BEAK TRIMMING HANDBOOK FOR EGG PRODUCERS

Best Practice for Minimising Cannibalism in Poultry

PHIL GLATZ AND MICHAEL BOURKE

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Foreword

Cannibalism is a significant problem for layer farm managers in Australia. It is a source of production loss and reduced welfare of birds. There are a number of strategies to reduce cannibalism, with the main one being hot blade beak trimming. Although this strategy helps to control cannibalism, it can also affect production and bird welfare and is the source of debate in—and outside—the egg industry.

This *Beak Trimming Handbook* provides farm managers with a tool to revise the strategies they use to combat cannibalism. It offers an overview of the problem and various solutions available now or likely to become available in the near future. The handbook can be used by farm managers as a 'benchmark' tool to compare their current strategies with those considered to be best practice.

Because hot blade beak trimming is the dominant method of combating cannibalism, the handbook concentrates on the farm manager's role in ensuring it is carried out to best practice standards. The handbook describes how, when and why birds are trimmed and their responses to trimming—information that can help managers to better care for beak-trimmed birds. It also examines current industry views, including those of farmers, industry consultants and researchers.

Although mechanical beak trimming has been the norm for the last 60 years in Australia, newer technologies are likely to become more prevalent in the next 10 years. The handbook considers these methods, as well as alternative management strategies that do not require any trimming. These different methods and strategies may become increasingly viable as further research is carried out to ensure their effectiveness in reducing cannibalism and maximising bird welfare.

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1

Pecking problems

Feather pecking and subsequent cannibalism is a serious problem affecting farm profit.

This chapter helps farm managers to recognise pecking and cannibalism problems in birds.

You will learn how to:

- recognise a bird's position in the pecking order
- identify different types of feather pecking
- recognise the signs of cannibalism.

1.1 Introduction

Feather pecking and cannibalism affect all birds in all production systems. When laying birds are kept intensively in cages or in floor-based housing systems, feather pecking and cannibalism can spread rapidly through the flock and result in injuries and deaths.

1.2 The peck order

Allo-pecking is a specific behaviour of birds and is defined as pecking of other birds. Usually one bird dominates another within a flock. Attacks include threats where one bird lifts its head above the others and then pecks the comb, head, neck and wattles of another bird and chases it. Submission is shown by crouching. The peck order in birds can change if new birds are introduced or the dominant bird is injured or defeated in an attack.

Body and head position is important during pecking.

1.3 Housing systems and feather pecking

Feather pecking is more common in floor-based commercial barn and free-range systems where large numbers of birds are in close proximity. In caged birds where the group size is smaller the peck order is more stable and fewer pecking problems are observed.

For outdoor hens, pecking is reduced when males are present.

1.4 Gentle pecking (monitoring required)

Feather pulling

Feather pulling involves a bird approaching another bird from behind or from the side and gently pulling on its feathers. Feather pulling usually causes little damage.

Feather pecking

Pecking directed at the feathers is known as feather pecking. Hens being pecked may not pay any attention at first, but persistent pecking may lead to injury.

Stereotype pecking

Some birds will peck repetitively at the feathers of other birds. This pecking is normally gentle and is referred to as stereotype pecking.

Self-pecking

Self-pecking is defined as pecking directed by the bird at itself. If the pecking becomes persistent it may cause injury.

Feather sucking

Birds will suck at the feathers of other birds, particularly the tail feathers, and this can lead to more serious pecking at the base of the tail.

1.5 More serious pecking (monitoring and management action required)

Feather eating

Birds will peck at the feathers of other birds and consume loose feathers on the floor particularly during the floor-rearing period when there is frequent loss of feathers

Figure 1. Feather-pecked birds in a barn system (Photo courtesy of Dr Kim Critchley)

from pullets. If there is a lack of feathers on the floor, birds will turn their attention to pecking and removing feathers directly from other birds, resulting in pecking damage. Small numbers of feathers on the litter can be an early indicator of feather pecking problems as feather eating occurs when short feathers (< 10 cm) are in short supply. Long feathers are eaten when short feathers are not available. Birds are attracted by the oil on the surface of the feathers and around the preening gland at the base of the tail.

Feather removal

Pecking that may cause damage includes feather removal, resulting in bleeding from the skin (Fig. 1).

Tail pecking

Birds will peck at the tail feathers of other birds. The tail is the region where many cannibalistic injuries occur. Birds should be monitored if there is a high frequency of pecking at the tail feathers.

Toe pecking

Toe pecking is commonly seen in young birds. Strong light illuminates the blood vessels in the toes of day-old birds, attracting others to commence pecking. This is a serious vice among young birds reared on dark-coloured litter and can lead to an increase in mortality and a reduction in growth rates.

Toe pecking is often caused by hunger, excessive warmth and toe trimming.

1.6 Aggressive pecking (urgent management action required)

Tissue pecking in bare areas

Forceful pecking is often directed at bare skin, leading to injury. This attracts other birds to join in the pecking, and death of the pecked bird usually results.

Head pecking

Head pecking is directed by dominant birds at members of the flock that are low in the pecking order, causing the recipients to squawk. In severe cases the areas above the eyes can become bruised, with swollen wattles and ear lobes. Even if birds have been trimmed and are kept in separate cages they can still reach through the cage and peck at a neighbour, or grasp its ear lobe or wattles and shake its head.

Vent pecking

Pecking several inches below the vent is the severest form of cannibalism. The damage can affect the strength of the vent, and a prolapse is likely to occur.

A prolapse can also occur when fat birds start laying, when birds have received an incorrect light program, or when flocks have not been reared uniformly and have underdeveloped members. Pecking may also be directed at the small downy feathers below the cloaca or near the base of the tail (Fig. 2). After birds have tasted blood they continue their cannibalistic habits. Cannibalistic pecking is responsible for at least 80% of all vent prolapses and often is caused by poor beak trimming. The offender is usually a cage mate or a bird that is in an adjacent cage and has not been beak trimmed correctly.

Tearing of tissue when a large egg is being laid encourages other birds to peck at the vent.

Cannibalistic pecking

There are many causes of cannibalism. Often outbreaks will occur in one shed, while birds in similar housing or on the same feed in other sheds on the same farm do not develop cannibalism. Two common factors leading to cannibalism are boredom and the pecking made at other birds while dust bathing.

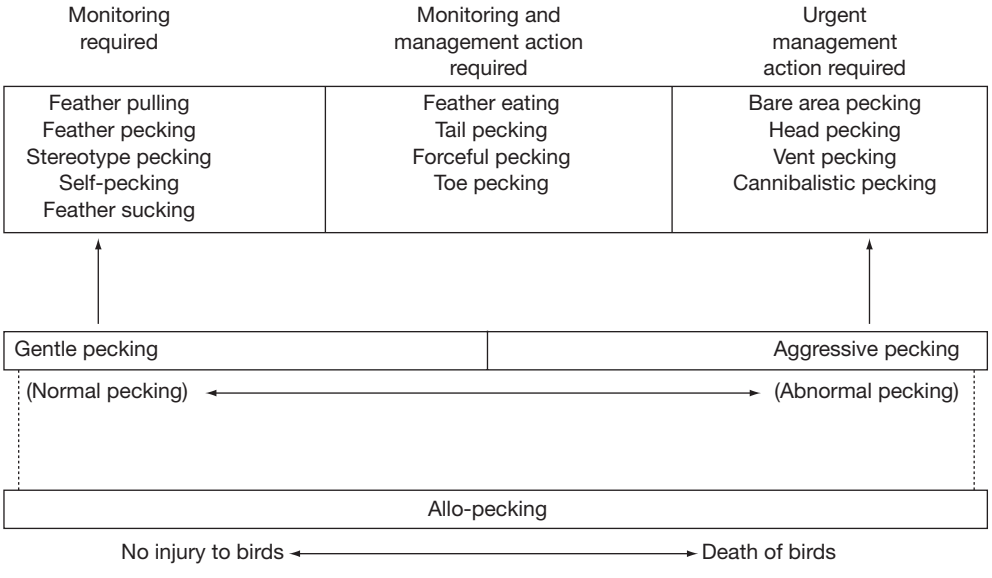
Figure 2. Tissue damage caused by pecking at the base of the tail (Photo courtesy of Sri Hartini)

Outbreaks of cannibalism are easy to recognise. Birds may show areas of the body that are blood stained, with broken skin, raw wounds and injured vents (Fig. 3). An individual bird engaging in vent pecking usually causes cannibalism in a cage. Other birds in the cage are likely to be pecked next. If vent pecking arises, all birds in the cage should be examined by everting the oviduct to examine the surface of the cloaca and

Figure 3. A bird with an injury on the back from cannibalism (Photo courtesy of Sri Hartini)

the lower part of the reproductive tract. Tissue damage may often be caused by a bird pecking at others while they are laying eggs.

Summary



The target cannibalism mortality rate is less than 1%.

Management checks

1. How much of a problem is aggressive pecking on your farm?

None | Moderate | Severe

2. Identify the types of pecking you encounter on your farm:
   - ☐ Toe
   - ☐ Tail
   - ☐ Head
   - ☐ Bare areas
   - ☐ Vent

3. What percentage of deaths from cannibalism do you have on your farm?
   - ☐ Worst _____ %
   - ☐ Average _____ %
   - ☐ Best _____ %

Best practice

- Staff can recognise different types of pecking.
- Cannibalism rate must be less than 1% of flock mortality.
- Farm manager can identify when action needs to be taken to reduce pecking problems.

2

Beak-trimming methods

Beak-trimming methods continue to evolve to improve precision and bird welfare.

This chapter helps farm managers to be familiar with the variety of beak-trimming methods available.

You will learn how to:

- identify appropriate ages to beak-trim your birds
- choose the most suitable method that is available to beak-trim your birds.

2.1 Introduction

Given the continuing welfare scrutiny of using a hot blade to cut the beak, attempts have been made to develop less painful methods of beak trimming. The infrared and laser methods are two recent technologies that have been investigated. Despite these developments, hot blade beak trimming is the most common method used and is still favoured by industry.

2.2 Beak trimming

Beak trimming involves the partial removal of the upper and lower beaks.

Flocks are beak-trimmed with an electrically heated blade to shorten and blunt the beaks so that pecking cannot do any great damage (Fig. 4). Without a correct beak-trimming program, all egg producers (cage, barn and free-range) risk heavy losses of birds during rearing and in the laying stage from cannibalism. Mortality of up to 30% of the flock can occur and cause huge financial losses.

Beak trimming reduces the dominance one bird has over another.

Beak trimming is carried out at various ages, depending on the preference of the farm manager. The most common ages for birds to be beak-trimmed are:

- day-old
- 5–10 days old (the most popular age)
- 4–6 weeks old
- 8–12 weeks old
- touch-up trim of adult birds (mainly in alternative systems).

Re-trimming may also be carried out if a bird's beak grows back enough to cause pecking damage. Birds are often re-trimmed at 8–12 weeks of age to avoid this happening. Some non-trimmed adult birds may need trimming if a pecking outbreak occurs.

Contract teams, individual farmers and some large poultry companies carry out beak trimming. Contract teams trim the majority of birds. Birds must be beak-trimmed by an accredited beak trimmer to ensure that nationally agreed standards are maintained and the welfare of the birds is not compromised (see section 3.4).

The term 'debeaking' is misleading, as the whole beak is not removed in the beak trimming of birds.

Figure 4. Beak trimming is the partial removal of the upper and lower beaks (Photo courtesy of Mark Bradley)

2.3 History of beak trimming

The terms ‘debeaking’, ‘partial amputation’, ‘beak trimming’, ‘beak tipping’ and ‘beak treatment’ have been used to describe the process. Paring of the tip of the top beak and beak burning were the first methods used by poultry farmers to control cannibalism in laying flocks.

In beak burning, a gas torch was used to burn off part of the upper beak. Later, a soldering iron was modified to give it a chisel edge, which enabled the operator to apply downward pressure on the upper beak to sear and cauterise the beak. The Lyon Electric Company in the USA used these modifications to develop the first beak-trimming machine. It was a heated knife attachment on a homemade beak support and frame. The machine was registered in 1943.

2.4 Development of other methods

Hot blade machines

Following the development of the ‘debeaker’ in 1943 there have been refinements to the machine, including the introduction of some blade temperature, cutting and cauterisation controls (Fig. 5). The temperature of the blade is mostly assessed by its colour, although thermometers are available to measure blade temperature. The most commonly used colour is a dark (dull) red blade with an approximate temperature of 650–750°C. A cherry red blade (850–950°C) is used for toe trimming.

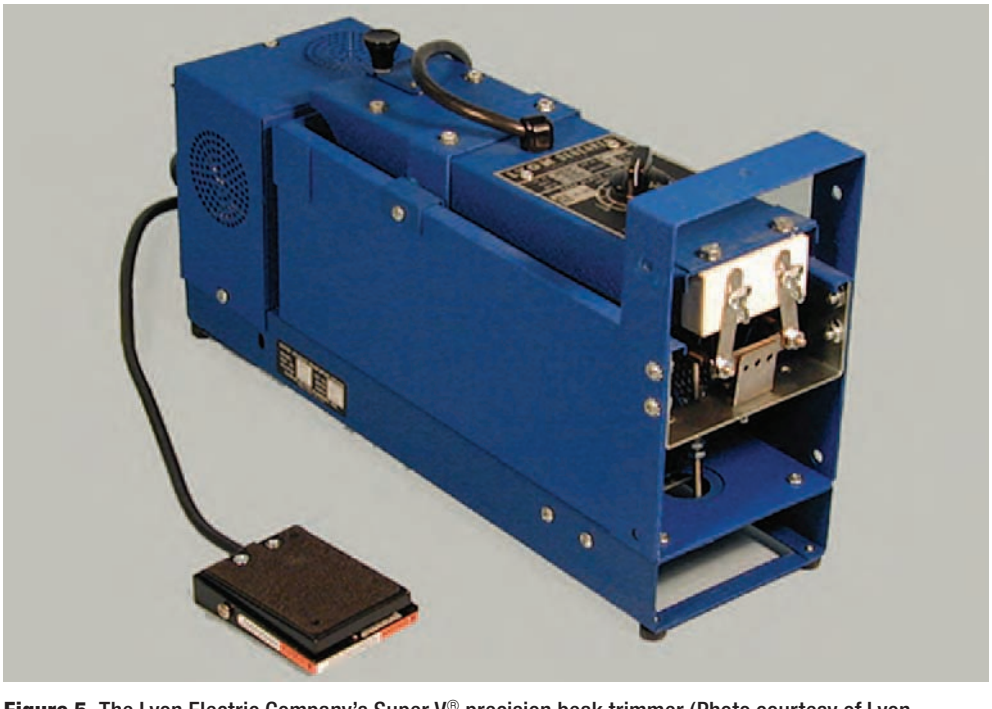


Figure 5. The Lyon Electric Company’s Super V® precision beak trimmer (Photo courtesy of Lyon Electric Co.)

