this information to change the diets and conditions of your hens when required.

How does stress impact my hens?

Hens will become stressed when there is an interruption to their routine (e.g., a change in colour of the handler's clothing) or an introduction of something they do not regularly experience (e.g., a threat like a snake or a weather event like a thunderstorm). If a bird experiences prolonged stress this will impact their health, behaviour, and laying.

Why is temperature so important?

Hens require a temperature of 13-29°C to ensure their body is working the right way. When the temperature is above or below this, their bodies become stressed and must use energy to regulate their normal body temperature.

High temperatures will mean your animal eats less and they lose calcium. Hens may pant to help regulate their temperature.

Ensuring hens have protection from cool and hot temperature extremes protects your hens from stress.

What can I feed my hens?

As chickens are constantly producing eggs, their nutritional requirements are high, and it is important they are fed a balanced diet. Changes in egg frequency and quality are great indicators that your hen's diet is not providing them what they need.

Hen diet needs to be considered in terms of energy content, feeding time and micro and macro nutrient content (such as calcium) as well as the cleanliness of the feed provided, avoiding presence of toxins and fungus. It is important you look at providing a diet as recommended for the life stage of your animal and that the diet is formulated by an animal nutritionist.

How much water does my bird need?

Fresh, clean water needs to be always provided to your animal. Water can be helpful to add additional supplements and medication to the diet of your animal, however it is important to make sure the water does not contain high levels of harmful compounds such as zinc and chlorine.



Why are my chickens fighting?

Chickens are social and hold a strong hierarchy within their groups. When the environment for the hen is not suitable, such as when there is overstocking, introduction of new birds and the laying space is not adequate, the dominant hens will attack the submissive hens. It is important to watch these behaviours as it can result in injury and death.

What is a 'broody' hen?

Broodiness is a natural behaviour in hens that occurs when your hen attempts to hatch her eggs. If your hen is broody, she will spend a long time in the nesting box and may become aggressive and protective over her nest site, she may also stop laying.

Why do I have so many cracked eggs?

Cracked shells are normally laid by older hens or hens deficient in calcium. If your hen has recently moulted, their calcium levels will be much lower, so ensure you change their diet to prevent cracks in their eggs. Cracked eggs are more likely to contain harmful bacteria so should not be eaten.

Why do I have so many dirty eggs?

Eggs can be dirty from a dirty environment or because they are laid in an inappropriate area (such as on the floor). It is important that you are careful with these eggs as they are more likely to contain harmful bacteria so should not be eaten.



For more information

The Australian Eggs website has comprehensive information on biosecurity, food safety and hen management. You can find resources such as:

- Biosecurity plan template
- Rodenticide guide
- *Salmonella* risk assessment toolkit
- Egg quality manual
- Pasture selection and management guide

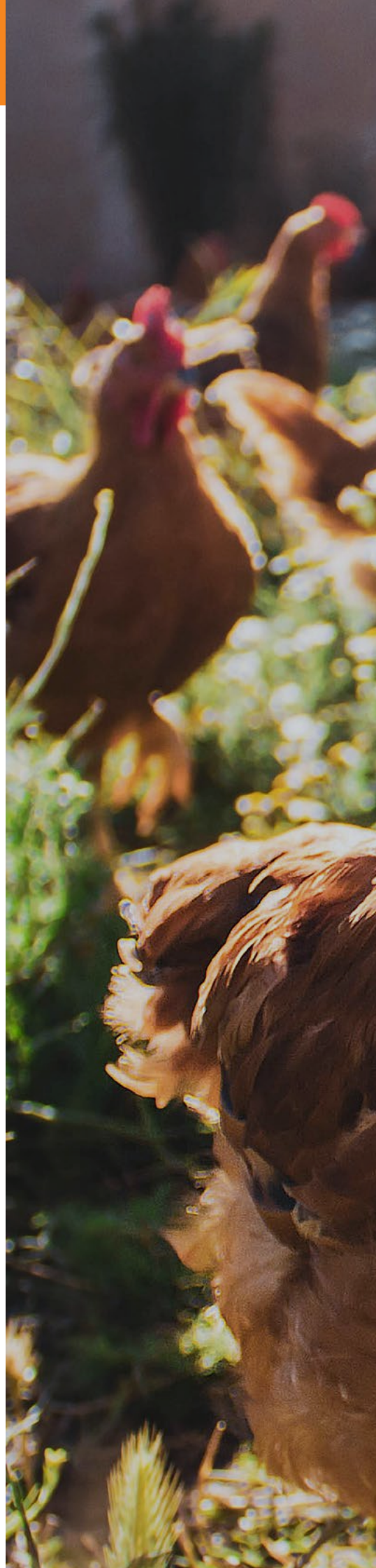
The reference for best practice biosecurity for the egg industry is the *National Farm Biosecurity Technical Manual for Egg Production*.

The reference for best practice water management for poultry is the *National Water Biosecurity Manual – Poultry Production*.

You can access these digitally on the [Australian Eggs website](https://www.australianeggs.com.au) or at www.farmbiosecurity.com.au

Poultry welfare is enforced by each State and Territory. Each State and Territory has their own welfare requirements but most uphold the *Model Code of Practice for the Welfare of Animals: Domestic Poultry* and the *Model Code of Practice for the Land Transport of Poultry*.

To view these documents and other regulatory documents go to www.australianeggs.org.au/for-farmers/resources/regulations







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