Gas beak trimming machine

This machine consists of a hot plate and cutting bar operated by means of a foot lever. The efficiency of the machine varies with gas pressure and wind conditions. Generally it is slow to use, but it is a useful portable machine for trimming small numbers of birds. Producers can currently purchase a pocket-type machine, which uses gas from a cigarette lighter as its heat source.

Electric soldering iron

A simple, inexpensive device used in the early years of the poultry industry for beak trimming birds consisted of an ordinary electric soldering iron. The edge of a brass or copper disk was sharpened like a blade and welded to the tip of the soldering iron. The disc on the soldering iron reached a temperature of 327°C, which was sufficient to cut and cauterise the beak.

Cold blade

The first cold blade method involved separating the tip of the beak from the deeper structures by traction or tearing. A short cut was made into one side of the beak only, extending into the side of the beak about 1.6–3.2 mm, starting about 3.2–6.4 mm from the beak tip. The flat side of the knife blade was placed against the cut portion and raised to loosen the beak edge. The tip was removed by applying downward traction.

A sharp jack-knife has been used to make a nick in the beak about 6.4 mm from the tip, with the thumb holding the cut portion of the beak against the blade. The knife is rolled around the tip of the beak, tearing off the horny portion and exposing the quick.

Secateurs have been used to trim the upper beaks of turkeys and layers at 1, 6 or 21 days. Dog nail clippers have also been used to trim beaks.

Cold blade methods are not used in the commercial industry worldwide.

Robotic beak trimming

The Robot AG 4500® machine was made in France by Gourlandt Industries Inc. The machine permitted simultaneous, automated beak trimming and Marek's (subcutaneous injection) and Newcastle-Bronchitis (eye drop) vaccination of day-old birds. The AG 4500 was suitable for vaccination, but problems emerged with the beak trimming. The birds were loaded onto the robot by hand, being held by cups around their heads. If they were not loaded correctly they could drop off the line or receive excessive beak trimming or very light trimming. The machine could not beak-trim day-old birds effectively if there was a variation in the weight or size of birds. Consequently, this machine has not been used in recent years.

Chemical beak trimming

Capsaicin has been applied at the time of conventional hot blade beak trimming to stop beak growth. Capsaicin is a cheap, non-toxic substance extracted from hot

peppers. When used in birds it induces a mild behavioural response only. Capsaicin decreases the rate of beak re-growth and hence the need for re-trimming. Operators must avoid contact with the substance during its application to the beak. Although harmless to birds, capsaicin causes pain in humans, therefore this method is not currently used for beak trimming.

Infrared beak treatment is controlled by a computer.

Infrared beak treatment

Infrared beak treatment is a process developed by Nova-Tech Engineering in the USA. The system uses a non-contact, high intensity, infrared energy source to treat beak tissue by a bloodless procedure (Fig. 6). The beam penetrates the hard outer layer of the beak, heating the tissue. The beak surface remains intact, protecting the treated soft tissue underneath. The beak looks the same as it did before the treatment except for whitening of the beak tip and a white dot on the top of the beak. The bird is able to continue to use its beak. Within a week the beak softens, and two weeks after the treatment the sharp hook of the beak erodes. At four weeks of age infrared-treated birds have longer beaks than birds cut with a hot blade. By 12 weeks, however, the infrared-treated beak will be shorter than the beak cut with the hot blade. A head-holding fixture allows accurate treatment of birds of different size.

The amount of infrared energy applied to the beak is programmable. The system was designed to minimise bird handling and administer vaccination and beak trimming to the bird at the one time. The equipment is currently available only on lease.

Figure 6. Infrared beak treatment with a non-contact, high intensity, infrared energy source (Photo courtesy of Peter Bell)

Laser beak trimming

Research is being conducted using a laser beam to cut the beaks of day-old birds. Many lasers are equipped with cooling systems to decrease the temperature of the treated area, providing a mild anaesthetic effect. More recently a low-powered ophthalmic laser was used, but the laser power was insufficient to cut the bony quick of the beaks, resulting in regrowth. Laser beak trimming may represent a welfare advance but further work is required before it can be applied in industry.

The temperature of laser beams can be precisely controlled.

Bio-Beaker® trimming

The Bio-Beaker® uses a high voltage (1500-V) AC electrical current across two electrodes to burn a small hole in the upper beak. Up to 2000 day-old birds can be trimmed per hour. The beak is inserted into the mask of the instrument. It takes 0.25 seconds to burn a hole in the beak. The advantage of this method is that beak trimming is done on day-old birds, making the unit ideal for use in the hatchery. The treated birds can eat and drink normally for the first few days while their beaks are intact. It was originally hoped that after a period of three to seven days the tip of the beak would die and erode, leaving a rounded stump. Unfortunately, in many birds the tip of the beak did not erode and birds had to be re-trimmed using conventional hot blade equipment.

The Bio-Beaker® is currently used to beak-trim turkeys.

Summary

- Flocks are beak-trimmed to shorten and blunt the beaks so that pecking cannot do any great damage.
- Beak trimming is carried out at various ages, depending on the preference of the farm manager.
- Re-trimming is carried out if a bird's beak grows back enough to cause pecking damage.
- Contract teams, individual farmers and some large poultry companies carry out beak trimming.
- The words 'debeaking', 'partial amputation', 'beak trimming', 'beak tipping' and 'beak treatment' have been used to describe the process.
- Hot blade trimming is the most popular method. Other methods tried or being researched are:
  - gas
  - electric soldering iron

- cold blade
- robotic
- chemical
- infrared
- laser
- Bio-Beaker® trimming.

Management checks

1. What is your current trimming method?
   - ☐ None
   - ☐ Hot blade
   - ☐ Infrared
   - ☐ Other methods _____
2. How will you keep up with changes in beak-trimming technology?
   - ☐ Speak to bird suppliers
   - ☐ Speak to other farmers
   - ☐ Seek information in trade journals
   - ☐ Search the Internet using the key words ‘beak trimming machines’
   - ☐ Undertake a study tour

3

Best practice beak trimming

Best practice procedures ensure improved production and welfare.

This chapter helps farm managers to monitor the quality of a beak-trim.

You will learn how to:

- recognise whether equipment is set up correctly
- identify whether birds are being handled according to best practice
- recognise best practice beak trimming
- ensure that best practice biosecurity is implemented.

3.1 Introduction

The most popular method of beak trimming birds is the hot blade technique. This chapter describes the best practice procedures required to ensure that hot blade beak trimming is carried out according to the *Model Code of Practice for the Welfare of Animals: Domestic Poultry.* Beak trimming is still being researched, and it is expected that new recommendations may become available in the future.

3.2 Setting up equipment

Stable position

Hot blade trimming of birds requires the beak-trimming machine to be properly installed on a table or metal frame so that the machine is stable throughout the day. The equipment should be set up using a levelling device, with the legs of the equipment

Figure 7. Beak-trim machine set up on a hard, flat surface (Photo courtesy of Michael Hastings)

positioned on a hard floor and flat surface to minimise vibrations or sudden movement of the machine (Fig. 7).

Lighting

To minimise the time required to carry birds to the work site, the farm manager should check that beak trimmers set up their equipment close to the birds. The equipment should be placed in a well-lit area (at least 150–200 lux) at waist level. Most beak-trim operators have a small globe that is attached to the beak-trimming machine to maintain a consistent light intensity for each beak-trimming job.

Use a light meter to ensure similar light intensity for each job.

Blades

Before beak trimming starts, the farm manager should ensure the beak-trim operator checks the blade to make certain it is clean, the sharp edge of the blade is facing the operator, and there is no gap between the blade and the bottom plate. The blade normally used is the Lyon BC blade. After 5000 chicks have been trimmed, the blade must be changed before it becomes blunt. A new blade must be installed or the old blade sharpened, provided it is not bent or deformed. New blades are very resistant and hard, but with high temperatures (yellow-red) they lose hardness and warp. Beak trimming of older birds is usually performed with a heavy-duty cutting blade. Holding the blade just above the cutting bar with an adjustable set-screw helps the operator to line

Table 1. Blade temperature, colour and cauterising time for trimming at 6–10 days

Colour	Temperature		Cauterising time (seconds)
	°C	°F	
Light red	500–550	932–1022	3
Dull red	650–750	1202–1382	1* or 2.5**
Bright red	850–950	1562–1742	0.75–1.0* or 2.0**
Yellowish red	1050–1150	1922–2102	Not used

*Non-permanent; end of beak is only singed and is red.
**Permanent (required to stop further growth of beak tissue).
(From *International Poultry Practice,* June 1990 edition)

the beak up with the blade. The gauge plate, if used, must be positioned such that it is snug against the cutting blade during cauterisation.

Blade temperature

Blade temperature is evaluated by looking at blade colour (Tables 1 and 2). Blade colour can vary with light intensity in the work area. A bright working area will cause the blade to look dull, whereas a dark working area will make the blade look brighter and appear hotter. Differences in ventilation across the blade can cause fluctuations in temperature. Standard light conditions or a device to measure blade temperature is critical if beak trimming is to be consistent. Increasing use is being made of a specialised thermometer to measure the blade temperature.

Blade temperature must be maintained at 700–750°C.

Automatic cam

If an automatic cam device is used, the cam must be set to give a cauterisation time of 2 seconds or less, depending on beak hardness. Use of very high blade temperature causes bubbles, protrusions or 'proud' flesh to develop on the beak stump, which is undesirable. Beaks of older birds need to be cut with a blade temperature 50°C higher than those of younger birds.

Table 2. Blade temperature and cauterising time for birds of different ages

Age at beak trimming	Cauterising time*	
	At 696°C (1300°F)	At 864°C (1600°F)
1 day	2.5	2.0
6–10 days, permanent	2.5	1.5
6–10 days, non-permanent	1.0	0.75
7–8 weeks	1.0	0.5**
10–12 weeks	1.0	0.5**

* In seconds
** Time per cut for two cuts

Water-cooling

The gauge plate and the cutting bar can become very hot. Most beak trimmers will set up their equipment so that water is circulated through the cutting bar and across the top of the plate. Otherwise, the beaks of birds can be burned when positioned onto the cutting bar or into the gauge plate before trimming.

Back-up equipment

Operators must maintain all beak-trimming equipment. It is good practice to ensure beak trimmers bring back-up equipment to replace any faulty parts, such as spare machines, blades, service tools, leads and light globes. If there is a power failure, contingencies should be in place to continue the beak-trimming job by giving access to a portable generator.

Seating

Occupational health and safety considerations require that seating is adequate for beak trimmers. To avoid back injuries, farm managers should encourage beak trimmers to avoid bending awkwardly to pick up birds. Birds to be beak-trimmed should be placed at waist height to avoid bending. The flow of activities associated with the beak trimming should be from left to right, or vice versa. The work height and workspace in the beak-trimming area should enable a smooth movement of people and birds to and from the beak-trimming site. Use of a fully adjustable ergonomic chair to suit the beak trimmer can reduce fatigue and eliminate acute or chronic back, neck, arm and leg pain.

Beak trimmers must comply with OH&S legislation. Contact your relevant State Government department for details.

Air quality

The air quality of the space beak-trim operators work in is often poor, with high dust levels, ammonia smells and the presence of other toxic gases. This can lead to an adverse working environment for beak trimmers. As the beak is being cut, odour from the burning tissue decreases the air quality in the working area. Farm managers should make sure work areas have good air quality.

Smoke

Farm managers should ensure beak-trim equipment is set up in such a way that smoke from the work site is ventilated away from the operators. Beak trimmers should be encouraged to wear masks to prevent long-term respiratory problems due to continual exposure to poor air quality. Paper masks are not suitable, as people often find them uncomfortable and difficult to breathe through. It is possible to buy full face masks and helmets that enable fresh air to be provided to the operator when working in a

dusty or smelly environment. Beak trimmers should be encouraged to visit their local doctor or OH&S clinic for advice on protection against poor air quality.

Dust

High dust levels can affect both birds and staff. Poor management of dust can also lead to equipment failure and/or electrical fires. Feed is a major source of dust. Dust particles that can affect health come from dried faeces, feathers, skin and litter, and their adverse effects arise because they carry or incorporate bacteria, fungi and gases. Because of the contribution of feathers to dust, the problem increases when pullets are moulting. If there is a dust haze in the shed, the larger visible particles are very likely to be associated with high concentrations of more damaging smaller particles.

Dust levels are influenced by stocking density and the amount of dust and friable material in feed, on surfaces and on floors.

Regular breaks

Maximum concentration must be maintained by beak trimmers to ensure a proper job. About 15 birds can normally be trimmed per minute. However, it is difficult for beak trimmers to maintain full concentration throughout the day while beak trimming, and regular breaks of 5 minutes every hour must be requested by the farm manager to minimise errors.

Injury to handlers

While staff are handling birds there is the potential to sustain injuries from the claws, particularly when trimming older pullets. The claws can lacerate exposed skin. Full face masks can prevent injury to the eyes and face. Careful and gentle handling reduces the risk of panic in birds and injuries to staff. Farmers should ask beak trimmers to use protective guards on their fingers because of the close proximity of the hand to the hot blade. Ice water and a first aid kit should be on hand to use if an injury occurs.

Staff on farms should have tetanus injections to prevent tetanus infection resulting from injuries.

Electrical safety

Farm managers should insist that beak-trim equipment, including electrical cords, is checked for electrical safety every six months. Extension cords should be positioned so they are not in the way of people moving in and out of the shed or catching birds. Electrical cords should be retractable on reels where possible.

3.3 Handling

Hatchery birds

Birds that are to be beak-trimmed in the hatchery are held in cardboard boxes (with holes for air supply) or plastic baskets. Birds must not be chilled or overheated. An optimum air temperature at day-old is 30–32°C. This is also considered to be the maximum environmental temperature at which birds should be beak-trimmed. Boxes containing birds must not be tilted or jolted, as the movement may frighten the birds. Before trimming, birds can be gently lifted out of the boxes, and placed in another box or basket after trimming. They must not be thrown.

To reduce stress on birds, farm staff and contract trimmers must move slowly and quietly through the shed.

Penning birds

There is not a great deal of stress on day-old birds while they are being placed into boxes or plastic crates. However, at 5–10 days of age (when beak trimming is normally done) they may panic and try to escape. When re-trimming is done at 12–14 weeks the fear response is even greater. The shed lighting should be dimmed so the birds do not overreact, particularly from staff movements in the shed. It is advisable to use blue lights, as birds tend to remain calmer.

Birds can be herded towards one side of the pen and retained with a 1-metre-high fence running along the pen. Yelling or shouting at the birds must be avoided, because this causes panic and may lead to injury and smothering. Birds can be caught and put into crates to reduce panic, but do not use crates with solid sides, as the birds require adequate ventilation at all times.

Bone fragility

A major risk to birds is bone breakage from rough handling. This risk can be minimised by careful handling. The tendency for crews to rush the catching to get the job done quickly can compromise bird welfare. Careful handling (i.e. removing birds singly and providing full body support and carrying them directly to the crate) can markedly reduce the incidence of bone breaks. A reasonable alternative is to use a breast support slide (metal or plastic) to remove birds from rearing cages during re-trimming to prevent injuries while they are being dragged across the feed trough.

Bone breakage in birds is a serious welfare issue.

Suffocation and bruising

If birds are kept at high stocking densities in confined pen surrounds they may overheat (especially in hot weather) and thus tend to bleed more after beak trimming.

Wire mesh surrounds or catching frames are required, as they do not restrict ventilation. Wire mesh should be covered with hessian to prevent stacking and pile-ups of birds. The *Model Code of Practice for the Welfare of Animals: Domestic Poultry* states that birds should be herded for pick-up under the supervision of a competent person to avoid suffocation and bruising. They must be handled and crated gently to avoid injury.

Ventilation

The *Model Code of Practice for the Welfare of Animals: Domestic Poultry* states that ventilation to supply fresh air must be provided to birds at all times. In close surrounds on a hot day the temperature at bird level can rise quickly and birds will start panting. The dual stress of being herded and subjected to high temperatures is likely to diminish the bird's ability to cope with beak trimming. Adequate ventilation is also important at all times to provide fresh air to operators. If the ventilation is poor, beak trimmers will soon become hot. Working under hot conditions (> 33°C) must be avoided. It increases the number of birds that bleed after beak trimming, and beak-trimming quality declines as operators become tired and irritable.

The ventilation rate must be at least 10–14 m^3/bird/hour when penning birds. Contact air conditioning suppliers to measure ventilation.

Catching the birds

When handling day-old birds, beak-trim crews should be asked to pick them up by one hand, wrapping the fingers gently around the chest and abdomen. Birds can also be scooped with both hands cupped. Up to four chickens can be handled in this manner, ensuring they do not spill from the sides of the hands.

Five- to 10-day-old birds can be gently caught whilst still contained within the brooding surrounds. Birds can be picked up by one or two legs and transferred directly to the beak trimmer. With 7- to 10-day-olds, five birds can be held in each hand. Alternatively, birds can be gently pushed into a large laundry bucket held on an angle, or placed into crates before beak trimming (Fig. 8). The *Model Code of Practice for the Welfare of Animals: Domestic Poultry* indicates that crates should be of a sufficient height for birds to stand, be properly maintained, and prevent escape or entrapment. Crates should not be tilted while birds are still in the crate. Birds should not be held in crates for more than two hours before beak trimming.

When birds are reared in cages they can be very flighty. Some birds may clutch the cage floor and will need to be held by both legs to loosen their grip. Birds suffer from bone breakage when handled roughly and must not be lifted or carried by the head, neck, tail or wing.

The operator can reach over the low fence to pick up buckets or a crate of birds, or receive them directly from the catcher. For 7- to 10-day-old birds the catcher should be located close to the beak-trim operator. The catcher should collect five birds in each hand and hold them by both legs, or by one leg. Birds should be prevented from flapping, as flapping will cause them to overreact when trimmed. With a bucket of

Figure 8. Young birds being scooped into a bucket (Photo courtesy of Belinda Rodda)

birds between the knees or on a suitable stand at hip height, the right-handed operator uses his or her right hand to hold the bird that is being beak-trimmed. Alternatively, birds can be held in the left hand of the operator and one bird at a time transferred to the right hand. Holding birds upside down for extended periods may result in an increase in beak bleeding after trimming. When birds are being handled for re-trimming it is recommended that no more than 10 birds (five per hand), each weighing up to 2.0 kg, be carried.

Holding day-old and 5- to 10-day-old birds for trimming

To beak-trim a day-old or a 5- to 10-day-old bird, the beak trimmer should hold the bird in the palm of the hand with the thumb on the back of its head and forefinger under the throat (this is a 'pistol grip'). Alternatively, the thumb could be wrapped around the upper body of the chicken or placed on one side of the head, with the forefinger curved around the neck on the other side.

If a gauge plate has been installed on the beak-trimming machine, the closed beak is inserted at an angle of 15°–30° into the 4.4 mm hole (for day-old birds) or the 7.9 mm hole (for 5- to 10-day-old birds). Light pressure is exerted on the throat to pull back the tongue and prevent it from being cut or burnt. This also withdraws the lower beak slightly so that it is a little longer than the upper beak when beak trimming is completed. Many beak-trim operators prefer to beak-trim 7- to 10-day-old birds because the beak is harder and it is easier to see the tip of the quick in the upper beak where the cut needs to be made.

Older birds

Trimming and re-trimming of older birds (12–14 weeks) is more difficult to manage. One method is to hold the bird with the thighs under the arm while keeping the wings close to the forearm and body to prevent flapping. The operator places the index finger of the free hand between the beaks to keep the beaks open so that the upper beak sits squarely on the cutting bar and is then cut. At the same time the finger holds down the tongue to prevent accidental burning.

The quality of stockpeople can be judged by the way they handle birds.

Operators who push too hard on the birds' heads can cause internal bleeding and death.

Inexperienced trimmers tend to relax their hold on the bird; this can result in errors cutting the beak.

If birds are beak-trimmed properly at an early age further re-trimming is not necessary.

3.4 Beak trimming

Best age to trim beaks

There is an industry view in Australia that 5–10 days is the best age to trim because of reduced mortality and beak regrowth compared with day-old trimming. Although research recommends beak trimming at one day old, correct trimming of both 1- and 10-day-old birds results in rapid healing of the beak stump.

Beak characteristics

Beak length and hardness should be assessed for each batch by beak trimmers. They will quickly get a feel for the range of length and hardness when they start trimming. This will give them a base from which they can judge how each bird should be trimmed. Decisions must be made in a very short period of time, so it is essential that beak trimmers quickly adjust their trim according to this assessment.

There is considerable variation in hardness of beaks between strains.

Beak trimmers can check the hardness of the beak by gently depressing it with a fingernail. For soft beaks, beak trimmers may need to reduce the cauterisation time by about half a second or reduce the blade temperature slightly by about 50°C. Harder beaks require the opposite adjustments: increased cauterisation time or blade temperature.

Beak length and shape are the most critical factors to assess, as these are the characteristics that have the most variation. Shorter beaks require less beak to be removed, whereas longer beaks need more removed.

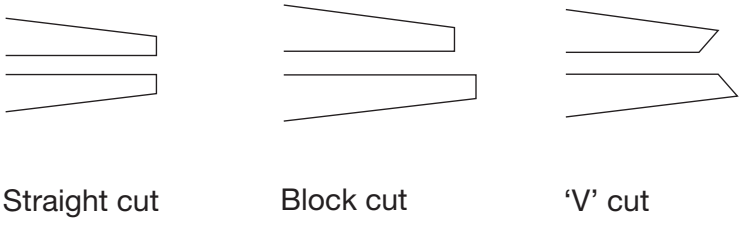


Figure 9: Types of beak trim

Other things to look for include crossed beaks, beak lesions, and other deformities. Birds with these problems are unusual and need extra care to ensure that beak trimming improves their beaks rather than makes them worse.

Instructions

The farm manager must advise the beak trimmer of the type of trim required. Block cuts with a step are the trim most commonly used in Australia (Fig. 9).

For example, when birds are being re-trimmed the farm manager can advise the beak trimmer to perform a 6 mm block cut with a 1 mm step. This means that the top beak should have 6 mm remaining from the outer edge of the nostril to the end of the beak, and the bottom beak should be 1 mm longer than the top beak.

Other types of trim the farm manager can request are a straight cut or a 'V' cut. The straight cut involves both upper and lower beaks being cut to the same length; that is, there is no step. A 'V' cut is similar to a block cut, but the edges of the upper and lower beaks are angled to give an inward 'V' shape rather than straight. An inward 'V' shape of the beak reduces the ability of the bird to grasp the feathers and skin of other birds.

Farm managers should ask beak trimmers to round off the edges of the beak to prevent uneven growth. Beak trimmers can do this by gently rolling the beak horizontally from side to side during cauterisation.

The trimming process

Beak trimming is carried out with a heated blade that cuts and cauterises the beak. The blade cuts quickly and smoothly through the upper and lower beaks in one motion. The heat of the blade seals off the cut, thus preventing bleeding and infection. Pain to the bird is minimised when the procedure is done correctly.

The technique may vary according to the age of the bird. The key things beak trimmers must do are:

- Squarely place the beak on the cutting blade.
- Use marks on the base plate, or use a blade stop, to align the blade to the position where the cut is to be made.
- Gently lower the blade on top of the beak, or insert the beak into the appropriate hole in the gauge plate.
- Hold the beak in position for about two seconds to allow cauterisation to occur as the blade makes contact with the bottom bar.
- Take care that the bird does not move during cutting.
- Remove beak residue from the blade regularly (at least every 15 to 30 minutes).

Repeatability is critical and is what sets a good beak trimmer above a beginner. Beak trimmers must never be asked to trade off accuracy for speed.

If birds are feather peckers and cannibalism persists, the beaks may need to be cut shorter.

If the beaks are of equal length after trimming, some birds may continue to feather peck and cannibalise.

Re-trimming

Re-trimming is any beak-trim after a bird has already been trimmed. It is carried out to avoid or correct pecking problems due to beak regrowth. Some farm managers will re-trim routinely as part of their bird management, whereas others will re-trim only to improve poor or incorrect trimming done previously. Some will also re-trim according to veterinary advice or when pecking problems occur.

Re-trimming often occurs at 8–12 weeks of age and sometimes as a touch-up for older birds. If proper beak trimming is carried out at an early age, there is less need for re-trimming.

During re-trimming there is greater variability between beaks than when beak trimming younger birds. This means that beak trimmers must assess the trim requirements for each bird carefully and be prepared to adjust as required.

When re-trimming, beak trimmers need to maintain good bird control, as the birds will be bigger and stronger. Farm managers should ensure that the gap between the top and bottom beaks is maintained.

Re-trimming may not be required in many birds but is done to avoid subsequent cannibalism.

Sealing a bleeding beak

Bleeders are birds that bleed from the beak after they have been trimmed. Bleeding usually occurs if the beak has not been cauterised properly or if the blade is too hot or cold. High shed temperature can stress birds and increase the number of bleeders, as can hot weather.

The important thing is to reseal the beak so that it stops bleeding. To reseal the beak it must be cauterised again. To do this successfully, beak trimmers must let the beak cool down before placing the beak against the blade for a second time.

Beak trimmers must not continue to try to reseal the beak by pushing against the blade if it continues to bleed. The beak must be allowed to cool again for a longer period of time, and then re-cauterised. Birds must be isolated if they are difficult to seal; consider culling these birds if they continue to bleed.

Beak trimmers should be asked to check their machine set-up, especially blade temperature, if the number of bleeders increases. There should be minimal bleeding if the job is done correctly.

Newly trimmed birds can bleed if they peck hard feed or equipment. This breaks the cauterisation seal, but the bird will recover. Farm managers should be aware that some birds bleed because of management issues after beak trimming.

Quality assurance

It is essential to ensure beak trimming is done correctly to provide a quality product and reduce stress on the flock. How do farm managers know this, and how can they prove it? Farm managers can make sure quality is maintained by monitoring the job beak trimmers are doing and taking action if something is not performed according to standard.

Beak-trimming quality involves all steps in the process, including biosecurity, handling birds, setting up, beak trimming, bird care after trimming and keeping records.

It is this process of doing a job correctly and providing a quality product that is called quality assurance, or QA. Quality assurance involves producing a product that satisfies the customer's requirements. For beak trimmers this product is a bird that has the correct amount of beak trimmed, so that welfare is maximised and pecking problems are minimised.

Checking trimmed birds

The farm manager should ensure the beak-trimming team is held responsible for the birds' welfare when the team is in the shed. The beak trimmer must work to ensure problems are minimised and the birds' behaviour returns to normal quickly after the job.

It is especially important that the beak trimmer watches the birds after they are trimmed to see if their behaviour is normal. The beak trimmers should stop trimming and check what is going wrong if the birds show any signs of undue stress (e.g. flightiness or inactivity).

Things to check for include:

- bleeding
- injuries
- beaks poorly cut
- smothering by other birds.

The trimmer should check each bird before releasing it. Some trimmers will isolate birds with problems immediately, whereas others will pick them out from the flock later on. The important thing is that birds with problems such as bleeding are treated.

Birds on the floor will naturally pack together in response to the activity in the shed. The farm manager should instruct the beak-trimming team to watch this at all times and if necessary spread the birds to stop smothering. This is especially important towards the end of the trimming operation.

Beak trimmers should ensure that birds are given water and feed quickly. Conscientious trimmers will also notify the farm manager of any problems found in a shed, including faulty fans, feeder problems, leaking drinkers, signs of rodents or wild birds, and any other maintenance issues.

Checking the quality of the job

The quality of a beak trim is determined by achieving:

- the desired length of beak
- the desired shape
- the desired step between top and bottom beak
- full cauterisation.

A good beak trimmer will maintain quality throughout the day. This means the required trim can be consistently achieved after many hours of work. Trim variation will occur, however, as beaks differ greatly and the birds may struggle. The important thing is to quickly assess the bird, then make positioning adjustments to achieve the desired result.

It is important to check the quality of trimming. The beak trimmers can assess each bird quickly by eye to see whether the desired trim has been achieved. Adjustments to their technique or the machine will need to be made if this is not the case.

Beak trimmers can also make a more accurate assessment of quality by measuring and recording the length of 100 upper beaks.

The farm manager should provide feedback on the quality of the trimming to the beak-trim team. This may be provided on the day of the trim but often occurs sometime later, after the beaks have grown and any cannibalism occurs. The quality of the work of the beak trimmers is permanent. Both good and poor trims will be obvious throughout the birds' life and may be reflected in the appearance of their beaks and in their egg-laying performance.

A beak trimmer's reputation comes solely from the quality of his or her work. If there are poor results the trimmer should not be asked to return to the farm.

Good beak trimmers get a feel for when beak trimming is going well. They can determine this from the ease of handling and the way the beaks are being cut. The beak trimmer can judge the stress on the birds and how the operation is going by the way the birds react. Struggling and loud squawking can be an indicator of problems, and the beak trimmer needs to make some adjustments to the process.

Measuring beak length

Farm managers and beak trimmers must be able to measure the upper beak length of birds of all ages being trimmed. Measure from the outer tip of the nostril to the tip of the beak to keep this consistent (Fig. 10). You can measure beak length with a dressmaker's tape or a caliper.

Guide to beak length

Farm managers provide the specifications of the trim they want, but they shouldn't ask for a trim that will compromise long-term bird welfare; industry has agreed this is anything less than a 5 mm beak trim at 8–12 weeks. A 5 mm trim will result in a small percentage of birds with beaks of 3 or 4 mm. No bird of any age should have a beak of less than 3 mm. You must not perform beak trims of less than 5 mm, except in day-old

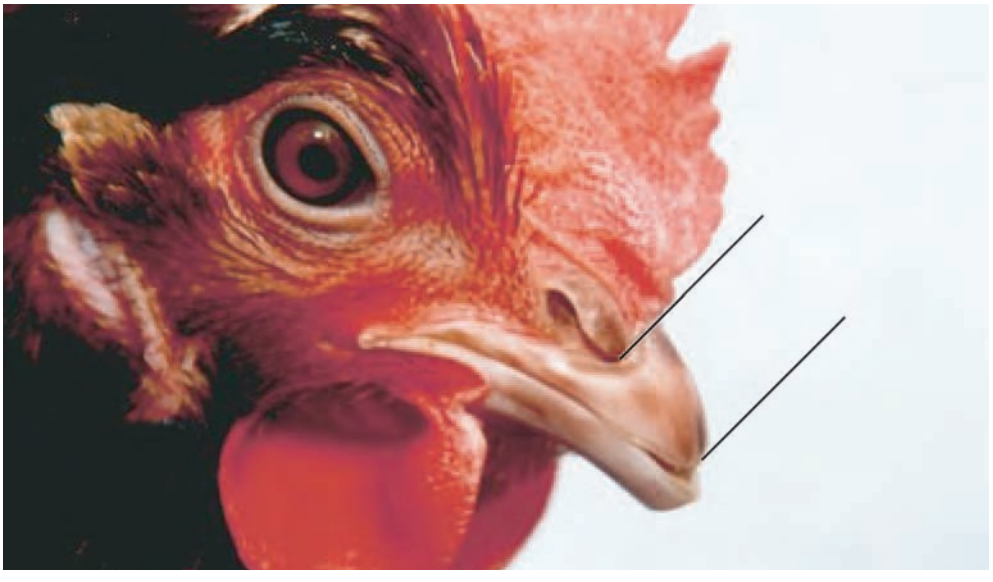


Figure 10. Measure beak length between the lines indicated (Photo courtesy of Mark Bradley)

and 10-day-old birds, where no more than 3 mm and 4.5 mm, respectively, should be removed.

In general, beak trimmers should remove no more than half of the upper beak and provide a step to the lower beak. This does not cut into the quick, and so results in trimming that meets industry standards and maximises bird welfare.

Figures 11 and 12 show the minimum amount of upper beak that must remain after trimming birds of different ages.

Accuracy standards for beak trimming

Achieving 100% beak-trimming accuracy is not possible in commercial situations. The egg industry, however, requires uniform trimming to the specified length so that adult birds have the desired beak length and shape.

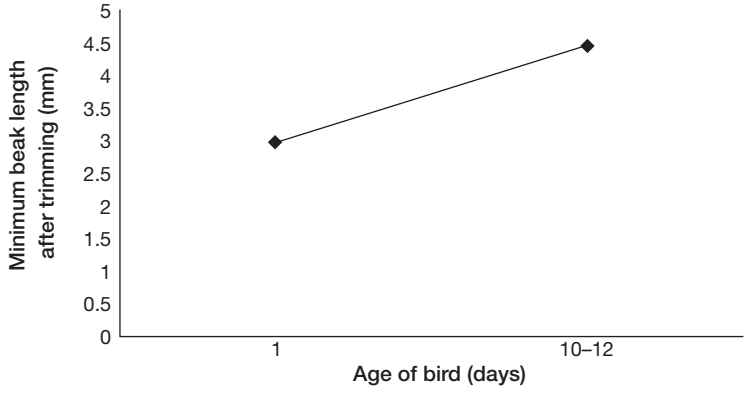


Figure 11. Minimum beak length after trimming at 1–12 days old

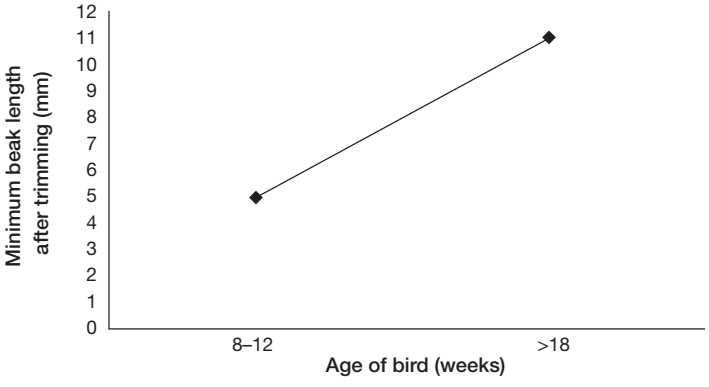


Figure 12. Minimum beak length after trimming from 8–12 weeks and from 18 weeks

Accredited trimmers can maintain uniformity in the length they trim. As experienced beak trimmers they must be able to trim 85% of birds to within 1 mm shorter or 2 mm longer than the desired length (Fig. 13). This is considered the optimal range. Outside of this optimal range, it is better to err on the side of a slightly longer beak than a slightly shorter one. For this reason, it is considered acceptable for 13% of beaks to be 2 mm to 3 mm longer than the desired length, while only 1% may be 1 mm to 2 mm shorter than the desired length. A beak which is too long, however, negates the benefit of beak trimming and therefore only 1% may be between 3 mm and 4 mm longer than the desired length.

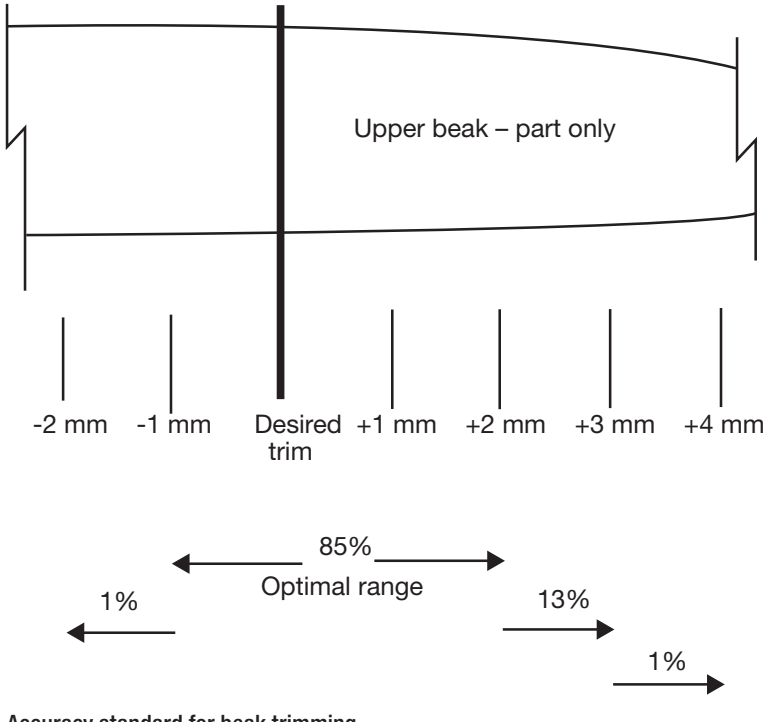


Figure 13. Accuracy standard for beak trimming

Figure 14. Cleaning the beak-trim machine (Photo courtesy of Michael Hastings)

3.5 Biosecurity

Biosecurity is the system used on a farm to prevent and control the introduction of infectious diseases and pests. Biosecurity is especially important for beak trimmers, as they regularly move from farm to farm. This movement has the potential to transmit disease unless biosecurity systems are maintained.

Biosecurity involves:

- setting the farm up as a quarantine area
- personal hygiene, including wearing clean clothes
- not having any contact with disease-carrying animals at home
- ensuring that vehicles are cleaned before arriving at the farm
- ensuring that all equipment is properly cleaned and sanitised
- using correct methods of transferring birds from farm to farm
- using correct methods of disposing of dead birds.

The importance of communication

It is essential that the farm manager contact the beak-trimming team before the job gets underway. An experienced beak-trimming team should confirm the following with the farm manager:

- location details of farm
- person to contact on arrival
- how to contact the person

- number and age of birds to be beak-trimmed
- location and order of birds to be trimmed
- any other issues.

Regular communication should be maintained during the job. This ensures there are no misunderstandings and changes can be made if required. Farm managers must insist on a report after the job is complete so they are aware of any problems.

Personal status

Diseases that affect poultry can easily be spread by human contact. Because of this it is very important the farm manager advises the beak trimmers that they do not do things which will increase the risk of picking up or carrying a disease affecting poultry.

A beak-trimming team should:

- maintain personal hygiene
- sign quarantine declarations when required
- follow the local biosecurity rules provided by the farm manager.

Farm managers must insist beak trimmers do *not*:

- keep domestic birds at home
- keep, or come into contact with, pigs or birds such as ducks, geese, emus, ostriches, pet birds and pigeons.

The farm manager must ask the beak-trimming team to sign the farm visitors' book when arriving at and leaving the farm and provide information on where they have previously worked. This leaves a trail for the farm manager to investigate in the case of a disease outbreak.

Cleaning and sanitising

It is essential that farm managers ask beak trimmers to clean and sanitise all equipment associated with beak trimming before the job commences and before they enter the farm. This is part of biosecurity and helps to ensure the beak-trimming team does not spread infectious diseases onto the farm. Cleaning and sanitising are both necessary. Cleaning is the removal of dirt from a surface, but it does not kill germs and bacteria. Sanitising (sometimes called disinfecting) involves killing the bacteria and other organisms left on a surface.

Farm managers should request that beak trimmers adopt a routine that suits their farm. For example, vehicles should be swept and vacuumed to remove any dirt and dust. The inside and outside of the vehicle, and particularly the tyres, should be washed with a sanitiser to kill any germs. When cleaning equipment, any loose dirt and dust should be cleaned from the trimming machines, electrical cords, nets, surrounds and tools (Fig. 14). Beak trimmers should be encouraged to pull their machines apart and clean and sanitise them to ensure that all foreign matter is removed and germs are killed. The label on the chemical product used should always be read and followed.

Daily routines

Biosecurity starts with the way beak trimmers do their jobs. The farm manager should advise that:

- only one farm is visited per day

- clean clothes and boots are worn
- equipment is cleaned and sanitised when required
- vehicles are cleaned and sanitised before they enter the farm
- no insects (especially flies) are brought onto the property
- no other animals are brought onto the farm.

The beak trimmers should use the designated parking and change areas that are available on the farm. Farm managers should provide portable footbaths and ask the beak trimmers to use these. Beak trimmers should dispose of over-boots in appropriate bins provided by the farm manager.

Summary

Set-up

Make sure:

- equipment is set up correctly
- an appropriate position is chosen for beak trimming
- the correct blades are chosen and fitted and adjusted correctly
- equipment is maintained on the day of beak trimming.

Handling

- Birds are easily injured if not handled correctly.
- Birds must be handled gently but firmly during penning, catching and holding.
- When penning birds make sure they do not panic.
- Never overcrowd a pen, and check for suffocation.
- Do not hold more birds than recommended by the *Model Code of Practice for the Welfare of Animals: Domestic Poultry*.

Beak trimming

- Assess the bird's beak before trimming.
- Adjust the trim after making an initial assessment.
- Beak length and shape are the most critical factors.
- Ensure birds are held gently and securely during trimming.
- Ensure a 'pistol grip' is used so that the tongue is retracted.
- Ensure the beak is square on the cutting blade.
- Adjust the cauterisation time according to the age of the bird.
- Re-trimming requires assessment of beak length and shape.

Biosecurity

- Biosecurity is used to minimise the spread of disease.
- Clear instructions are required to minimise problems.
- Personal hygiene is important.
- Minimise contact with backyard poultry.
- Equipment and vehicles should be cleaned and sanitised.

Management checks

1. Does your Quality Assurance scheme have a protocol for beak trimming?

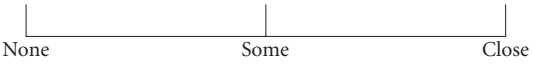
   ☐ Yes ☐ No

2. Are your beak trimmers accredited?

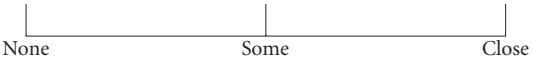
   ☐ Yes ☐ No

3. How much involvement do you have in providing instructions and monitoring the beak-trim process?

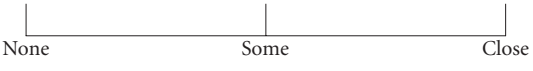
Set-up



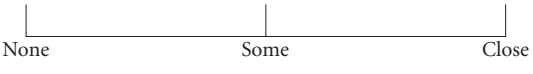
Biosecurity



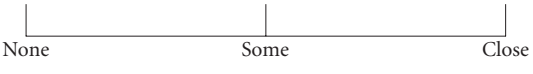
Handling



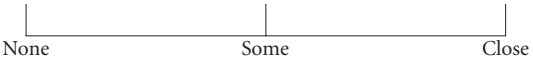
Records



Communication



Trim length



Best practice

- Use a QA program.
- Use accredited beak trimmers.
- Provide clear instructions to beak trimmers.
- Monitor the progress of the beak-trimming team.
- Provide feedback to the beak-trimming team.

4

Managing beak-trimmed birds

Careful management of birds during and after beak trimming reduces mortality and the cost of production.

This chapter helps farm managers to implement best practice management of beak-trimmed birds.

You will learn how to:

- identify the precautions and monitoring required during and after beak trimming
- recognise the health and production responses of beak-trimmed birds
- implement management practices to ensure that beak-trimmed birds achieve maximum production.

4.1 Introduction

The farm manager has the responsibility for birds during and after the beak-trim process to ensure their welfare is not compromised. This requires monitoring of the process to ensure instructions are followed, and implementation of contingency plans if problems arise.

4.2 Precautions during beak trimming

Behaviour

During beak trimming, birds will react to the cutting of the beak by vocalising and exhibiting escape behaviour. Farm managers should be aware that excessive

vocalisation and escape responses might be an indication that beak trimming is not being conducted effectively and the processes being used should be immediately reviewed. Birds could suffer shock from the operation, huddle and develop a shivering response during and after the operation. Farm managers should observe the response of birds after the procedure and determine whether the response is normal.

Water-cooling

One problem that occurs during the hot-blade beak-trimming process is that the cutting bar of the beak-trimming machine can become hot. Overheating will cause the blade to warp and cause blisters in the bird's mouth. Most machines allow for water-cooling of the cutting bar. This helps to prevent burns to the bottom of the beak as it is placed onto the cutting bar before the blade is used to cut the beak.

Incorrect holding

When the bird is incorrectly held, some of the problems that can occur are burnt tongues, top beaks that are too short, and bottom beaks that are either too long or too short. The beak should not be pulled away from the blade until it is completely cut. This will prevent tearing of the tissue in the roof of the mouth.

Hot weather and bleeding birds

In hot weather, to avoid increased bleeding of the birds, farm managers must ask that beak trimming cease when temperatures reach 33°C. In high temperatures beaks are over-cauterised, increasing the incidence of beak dieback. Up to 3 mm of beak tissue may slough off rather than regrow. An increase in the number of bleeding birds could also be a result of improper handling or the blade being either too hot or too cold. If there is an increase in the number of birds that are bleeding, then there should be a review made of whether the catching, handling, or cutting process needs to be modified.

Birds that are sick should not be beak-trimmed. Birds that are bleeding after beak trimming attract the attention of other birds and give them a taste for blood. After beak trimming it is common to see other birds gently pecking at the wounds on the beaks of other birds. If a bird is bleeding after trimming it is recommended that an extra one second of cauterisation be applied to seal the wound. The beak of the bird can be dipped in ice water soon after beak trimming to cool the wound and prevent further bleeding.

4.3 Monitoring after beak trimming

Checking birds

Checking of birds is considered to be an important task, particularly soon after beak trimming. Regular inspection is important to the welfare of a beak-trimmed flock of birds. Compliance with the intent of the *Model Code of Practice for the Welfare of Animals: Domestic Poultry* in relation to dead, sick, deformed or injured birds can be achieved only by frequent inspections.

There should be a minimum of four inspections in the 24 hours after beak trimming.

General behaviour of birds

Farm managers should observe the birds at regular intervals after beak trimming. Immediately after trimming, birds may be unstable when standing, but they will start eating and drinking soon after. If the flock is very quiet and does not behave normally, the farm manager should make certain there is no aspect of the operation that is causing problems for the birds.

Eating and drinking

Soon after having their beaks trimmed the birds will return to feeding and drinking. Farm managers must make sure adequate quantities of feed and water are available. Beak trimming may set a flock back by two to three weeks through a reduction in feed consumption and body weight. Poor trimming will result in birds not being able to eat properly; food wastage will occur, either because they cannot pick up the feed or eating is painful. Such birds die from starvation or produce poorly. A shallow depth of feed in the feeder can impair egg production if the hen has a lower beak that is 1 cm longer than the upper beak. Adequate feed depth in troughs must be maintained for flocks with long lower beaks. Beak-trimmed birds need access to open water troughs, as the birds may take time to re-adjust to nipple drinkers. Water depth must be sufficient for birds with long lower beaks to drink.

Mortality

Some flocks of chicks may have a few birds that are weak and would normally die during the first week, irrespective of whether beak trimming was performed or not. Nevertheless, the body weights of the birds that die should be recorded and post-mortems carried out to determine the cause of death. If beak trimming is resulting in increased mortality rates or poor growth and performance of birds, then the beak-trimming method should be examined and action taken to reduce the problem. Possible causes for an increase in mortality are poor handling of birds before and during the procedure, excessive bleeding, over- or under-cauterisation, severe beak trimming, and inability to easily gain access to feed and water.

Record the mortality rate after beak trimming. It must not exceed 1% in the seven days after trimming.

Culling birds

For bird welfare reasons it is important to identify birds to be culled and to cull them humanely straight away. The only recommended method of culling on farms is

cervical dislocation. It is the only practical method and quickly results in death. An experienced farm manager can quickly decide which birds must be culled. These are birds that appear very weak, unable to move and are not likely to survive after the beak-trimming operation.

There is a welfare concern over the humaneness of cervical dislocation, since birds may experience pain before death.

Communication

Farm managers should maintain contact with beak trimmers in the first week after the operation to ensure that beak trimming has been successful and there are no problems with the birds.

Uneven flock development

When beak trimming is not consistent, uneven flock development occurs and can affect the production of the flock. Some birds come into lay earlier than others, and egg weight and other production parameters may be variable. Grading the birds into weight groups of similar size can help birds to achieve the same rate of development.

Appearance of the wound

The cauterised beak will be light brown on the outer edge of the cut and darker brown in the centre of the beak where the blood vessels and bone have been cauterised. There may be evidence of bleeding if the beak has not been sufficiently cauterised. An increased incidence of beak impaction results from the inability of the bird to control the flow of salivary secretions. The saliva causes wetness of the feed, which sticks to the beak, causing impaction of the feed on the beak and potential infection. This abnormality interferes with eating and drinking, resulting in poor feed efficiency and egg production. Farmers must cull these birds.

Beak imperfections

Farm managers should carefully observe the beak and record any evidence of beaks that have bulbous growths, splitting, chipping, thin keratinisation (characterised by areas that bruise or bleed easily), impacted beaks and beak dieback, which is a dark or gangrenous area of dead tissue on the beak.

Long-term success of beak trimming

The long-term success of the beak-trimming program is dependent on how well the beak recovers from the procedure and the resultant appearance of the beak at various stages during the life of the bird. In particular, birds should perform to the maximum of their potential, with no evidence of poor feeding or drinking ability and no evidence of cannibalism. Farm managers should make an assessment of the quality of the beak-

trimming job by first assessing the birds at 10–12 weeks when re-trimming is normally done and later at 20–30 weeks of age after birds have been housed in the layer facility.

Improperly beak-trimmed pullets cannot reach their optimum potential in the laying house.

Feathering

An indication of the effectiveness of beak trimming in the long term is the feather score of the flock. A large number of birds with poor feathering on the back, vent, tail, wings and neck is a sign the flock may not have been trimmed effectively. Bare areas on the skin are prime regions for attack and cannibalism by other birds, especially if there are scratches or wounds in these areas. Farm managers should develop a score system for feathering where A = good, B = average and C = poor, and should record this information.

4.4 Health problems associated with trimming

Following beak trimming, there is regrowth of the keratin layers of the beak. The cut end heals and is covered with keratin beak tissue. In some cases, however, the keratin layers may not be able to regrow enough for the cut surface to recover. In this situation the fibrous tissue (softer than keratin) covered by an epithelial layer becomes abraded and eroded, leaving a surface that is granulated, with a permanent scab. Many birds manage to eat and perform normally with this wound, but the open nature of the lesion can provide an entry point for bacteria. This typically produces a local infection manifesting as fibrous lumps on the face. Likewise, if the cauterisation is inadequate, there is also potential for bacteria to enter through the cut and cause an infection. In some cases the type of feeder and drinker can lead to continued irritation of the recently trimmed beak, resulting in this area of the beak acting as a portal of entry for bacteria such as *Staphylococcus* spp.

4.5 Assessing beaks

Farm managers should make a qualitative assessment of beak-trimming standards to determine a grade for the quality of their beak trimming.

Grade A: no imperfections, splitting, chapping, swelling, or poor keratinisation; 12 mm upper beak and 14 mm lower beak; inward V-shaped beak. Fewer than 5% of birds with minor imperfections and/or incorrect beak lengths.

Grade B: 5–10% of birds with minor imperfections and/or incorrect beak lengths.

Grade C: More than 10% of birds with major imperfections and/or incorrect beak lengths.

4.6 Production responses of beak-trimmed birds

Mortality

Although pullet mortality rates are generally unaffected by beak trimming in sheds with light control, mortality is lower in beak-trimmed flocks compared with non-trimmed flocks. The mortality rate of severely trimmed birds is generally lower than that of lightly trimmed birds, due to lower levels of cannibalism.

Feed intake and body weight

Feed intake and body weight are lower when beak trimming is done at an early age. When an excessive amount of beak is trimmed from adult birds, feed intake and body weight are reduced. Trimming of 4, 6, and 8 mm of the beak of adult birds causes a decrease in feed intake and body weight. Removing 3 mm of the beak of an adult bird depresses feed intake for a short period, but recovery occurs within two weeks. A moderate trim of 2 mm in adult birds does not affect feed intake.

Feed efficiency

Feed efficiencies of beak-trimmed birds are better than those of untrimmed birds. Feed wastage has been suggested as a possible reason for the increased feed usage in untrimmed birds. Daily feed usage, which includes feed consumed and feed wasted, can be about 120 and 140 g for beak-trimmed and untrimmed birds, respectively. One reason for better feed efficiencies is correct beak trimming, which results in better feather cover and decreases the energy requirements for maintenance.

Feather cover

Feather cover is better in beak-trimmed birds, probably because of reduced feather pulling and pecking. In comparison, untrimmed flocks often peck the back, tail, and neck regions, thus removing feathers. Beak trimming half of the upper beak during rearing may improve the feather cover of adult birds. Feather pulling and pecking can be reduced by removing two-thirds of the beak at day-old. Floor-reared and wire-reared birds have better feather cover as a result of beak trimming.

Age at maturity

Trimmed birds experience a short delay in sexual maturity. An exception is with a severe trim, which can result in a two-week delay in sexual maturity.

Egg production

Moderate beak trimming does not affect egg production. In fact, some beak-trimmed flocks have improved egg production compared with untrimmed birds. Reduction in egg production can occur when 18-week-old birds are subjected to a severe trim.

Egg quality and weight

Beak trimming does not affect shell thickness, the incidence of blood spots, or albumen height. Egg weight is generally not affected by beak trimming, although there can be a decrease in egg weight when beak trimming is done at day-old.

Summary

- The cutting bar can get hot during trimming.
- Incorrect holding can lead to problems during beak trimming.
- A cold or blunt blade can fracture the beak.
- Observe the behaviour of beak-trimmed chickens at regular intervals.
- Check beak-trimmed birds four times in the first 24 hours after trimming.
- Cease beak trimming when temperatures reach 33°C.
- Cannibalism can arise if birds bleed after beak trimming.
- Poor trimming results in food wastage, starvation and an uneven flock.
- Cervical dislocation is the most practical method of culling birds.
- Determine the effectiveness of trimming by measuring beak length.
- Record the mortality rate after beak trimming. It should not exceed 1% in the first seven days.
- The success of beak trimming is reflected in bird performance and the appearance of the beak.
- Grade beaks on the basis of imperfections.
- Poor feathering is an indication of poor beak trimming.

Management checks

1. What beak-trim do you normally use?
   - ☐ 5 mm block cut
   - ☐ 6 mm block cut
   - ☐ 7 mm block cut
   - ☐ Other _____
2. What checks do you make during the beak-trimming process?
   - ☐ Blade colour/temperature
   - ☐ Number of bleeders
   - ☐ Bird behaviour
   - ☐ Bird handling
   - ☐ Beak trimmer skills (precision, bird handling, etc.)
   - ☐ Position of team in the shed
   - ☐ Other _____
3. How do you know the quality of beak trimming is up to standard?
   - ☐ Quick visual assessment
   - ☐ Measure the beak lengths of a few birds
   - ☐ Measure the beak lengths of 100 birds and work out a percentage accuracy
   - ☐ Bird behaviour

- ☐ Production changes
- ☐ Other _____

4. What management practices do you use after trimming to maximise bird welfare and production?

Short-term

- ☐ Ensure feed and water is readily available
- ☐ Add extra feed to ensure birds do not injure trimmed beak on the bottom of the feeder
- ☐ Change the lighting according to birds' needs
- ☐ Cull sick birds
- ☐ Other _____

Long-term

- ☐ Monitor birds' feathering
- ☐ Monitor beak length and shape
- ☐ Monitor health problems
- ☐ Monitor production responses (e.g., egg weight, feed intake and egg production)

Best practice

Short-term

- Check birds for behaviour and appearance regularly after beak trimming; i.e., four times on day 1, then twice daily for the next three days.
- Ensure feed and water is readily available.
- Ensure birds are not heat or cold stressed.
- Cull moribund birds.
- Ensure lighting is adequate and litter is not wet.

Long-term

- Monitor flock evenness.
- Check beak length, appearance of beak stump and feather cover.
- Ensure production is meeting required standards.

Qualitative measurements

- Score bird condition.
- Grade beaks on appearance.

5

Welfare of beak-trimmed birds

Beak trimming causes short-term pain to prevent death from cannibalism.

This chapter helps farm managers to understand the welfare issues involved in beak trimming.

You will learn how to:

- identify different views concerning beak trimming
- identify *Model Code of Practice for the Welfare of Animals: Domestic Poultry* recommendations that apply to beak trimming
- identify the role that training can play in maximising bird welfare.

5.1 Introduction

The welfare of birds during beak trimming and the potential negative long-term effects of the procedure are becoming increasingly important to consumers. In the *Model Code of Practice for the Welfare of Animals: Domestic Poultry*, beak trimmers are required to be accredited to ensure that standards of beak trimming are consistent and do not compromise the welfare of birds. The beak-trimming standards were developed by industry and have been documented in the *Beak Trimming Training Manual*, Edition 1, Publication no. 02/092, published by the Rural Industries Research and Development Corporation. It is the farm manager's responsibility to ensure that operators adhere to the recommendations for beak trimming in the *Model Code of Practice for the Welfare of Animals: Domestic Poultry*.

5.2 Codes of Practice for beak trimming in Australia and Europe

In 1965 the Brambell Committee in the UK recommended that beak trimming should be banned within three years. However, beak trimming is still widely used worldwide, although it has been banned in some EU countries. In Germany the Animal Welfare Law (1998) states that beak trimming is an amputation, which is a painful procedure for birds and impairs the function of the beak. However, it still can be performed if the intervention is indispensable for the protection of the birds, provided that people with expert knowledge and skills carry out the beak trimming.

In the UK, amendments to the RSPCA's Freedom Food Welfare Standards in 2003 state their intention to move away from any beak trimming within five years, and that it will not be permitted after 2010. The industry, on the other hand, has suggested that it may take 10–15 years before aggressive traits can be bred out. Where beak trimming is practised in the UK the standard is to remove one-third of the upper beak if cannibalism is a problem.

In Australia, the Agricultural Resource Management Council of Australia and New Zealand (ARMCANZ; now PIMC, the Primary Industries Ministerial Council) passed a resolution in 2000 that required the egg industry to develop a national accreditation program for beak trimming as a component of the *Model Code of Practice for the Welfare of Animals: Domestic Poultry*. As a result, the egg industry developed a training manual that defines acceptable standards. These standards included how to conform to biosecurity requirements, set up beak-trimming equipment, handle birds for beak trimming, trim the beak and assess the quality of the beak trimming. The *Beak Trimming Training Manual* also specifies how training can be implemented in the industry.

The Australian egg industry intends to accredit all beak trimmers.

5.3 Welfare views

Some welfare groups consider that beak trimming is a last-ditch measure to avoid the consequences of aggressive behaviour in birds resulting from bad management, high stocking densities, poor diet and high light intensities. They indicate that birds suffer a setback in growth and development as they recover, and that the pain caused during beak trimming reduces production, particularly from beak tenderness, which makes it difficult for birds to eat. There is also a concern that trimmers show insufficient care, with some birds suffering shock, burnt tongues and other facial injuries.

Welfare groups consider that the need for the beak-trimming practice has resulted from over-intensification.

5.4 Changes in the beak after trimming

The beak is essential for birds to pick up feed particles, explore the environment, preen and defend themselves. The beak surface contains structures that play important roles in enabling birds to discriminate between various food sources. Beak trimming results in the removal of sensory receptors, with a subsequent reduction in feed intake, pecking efficiency, and drinking ability; loss of some temperature and touch responses; and development of behaviours indicative of chronic pain. Birds can become passive when two-thirds of the beak is removed. Dry mash tends to block the nostrils of birds that have short, blunted beaks, and they are unable to clean up their food troughs.

The wound on the beak stump heals about one to two days after the operation in day-old birds.

5.5 Pain after beak trimming

Following beak trimming, birds experience painless and then acute and chronic pain phases; this is similar to the pain cycle humans experience after injury.

The painless phase occurs soon after injury. The injured nerves lose their ability to transmit messages and signals cannot be received in the brain. There are also analgesics released from the brain that can mask the pain.

The acute pain phase is the period during which trimmed birds adjust to the immediate injury, and it can last a few minutes, hours, or days. The acute pain results from activation of pain receptors as a result of damage to the beak and nerve injury. The receptors send signals to the brain, causing the feeling of pain.

The chronic pain phase occurs when birds experience pain for a long period after the beak has healed. Research has shown that chronic pain is unlikely to be present if birds are beak-trimmed according to accreditation standards.

The pain-free period after trimming can last for several hours or for longer than 24 hours.

5.6 Neuromas

A neuroma is a tangled mass of nerves that grows after a nerve has been cut. Neuromas form in the beak stump after trimming and have been suggested as the cause of chronic pain. Several weeks after the neuroma forms, the tangled nerves start to break down, taking at least 10 weeks to repair. Occasionally, the mass of nerves does not degenerate and can give off signals that are felt as chronic pain.

Neuromas will form irrespective of the age at which beak trimming is performed but have a greater potential to dissolve if chicks are trimmed early in life. Research shows that birds beak-trimmed at day-old and re-trimmed at 12 weeks do not have feeding and pecking behaviours that indicate they are suffering severe chronic pain.

Scientists are still to determine whether all neuromas that form in the beak cause chronic pain.

5.7 Beak-trim training

An important factor in determining the welfare of beak-trimmed birds is the skill of the operator. A well-trained, experienced beak trimmer using best-practice methods will accurately remove the required length and so minimise welfare problems. A poorly trained, less experienced operator who doesn't use best practice is likely to be the source of problems that could have been avoided.

Training in Australia is largely carried out on the job, where experienced trimmers provide guidance and supervision to those new to the task. Skills are taught and knowledge imparted so that a new trainee can learn how to beak-trim and find out why things are done in a certain way. The other vital component of learning is for trainees to gain a caring attitude towards the animals they trim and thus maximise animal welfare.

5.8 Beak trimmer accreditation

Accreditation provides a way of ensuring beak trimmers meet the standards required by on-farm quality management systems. Beak trimmers are required to have their skills and knowledge formally assessed against a national competency standard developed by the poultry industry. Once they demonstrate their competence, they meet quality assurance criteria required by the egg industry in Australia. Accreditation of beak trimmers is required according to the *Model Code of Practice for the Welfare of Animals: Domestic Poultry*.

How well trained are the beak trimmers you use? Contact the Australian Egg Corporation Limited (02 9409 6999) for further information about accreditation.

5.9 The workplace trainer's role

The role of a workplace trainer is to train suitable employees so they can beak-trim all ages of birds according to the *Model Code of Practice for the Welfare of Animals: Domestic Poultry* standards. The aim is to bring trainees to the required standard so they can be assessed as competent and therefore become accredited beak trimmers. A workplace trainer should be proficient at beak trimming, have industry experience and

be up-to-date with recent trends. Technical ability, however, does not automatically make people good workplace trainers. Teaching others is a separate skill that must be learned—just as beak trimming must be learned. Courses are available for gaining some advice on how to train others. Contact TAFE or a private training provider for details.

The Beak Trimming Training Manual *supports training of new beak trimmers.*

5.10 The trainee's role

The trainee's role is to learn on the job. Trainees need to acquire the necessary knowledge, skills and attitudes to meet industry standards. They are assessed once the workplace trainer is satisfied they can meet the standards. They become accredited beak trimmers if they are deemed 'competent'. If they do not reach the required standards they are deemed 'not yet competent' and can be reassessed when they have gained more skill and experience in the areas in which they did not perform well.

5.11 Training in the workplace

Trainees should be able to work at their own pace wherever possible, so that they have time to grasp what is required. They should be encouraged to observe carefully so they pick up the 'tricks of the trade': those skills that make the job easier and more accurate. It is also important to think about how trainees learn best and to use the methods that best suit them. Do they prefer to see a task done, or are they happy to have it described? Do they pick up a task quickly, or do they need time to think about it and practice?

5.12 Trainer tasks

The trainer needs to refer to the *Beak Trimming Trainer Guidelines* and discuss with the trainees how the training will take place and what will be expected of them. It is important that trainees know how and when the training will take place, so there are no surprises. The main tasks of the trainer are to provide the *Beak Trimming Training Manual* to the trainees and decide how it will be used in the training. Trainers are expected to demonstrate correct techniques, including handling birds, setting up, trimming and checking quality; provide opportunities for trainees to practice the required skills; answer questions about things trainees are not sure about; provide feedback about the trainees' performance; and carry out practice assessments to help trainees to be ready when the real assessment occurs.

5.13 Assessment

Assessment is a process that checks whether someone has reached the desired standard. It ensures that a trainee is actually competent to carry out set tasks at the end of the training period. An accredited assessor will assess the trainee. Accredited assessors

must have recent industry experience. Where this is not possible, an experienced beak trimmer must help the assessor. This ensures the assessor or assessment team has the required technical and assessment skills. Assessors must be employed by a registered training organisation (RTO) or have a partnership agreement with an RTO. This linkage provides the mechanism for assessment results to be recorded and the provision of nationally recognised Statements of Attainment. It also ensures that the assessor complies with the standards of the Australian Quality Training Framework (AQTF). The assessor will assess trainees against relevant industry standards. He or she will arrange a convenient time to visit when beak trimming is being performed during a normal workday and will let the trainees know how they will be assessed. Trainees will be observed as they go about their normal duties; questions will be asked and a decision made as to whether they meet the standards (i.e., whether they are competent). Feedback is provided to the trainees and team leaders and arrangement made for a nationally recognised Statement of Attainment to be issued to the trainees (if they are successful).

Assessment measures the trainee's competence against industry standards.

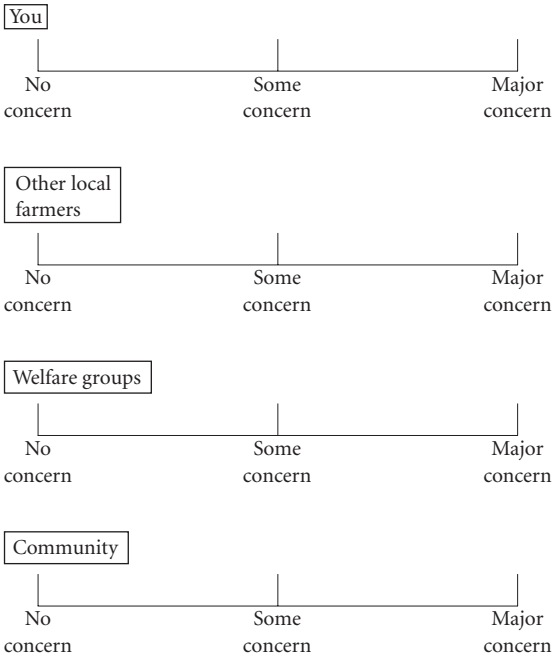
Summary

- Some welfare groups consider that beak trimming is used as insurance against bad management.
- Most producers believe that beak trimming prevents pain and suffering from cannibalism.
- The beak of the bird is essential for picking up feed particles, for preening, and for defence.
- Beak trimming reduces food intake and pecking efficiency.
- Birds experience pain-free, acute and chronic pain phases after trimming.
- Neuroma formation is suggested as a cause of chronic pain.
- Beak trimming correctly at day-old leads to normal feeding and behaviour.
- Beak trimming has been banned in various EU countries.
- In the UK, amendments to the RSPCA's Freedom Food Welfare Standards in 2003 stated the intention to move away from any beak trimming within five years.
- In Australia, PIMC required the egg industry to develop a national accreditation program for beak trimming.
- Beak-trim training in Australia is intended to be carried out on the job, with no set time limit.
- The workplace trainer's role is to train suitable employees so they can beak-trim birds of all ages in accordance with egg industry standards.
- The trainee's role is to learn on the job to acquire the necessary knowledge, skills and attitudes to reach industry standards.
- Assessment is a process that checks whether someone has reached the desired standard.

- Assessors must be employed by a registered training organisation (RTO) and comply with the standards of the Australian Quality Training Framework (AQTF).

Management checks

1. Use the following scales to:
   - Identify the welfare concerns relating to *beak trimming* shown by you, other farmers, welfare groups and the community (use a circle on each of the four scales).
   - Identify the welfare concerns relating to *cannibalism* shown by you, other farmers, welfare groups and the community (use a cross on each of the four scales).



2. Do you have access to the *Model Code of Practice for the Welfare of Animals: Domestic Poultry*?

   ☐ Yes ☐ No

3. Have you been involved in any training related to:
   - beak trimming ☐ Yes ☐ No
   - quality assurance ☐ Yes ☐ No
   - management of birds ☐ Yes ☐ No
   - care of birds ☐ Yes ☐ No
   - training people ☐ Yes ☐ No

Best practice

- Consult Chapter 3 to determine the standards required for trimming birds of each age.
- Use accredited beak trimmers who have a proven reputation in the industry.
- Do a short course to improve your training skills.
- Appreciate the fact that other people, including welfare groups and consumers, may have differing views on beak trimming and cannibalism.

6

Industry views on beak trimming

The views given in this section are from experienced beak trimmers, egg producers, and veterinary and industry consultants in Australia. Information is provided by industry on advantages and disadvantages of beak trimming, bird welfare considerations, current methods, costs of trimming and methods to minimise the use of trimming.

This chapter helps farm managers to familiarise themselves with current industry views.

You will learn how to:

- describe industry views on the advantages and disadvantages of beak trimming
- describe industry views on the future of beak trimming.

6.1 Introduction

Many producers believe that, on balance, the practice of beak trimming is favoured, provided the operation is performed properly. Using cannibalism and mortality as criteria, beak trimming is interpreted as alleviating stress. The prevention of cannibalism is seen as a positive contribution to animal welfare, as the pain and suffering resulting from cannibalism may be much greater than that from beak trimming and may result in the death of the bird.

Producers believe that beak trimming prevents certain death in layers.

6.2 Public perception

Beak trimming generally has a poor image. Originally called 'debeaking', it sometimes was quite severe, and the memories linger. The key to good beak trimming is consistency and concentration. If just one bird in a hundred is cut wrongly—especially too short—then the 99 done correctly are generally ignored and the focus is on the one ruined bird. With infrared trimming now a reality, the industry must seize the opportunity to lift the image of beak trimming.

6.3 Beak trimming changes over the years

Bird welfare

In the 1970s only the top beak of the bird was trimmed. However, new strains introduced to Australia were more aggressive and there was a need to trim the bottom beak as well. Birds with a sharp bottom beak picked at the vent regions of other hens as the egg was laid, causing injury leading to prolapse. Light intensity was reduced in sheds to help minimise the vent-pecking problem.

The new strains imported into Australia have a high predisposition to pecking. Bird welfare has improved, because three trims were usually performed (at 5–10 days, 10–12 weeks and before housing). However, nowadays most strains receive only one light trim, particularly if they are housed in lightproof housing.

Different strains require different levels of trimming.

Farmers and supervisors who refer to the *Model Code of Practice for the Welfare of Animals: Domestic Poultry* are familiar with industry welfare commitments. The extremes of beak trimming are less commonly seen now, but on occasions beak-trimming quality is poor. This occurs because of the inability to maintain trained staff in beak-trimming crews. Vent pecking and cannibalism are more likely to occur in barn and free-range production systems, especially in poor facilities. There is a need for high standards of bird husbandry and a greater need for beak trimming in barn- and aviary-type systems.

Farmers have developed greater awareness of welfare issues.

Generally there has been no benefit to the industry from changes in beak trimming, other than in buying day-old, infrared-trimmed birds. Benefits have arisen from the improved technology and housing and reduced need to trim birds or the need to only beak-tip birds that are reared in cages in controlled environment houses.

Equipment

The hot blade equipment has not changed and thus the trim result is very dependent on the operator. However, the use of semiautomatic machines and more experienced

operators has improved the quality of trimming. The recent introduction of infrared trimming (at day-old) has resulted in a significant improvement in beak-trimming uniformity, bird viability and growth profiles and improved bird welfare. Mechanisation of this equipment has taken human error out of beak trimming.

Working conditions

Working conditions have improved because of controlled environment shedding. Generally in barn-style sheds there has been minimal improvement. Outbreaks of picking in laying flocks, with high levels of vent trauma, are an indication that the shed conditions are not suitable.

6.4 Current methods used for trimming and re-trimming

Most producers aim to have a blunt beak with a step of 3 mm at 30 weeks of age. Currently, trimming is done at 10 days of age using a block trim, which results in a slightly longer lower beak. This has been the standard method used for all strains for the past 20–30 years. Re-trimming at 10 weeks involves a tidy-up of the top beak and cutting off some of the lower beak. When birds are trimmed at less than 12 weeks of age there is a greater chance of the beak growing out. If 5 mm of beak remains at 12 weeks it will hardly ever grow out beyond 7–8 mm. A well-grown bird at 10 weeks is less likely to show beak regrowth than a backward pullet.

Excessive beak trimming leads to production problems.

Some producers consider that the length of the beak is not important. The beak-trim has to be short enough so that the bottom beak does not regrow. Some farms do not trim until eight weeks, with no further touch-ups. At 9–10 weeks of age the upper and lower beaks are cut such that 9 mm of the upper beak remains, with a 2 mm step to the lower beak. The risk in delaying the first trim is that picking can occur before eight weeks. Other farms trim only once, at 10 weeks. Birds housed in free-range and barn systems usually have two beak-trims, the first at 7–10 days and the second at 12 weeks, using a step cut. A light step cut is used for adult birds in production if pecking is a problem.

Birds housed in light-controlled and environment-controlled houses are given a light trim only at 9–10 weeks. On some light-controlled farms only the beak tip is removed.

Beak tipping is practised on some farms with light-controlled sheds.

Female broiler breeders are not trimmed, and males are tipped (removal of 2 mm of the upper and lower beak) to prevent them pecking at females.

The only situation where trimming may not be necessary is in some free-range systems where birds have been reared in the free-range facility and have not developed undesirable pecking behaviours.

6.5 Current costs of trimming and re-trimming

The cost of beak trimming has increased marginally since 1980 from A$0.10–0.12/bird to A$0.15/bird in 2005. However, the cost of beak trimming may increase to A$0.20/bird in 2006. Some contractors are currently charging A$0.07 for the first and second trim combined in order to maintain market share. When combined with vaccination, the cost of trimming equates to A$30–35/hour for a good operator.

6.6 Factors that can lead to cannibalism

Brooding

Cannibalism is a major problem, and most farmers have experienced it at some time. If birds are not beak-trimmed at day-old, toe picking or tail picking can occur and if unchecked can lead to 50% mortality. Extending bright brooding lighting beyond 48 hours may result in a pecking problem.

Stocking density

Overcrowding in the brooding areas, especially with 'hot spot' brooders, can result in cannibalism. It is advisable to expand the brooding area every day. A stocking density of 450 cm^2 per bird in cages and 7 m^2 in barn sheds will almost always cause pecking problems. White-feathered birds are genetically predisposed to pecking and are much more likely to cannibalise than brown- or black-feathered birds. Most cannibalism starts with picking around the tail and vent. Birds will pick at the base of the tail, lower abdomen and vent and leave gaping holes. Flocks, which appear normal, can quickly become cannibalistic and birds will be killed within 15 minutes. Bare, exposed skin is vulnerable to deep scratches. Some lesions can be 15 cm long and 3 cm deep.

Light intensity

High light intensity can increase the incidence of pecking. Poultry originated in rainforests under a foliage canopy with low light intensity. Under these low light conditions, feather pecking is minimal. However, under high light intensity (100–1000 lux), particularly in naturally ventilated sheds, birds will engage in more feather pecking. In naturally ventilated sheds the lower side panels are often left open for ventilation. Excessive light shines up under the cages, illuminating the vent during laying and encouraging the other birds to peck. Increasing the light intensity and duration of exposure for mature birds in barn facilities can increase pecking. Changes in light intensity in naturally ventilated sheds owing to frequent changes in outside cloud cover can increase pecking, as does variable light intensity from poor lighting layout in controlled-environment sheds. Light leakage from inlets and outlets, resulting in 'torch-like' beams of light on the birds' feathers, attracts feather pecking.

Bright light will increase aggression.

Management

If birds are moved from controlled-light housing to uncontrolled lighting they will be likely to develop pecking problems within two to four days. This is exacerbated during periods of high light intensity, especially in spring and summer, or during the pre-lay period when there is competition for feeding space and/or inadequate feed intake. In barn systems, if the trim is light, birds develop pecking problems during the onset of lay, leading to high feather loss, which in turn leads to high mortality rates. It is difficult to stop this problem. Poorly reared flocks, or those with Marek's disease, have variable-sized birds and tend to develop destructive pecking problems.

A common practice is to move birds to fill in gaps. The bird that is left in the cage could be a killer and will peck her new cage mates. Reduced or damaged plumage from cage rearing can lead to increased pecking mortality. Broken, distorted or cut feathers are more attractive to flock mates.

Keeping different ages of birds with different feather colours together may start a behavioural pecking problem.

Other factors that need to be considered are:

- Strains selected for laying vary in their pecking vices.
- Flock nervousness or hysteria is common in high-producing strains.
- Periods of disturbance from vehicles and other farm noises can upset birds and increase pecking.
- Changes in staff tending to the flock can disturb birds and initiate pecking.
- Pecking increases with a lack or absence of properly designed nest boxes.
- Rough handling often leads to pecking.
- Lame birds and dead birds left in the flock attract other birds to peck at them.
- High dust and ammonia levels, the presence of predators, flies and ectoparasites, and poor ventilation can increase pecking.

Nutritional deficiencies are often reflected in some neck moulting soon after the peak of lay.

Weather

Variable weather conditions (e.g., high humidity and high temperature), especially during periods of thunderstorm and lightning activity, can initiate pecking.

One of the overlooked factors in beak trimming is the ambient temperature when birds are trimmed; ideally it should be at 24 or 25°C. When birds are being beak-trimmed (10–12 days of age) at temperatures of 37°C it is difficult to stop the beak from bleeding. Beak trimmers have always known it is better to beak-trim when it is cooler. In a controlled-environment shed the temperature can be set at 25°C. Under

these conditions, and using a five-member beak-trim crew, it is possible to trim 40 000 caged chickens/day or 1200/hour with fewer than 1% bleeders.

Injuries

Birds are attracted to peck at the reproductive tract, which is exposed during egg laying. An inflamed cloaca from enteritis, or a bulging cloaca at the onset of egg production, also attracts pecking. Injuries attract pecking at damaged tissue. If birds are bored they may peck. Aggressive individual birds will attack sick, weak, small, or odd-coloured birds, and will attack during the period when there is feather change from fluff to feathers in young birds.

6.7 Remedies to stop cannibalism

There are a number of methods that can be used to prevent cannibalism. These include environmental, nutritional and medicinal approaches as listed below.

- beak trimming
- hanging cabbages or sugar beets in the pen for birds to peck at
- putting pine boughs on the floor
- using dim and/or red light to reduce aggression
- painting windows red
- applying Stockholm tar to picked birds
- using 'no pick' salves
- using repellent sprays
- adding salt to the feed and water
- feeding oats
- feeding vitamin preparations or including vitamin B complex in drinking water
- feeding DL-methionine, manganese sulphate and horn meal to reduce cannibalism
- applying Vicks Vaporub® on the wound
- including DL-methionine in drinking water (1.5 g/L for the first four days; 1.0 g/L for the next three days)
- feeding whole-grain diets.

Beak trimming is the most successful method known to reduce cannibalism.

6.8 Suggested ways of minimising the need for trimming

Lighting

Controlled lighting (about 3–5 lux) in lightproof sheds from day-old to end of lay is the only effective method to prevent cannibalism. The lower light intensity in the shed reduces pecking and restricts mortality to 3%–4% during lay. To avoid any pecking, the shed needs to be blacked out, with no outside light leaking in through the shutters or fans. In barn systems the policy of using higher light intensity in nest boxes to

attract birds can increase pecking mortality because birds can easily see the oviduct everting as the egg is being laid.

Nutrition

The use of high fibre diets has had variable success in minimising pecking in barn birds. There is a lack of awareness of how nutrition management can be implemented to reduce pecking. Cost pressures often mean that appropriate diets are not fed. There is a view that protein-deficient diets (i.e., inadequate intake of protein associated with low feed consumption) are linked with increased pecking mortality.

Deficient levels of sulfur-containing amino acids (methionine and cysteine) result in increased pecking mortality. Increasing the proportion of plant proteins compared with animal proteins has also been associated with increased pecking mortality. Increased tryptophan and group B vitamins can help reduce pecking activity. Including higher levels of millrun, rice hulls, oats and barley in the ration may lower the incidence of pecking mortality. High levels of pecking mortality on high wheat or corn formulations have been significantly reduced by the incorporation of high levels of fibre in the rations. This may be due to changes in gut microflora, making the birds feel less hungry and increasing the feed passage time.

Changes in diet (e.g., change in source of feed or formulation) and differences between batches of feed can lead to changes in palatability and feed intake, resulting in increased pecking mortality. Feeding diets with deficiencies of calcium and protein, manganese and arginine, zinc, salt or sulfur amino acids can increase pecking. Feeding canola meal, blood meal and soybeans, pellets or compressed feed using a cafeteria system of feeding, with excess corn in the ration, can increase pecking. Rations containing high levels of wheat and low levels of protein and vitamin B12 lead birds to compensate for the protein deficiency by increasing their pecking at the feathers of other birds.

Housing

Birds reared on perches before moving to the layer facility have significantly lower mortality rates from picking. Facilities that house birds from day-old to end of lay invariably have lower pecking mortalities. Broiler breeder companies or, particularly, free-range type operations often use this procedure. Generally they do observe lower pecking mortality rates.

Additives

Treatment of drinking water with high levels of water-soluble vitamin B can reduce pecking activity for a short period. Use of vitamins is implemented only immediately following a noted or suspected stress-related change in pecking behaviour. A reduced concentration of dietary electrolytes (particularly sodium), or reduced intake, can significantly increase pecking mortality.

Health

Health problems in flocks often initiate pecking mortality. This is observed in Marek's-vaccinated flocks where diseased birds are pecked and dominated by healthy birds. Rigorous culling is required.

Strains

Genetic variation among strains can affect pecking mortality. Farmers have observed differences between strains. Changing to a strain that engages in less pecking and cannibalism is often practised.

Flock uniformity

High stocking densities can increase pecking mortality. Poor uniformity in body weight (birds either too light or too heavy) at point-of-lay can result in increased pecking mortality. Consideration should be given to introduce grading during rearing in flocks with poor uniformity in body weight.

6.9 Implications of not beak trimming

It is possible to rear birds without beak trimming if there is effective light control. However, once an outbreak of cannibalism occurs it will be difficult to control. The more flighty, aggressive strains need to be reared at lower light intensities. Control of pecking is quite different in the laying stage compared with the rearing stage, when a higher light intensity (up to 5 lux) is provided. Under some conditions it might be possible to manage laying hens without beak trimming, but for most producers the risks of such a policy are too high. Care must be taken when considering the 'no trim' form of management. Elimination of beak trimming may seem to be an attractive goal, but it must be done with caution and careful consideration of all the consequences.

6.10 Future of trimming

The possibility of using laser and infrared trimming may improve the welfare of the bird and satisfy some of the demands of the Animal Welfare movement, through a reduction in pain and removal of precise amounts of beak, taking away operator error. It is possible that day-old laser- or infrared-trimmed birds may not require a re-trim, especially in the newer light-controlled housing. The requirement for trimming may become less in the well-managed, controlled-environment facilities. The reverse may apply to extensive systems until there is an appreciation of the requirement for uniformity and adequate facilities. In barn housing the EU condones the use of trimming. Therefore it is presumed that beak trimming will be used for a long time in alternative systems. Some producers believe that beak trimming will always be needed because the economics of the egg industry require intensive housing.

The ultimate goal would be to genetically engineer birds with beaks modified so they could eat and drink properly but be unable to cannibalise. Producers experiencing continuing losses from cannibalism will either get out of alternative systems or beak-trim. Various alternative production system associations have placed a ban on beak trimming, which imposes serious risk to the business if cannibalism is a problem.

6.11 Advantages of beak trimming

Beak trimming minimises the incidence of picking and subsequent feather loss and mortality, thereby maintaining quality of life for the bird. Beak trimming prevents the behaviours that lead to the damage arising from the initial vices of feather sucking and feather plucking, and helps to improve feed conversion and production. It is critical to beak-trim before any picking has begun. Beak trimming is an insurance policy against cannibalistic behaviour. Farmers have peace of mind when birds are trimmed, especially if flocks are prone to pecking, given the shocking impact that pecking and cannibalism can have.

Beak trimming can reduce laying flock mortality from as high as 50% to 5%. For example, the cost to trim 1000 birds is A$150, but a net saving of A$1725 could be achieved from the reduction in mortality of about 20% for birds valued at $8.62. These savings do not include the increase in egg income resulting from the reduced mortality.

6.12 Disadvantages of beak trimming

A common problem has been excessive beak trimming, resulting in birds with reduced ability to pick up food particles. Sometimes this can occur when inexperienced beak trimmers, rather than experienced contractors, carry out the beak trimming. When birds are not beak-trimmed sufficiently the beak will grow out and severe cannibalism may develop.

On occasions, the top beak can be cut too short and therefore is tender, affecting feed intake and body weight and subsequent laying performance. On the other hand, the top beak can be left too long and grows out, leading to feather picking and mortality. Sometimes a large gap is left between the top and bottom beaks, making it difficult for birds to feed, especially from chain-trough feeders where there is a lower feed depth.

If birds are trimmed for the first time at 10 weeks, their growth rate is slower due to increased beak sensitivity, which reduces feed intake. The nutrient density of feed is usually increased, which is an expensive strategy. Improperly beak-trimmed birds usually have lower egg production rates. Total reliance on beak trimming to address pecking problems is also a long-term disadvantage to the producer. Farm managers can reduce the severity of trimming in light-controlled facilities by applying nutritional, husbandry and lighting strategies.

Summary

- In the 1970s only the top beak was trimmed.
- Different strains require different levels of trimming.
- Farmers have a greater awareness of bird welfare.
- Infrared trimming is a new method with potential welfare benefits.
- Beak trimming is the most successful method of reducing cannibalism.

- Excessive beak trimming leads to production problems.
- Light-controlled housing reduces the need for excessive trimming.
- Some producers consider the length of the beak-trim not to be important.
- Beak tipping is practised on farms with light-controlled sheds.
- Light intensity of 3–5 lux is required to prevent cannibalism.
- Protein-deficient diets lead to cannibalism.
- Inclusion of high fibre in rations reduces feather pecking.
- Birds reared on perches have less pecking problems.
- Vitamin B can reduce pecking activity.
- Strains vary in pecking mortality.
- Toe pecking and tail pecking can lead to mortality.
- Pecking at the vent while the egg is being laid can be a problem in sheds with high light intensity.
- Moving hens to another cage or to a high-light-intensity shed can initiate pecking.
- Changes in diet or batches of feed can increase pecking.
- Injured birds will often be cannibalised.
- The image of beak trimming needs to be improved.

Management checks

1. Do the views expressed in this chapter change your thinking about beak trimming?

   ☐ Yes ☐ No

2. Why or why not?

   .....

   .....

   .....

3. What opportunities do you have to discuss beak trimming with other people?

   .....

   .....

   .....

7

Alternatives to beak trimming

Use of fitted devices, enrichment devices, abrasives, low lighting and low-pecking strains can reduce the need for beak trimming.

This chapter helps farm managers to consider strategies that can be used to reduce the need for beak trimming.

You will learn how to:

- describe devices that can be used to reduce pecking problems
- describe genetic strategies being used to reduce feather pecking in strains of birds
- outline lighting techniques to reduce feather pecking in birds.

7.1 Introduction

Beak trimming has been banned in some countries, and some multinational food chains are requesting products from birds that have not been beak-trimmed. As a result there has been an increasing emphasis placed on developing alternative methods to replace the need for beak trimming. This chapter examines some of the methods that have been used for many years in the industry, plus new strategies that involve the use of enrichment devices and beak abrasives. The method that has the greatest potential is to select docile strains of birds that have reduced tendency towards aggressive feather pecking and cannibalism.

7.2 Spectacles

The use of spectacles (anti-pecking devices made of a coloured flexible polyethylene material), fitted on the nares of the hens, allows birds to look to the side or down but

not directly ahead. Spectacles reduce social stress by limiting visual contact. Spectacles can be effective in controlling feather pecking and improving feather cover, but they are impractical in commercial situations. Mechanical devices have disadvantages: they can only be put on birds over 1 kg, they are relatively expensive and they take considerable time to fit to the bird. They cannot be used in cages because they interfere with eating and drinking and can be easily dislodged. These devices are held in place by metal clips that pierce the nasal septum, which is a welfare concern. The *Model Code of Practice for the Welfare of Animals: Domestic Poultry* does not recommend such devices for general use.

Spectacles are used mainly by poultry fanciers.

7.3 Contact lenses

Red contact lenses were first used in the 1960s in the USA for layers as an alternative to beak trimming. They failed to gain popularity because they caused considerable eye irritation, eye infections and abnormal behaviour, and were not retained well. The lenses were redesigned in an attempt to eliminate these problems. The lenses have been claimed to keep birds calm, eliminate the need for beak trimming, eliminate cannibalism, reduce feed usage and increase egg production. Birds can be fitted with the lenses at the rate of approximately 10 birds/minute. However, in some cases red plastic lenses inserted at 12 or 16 weeks of age have lowered egg production and increased mortality because of the inability of birds to find the feed. More recently, contact lenses of other colours have been introduced for laying birds. Birds fitted with red lenses (rosy glasses) appeared to be the least stressed.

7.4 Environmental enrichment devices

Environmental enrichment makes the environment more interesting for the bird, thus increasing the range of desirable behaviours and reducing the occurrence of harmful ones. The devices improve the animals' interest and enable them to cope better with intensive housing. This is normally achieved by introducing objects, biological materials, pictures, sounds and odours into the birds' cages or floor pens. The use of cage furniture (e.g., nest boxes, perches and dust baths) also helps to satisfy some of the birds' requirements.

Enrichment devices reduce fear, boredom and feather pecking.

A wide range of objects has been used to provide enrichment for birds. Some birds ignore the devices and show increased aggression. One of the devices on the market is the Agrotoy®. It consists of a blue plastic frame with a red hanger attached. The device reduces aggression and mortality in caged laying hens.

Small silver bells also attract pecking. Peckablocks® (cereal-based enrichment devices) are said to reduce the amount of aggressive behaviour directed at other birds.

Chicks and adult laying hens will also peck at bunches of white polypropylene baling twine secured to the roof of the cage or a perch. Birds tease apart the strands of the string, similarly to what they do when preening. The string reduces gentle and severe feather pecking and decreases the amount of feather pecking damage. The twine is the most effective enrichment device available.

Hens peck more at white string than at coloured string.

7.5 Biting devices

Plastic anti-pecking devices have been developed for use in game birds. They are held in place by lugs inserted in the nares. These devices are not commercially applicable for laying birds. In pheasants, rings are fitted in the nostril and between the mandibles to prevent complete closure of the mandibles. A bumper device protrudes beyond the beak tip to prevent complete closure of the beak. The use of bits as a preventive measure against feather pecking is not permitted in many countries, including Australia.

7.6 Tin pants

Tin pants have been fitted to the vent to minimise vent pecking. The device takes the form of a protective metal shield to cover the vent area to prevent other birds pecking the vent region. This device has been used only by poultry fanciers.

7.7 Changing the light intensity

The intensity of light can be manipulated in poultry houses to reduce pecking among the flock mates. Bright light increases pecking activity in birds. Hens exhibit an increase in aggressive and stereotype behaviour when exposed to higher light intensity. Head flicking, vent, tail, head and body pecking are the behaviours most closely associated with an increase of light intensity. Therefore, under low intensity light it is possible that the birds cannot see each other well, reducing antagonistic encounters and aggressive behaviour among them. It is important to eliminate areas where bright sunlight strikes the floor. The use of very low light during the first three weeks of rearing may discourage any pecking vices developing in birds, thereby avoiding the need for beak trimming.

7.8 Use of coloured lights

For many years it was the practice to brood and rear birds under red light to prevent cannibalism, but there is little direct evidence this practice was effective. Low-intensity white light is satisfactory. More recently, blue light has been used to keep birds calm.

7.9 Provision of straw, grain and whey blocks

Feather pecking and cannibalism are considered to be redirected ground pecking because of strong similarities in the performance of both behaviours. The main strategy in preventing feather pecking is therefore to provide an adequate substrate. Substrate conditions during the rearing period affect the development of feather pecking. Use of grain spread onto the litter (scratch grain) is recommended. During the rearing period, semi-solid milk or whey blocks have been located around the house, or green leafy vegetables hung up and grass clippings spread around, to prevent feather pecking.

7.10 Use of anti-pecking compounds

Treating the everted vents of birds suffering vent trauma with a stock wound spray deters other birds from pecking at the wound. A large proportion of birds are re-trimmed at about 12–14 weeks of age. Spraying for vent trauma could be substituted for the second beak-trim and could remove the need for it.

Spraying with a stock wound spray for vent trauma improves feed conversion, egg production and egg weight when compared with not spraying. The time required to spray the vents of hens from cages where the eggs are bloodstained is considerable: 70 minutes is required per 1000 hens per week.

7.11 Genetic strategies

There are large differences in feather pecking and mortality rates between strains, indicating the potential for identifying stocks that may require less severe beak trimming than is commonly practised, or no trimming at all. Cannibalistic deaths occur less frequently in birds selected on family performance without beak trimming, compared with unselected stock.

Selecting separately for rate of lay and longevity has resulted in the development of strains of laying hen that show much less feather pecking and cannibalism.

Current gene mapping efforts are providing information on gene function at the molecular level and could provide alternative strategies to conventional selection for improving welfare. Molecular studies suggest that a major gene may influence the combined traits of cannibalism and aggression. Probable quantitative trait loci (QTL) for gentle feather pecking at 6 and 30 weeks of age have been identified, and a significant QTL for severe feather pecking has been detected at 30 weeks. Different genes may regulate feather-pecking behaviour at 6 weeks than at 30 weeks. More importantly, indirect selection to decrease feather pecking and cannibalism by marker-assisted selection may be possible. Also, the tendency to receive feather pecking might be genetically regulated. The location of this tendency on the chromosome was different from the QTL for performing feather pecking, indicating that performing and receiving feather pecking are different traits.

There is potential for changing the level of feather pecking and cannibalism if low-fear strains are selected.

7.12 Beak abrasives

This technique involves fixing an abrasive material in the feed trough. When the birds are feeding they wear down the sharp hooks on their beaks. This technique may be suitable for birds that are destined for cage egg production or alternative systems (including organic).

An alternative method to beak trimming is referred to as 'beak blunting'.

The beak blunting technique can be applied to growing birds from 6 to 18 weeks of age and onwards into the laying period, as required. The hooked beak that some birds develop is formed late in the rearing period. Early introduction of the blunting procedure could ensure blunting of the hooked end of the beak. A blunted beak at point-of-lay may last throughout the whole laying cycle, or, alternatively, the blunting technique may be continued right through the laying period. Initial application of the treatment during rearing, when the birds are on a controlled feeding regime and levels of food in the troughs are low, would give greater opportunity for the proposed treatment to have an effect.

Summary

- Spectacles reduce social stress in birds but cannot be used in caged birds.
- Contact lenses keep birds calm but can cause lower egg production and increased mortality.
- Enrichment devices reduce harmful behaviour.
- Bailing twine hung up for birds to tease out is the most effective device.
- Strains with reduced feather pecking and cannibalism have been developed.
- A major gene influences cannibalism and aggression.
- Abrasive material in the feed trough can blunt the beak.
- Reducing light intensity in the sheds reduces feather pecking.

Management checks

1. Do any of the alternatives mentioned in this chapter appeal to you as replacements for beak trimming?

   ☐ Yes ☐ No

2. Have you discussed any alternatives with other farmers?

   ☐ Yes ☐ No

3. If you were to implement an alternative to beak trimming, how would you pilot the change?

   .....

   .....

4. Have you thought about management of your birds if beak trimming is phased out in the future?

   ☐ Yes ☐ No

   Comments

8

Strategies for minimising cannibalism

Strategies should be reviewed regularly.

This chapter helps farm managers to develop strategies to minimise cannibalism. You will learn how to:

- document the strategies you plan to use to minimise cannibalism
- revise your current strategies to minimise cannibalism
- justify your choice of strategies.

8.1 Introduction

Farm managers have a range of strategies available for minimising cannibalism on their poultry farms. Key information can be obtained by regular communication with the companies supplying birds, pullet rearers, beak trimmers, and extension and research groups. Selection of the correct strategies for minimising cannibalism can make the difference between a profit or loss for the farm.

8.2 Strain selection

New strains of birds are constantly being introduced into the market. Farm managers should communicate with bird suppliers to obtain the latest information on strains with low levels of cannibalism. Seek information from other farmers using similar strains. Beak trimmers can also provide valuable information on the pecking characteristics of different strains of birds.

8.3 Use of accredited beak trimmers

The *Model Code of Practice for the Welfare of Animals: Domestic Poultry* requires accredited beak trimmers to be used. The quality of beak trimming can be checked at the time of beak trimming and throughout the life cycle of the birds by measuring beak length and beak step and scoring birds for beak imperfections. Flocks that have not been beak-trimmed uniformly can develop uneven growth patterns and poor feather cover, and subsequent laying performance and farm profit can be affected. Ensure that adequate precautions are taken during and after beak trimming so that the welfare of birds is maintained.

8.4 Pullet rearers

If birds are reared on a pullet grower farm, discuss the performance of birds with the grower during the rearing period and obtain information on the growth curve of the bird. If the flock is not uniform in body weight then there is potential for vent pecking and cannibalism to occur early in lay. Using birds that have had access to perches during the rearing period helps to reduce pecking in the laying period.

8.5 Housing and environment

In controlled-environment housing every attempt must be made to prevent light leakage into the shed and to maintain a light intensity of 5–10 lux to reduce feather pecking. Birds that are maintained in their thermoneutral zone (21–23°C) may perform better. On barn and free-range farms it is more difficult to control the environmental temperature and light intensity. Feather pecking and cannibalism in these systems may be a problem, therefore farm managers need to be more vigilant in their management of birds.

8.6 Nutrition

Nutritional deficiencies often result in feather pecking. Feeding of recommended and balanced diets during the laying period can reduce feather pecking and cannibalism. The decision on the diet to be fed is often made on economic grounds, and the diet may not always meet the nutritional requirements of the bird. The use of higher fibre levels (5%) in layer diets can reduce feather pecking.

8.7 Staff

Farm managers should employ staff who have a close affinity with the birds. It is well known that the use of staff that are motivated and have a good attitude towards the care of birds often results in better flock performance. Staff that are noisy and handle birds roughly may cause agitation in birds, which could result in feather pecking and cannibalism.

8.8 Alternatives to beak trimming

Farm managers should consider using alternatives to beak trimming, as there is a growing trend for food market chains and consumers to prefer products produced by birds that are not beak-trimmed. A range of alternatives is available for managers to consider. These include some of the older methods, such as the use of sprays and floor substrates as well as reducing light intensity. More modern methods include the use of beak abrasives and enrichment devices (see Chapter 7).

Summary

- Select low-feather-pecking strains.
- Use accredited beak trimmers.
- Monitor the quality of beak trimming and feather cover.
- Ensure adequate precautions are taken during and after beak trimming to maintain the welfare of the birds.
- House birds at low light intensity.
- Maintain birds in their thermoneutral zone.
- Employ staff with a caring nature towards birds.
- Use alternatives to beak trimming where markets require it.

Management checks

Use the following prompts to help you plan your management of cannibalism.

Problem: cannibalism

Bird mortality due to cannibalism is _____%.
The problem is (tick one):

☐ decreasing ☐ stable ☐ increasing

Current strategy (tick one)

☐ beak trimming ☐ alternative methods ☐ other action
Comments (Provide any details you think are relevant)

.....

.....

Revised strategy (tick one)

☐ beak trimming (Go to 1) ☐ alternative methods (Go to 2) ☐ other action (Go to 3)

1. Beak trimming

a. Beak trimming method (Describe the method to be used – see section 3.4)

.....

b. Trim required (Describe the trim chosen – see section 3.4)

c. Monitoring of trimming (Describe how you plan to monitor the trimming process – see section 3.4)

d. Quality checks (Describe how you plan to check the quality of the trimming process – see section 3.4)

e. Management practices post-trimming (Describe the management practices you plan to use after the trimming process – see section 4.3)

2. Alternative methods

a. Method selected (Briefly describe the method you have chosen – see Chapter 7)

b. Management practices to maximise effectiveness (Briefly describe the practices that you plan to use – see Chapter 7)

3. Other action

a. Management practices to minimise cannibalism (Briefly describe the method you have chosen – see Chapter 8)

Training

What training opportunities could you offer your staff to support your chosen strategy? (For example, on-the-job training, off-the-job training, short courses, videos, etc. – see Chapter 5)

Long-term strategy

What changes to your chosen strategy might you consider in the next five years? (For example, newer technologies – see Chapter 8)

Justification

How might you justify your strategy to someone outside the industry (egg consumers, welfare groups, general community, legislators, etc.)?

Appendix

Farm managers' targets for beak trimming

(List of targets that farm managers should encourage beak trimmers to achieve)

Biosecurity	
Arrival at farm	Beak trimmers must notify the farmer on arrival.
Farm biosecurity	Beak trimmers must check farm biosecurity policy and follow instructions.
Personal biosecurity	Beak trimmers must not keep backyard domestic hens or other avian species at home.
Diary	Beak trimmers must keep a diary of all their farm visits.
Vehicles and equipment	Vehicles and equipment must be cleaned and sanitised inside and out after each beak-trimming job.
Equipment set-up	
Stable equipment	Beak-trimming equipment must be set up on a secure table, or the legs of the machine placed on a firm base, to prevent vibrations and errors when cutting beaks.
Levelling	The beak-trimming equipment must be level to ensure beaks are cut consistently.
Lighting	Lighting must be consistent at each beak-trimming job so that the desired blade colour is achieved consistently. The beak must be well lit (at least 150–200 lux) to enable the operator to see clearly where the beak needs to be cut.
Correct blades	The blades used must be designed for beak trimming. The specific blade used will be determined by operator preference for the birds being trimmed.
Sharp blades	The blades must be sharp and able to cut a strip of paper when cold. The sharp edge of the blade must be facing the operator.
Change blades	Blades must be changed when required, according to the beaks being trimmed. Maximum usage for a blade is 5000 birds.
Blade temperature	Blade temperature must be appropriate to the conditions. This may vary with the weather and beak hardness. A dull red blade (700°C measured with a thermocouple) is usual.

Base plate	The base plate must be straight and clean.
Occupational health and safety	
Operator position	A seated or standing position to address the machine should be used, according to operator preference. The position used should minimise fatigue and aching limbs and help the operators to maintain full concentration throughout the day of beak trimming.
Temperature	When the temperature reaches 33°C beak trimming must cease.
Dust mask	A personalised dust mask with air supply is recommended.
Air quality/ ventilation	Adequate ventilation is required to vent poor quality air away from the beak trimmer for improved working conditions.
Regular breaks	Rest breaks must be taken every hour to ensure that the beak trimmer can recuperate and maintain concentration.
Injuries/first aid kit	Beak trimmers must handle birds carefully to prevent scratches to the body from claws and flapping wings. A first aid kit is recommended to enable injuries (particularly burns) to be treated immediately.
Equipment safety	Beak-trimming equipment must be regularly checked for electrical faults to prevent injuries (electrical shock) and equipment breakdown.
Yarding birds	
Chick boxes	Chicks must be held at appropriate stocking density to prevent overcrowding and improve response to beak trimming.
Dim lighting	Dimming the lighting (where possible) reduces the flightiness in birds and reduces stress on birds when herding.
Flightiness	Persons herding birds can reduce flightiness by not shouting, clapping, or waving hands.
Staff movement	Staff must move quietly and smoothly to reduce stress on birds.
Crates	Crates for holding birds must be adequately ventilated, free of abrasive objects and held at stocking density according to the Code of Practice.
Pens	Pens for holding birds must be adequately ventilated, with shadecloth on the sides to prevent birds escaping.
Smothering	Forcing birds into corners of pens must be avoided to prevent excessive packing and smothering.
Injuries	Pens for holding birds must be free of protruding wires or any objects that might cause injury.
Catching	Birds must be picked up by the legs only, as injuries may occur if they are picked up by the wings, head, neck or tail.
Carrying birds	The Code of Practice requires that a maximum of 10 birds (five per hand) up to 2 kg each be carried.
Location in relation to trimmer	To minimise stress, birds should not be carried for more than 30 m to the beak-trimming site.
Holding birds for trimming	
Holding	Chicks should be held gently in the palm of the hand, with the thumb curled around the head and the forefinger gently placed across the throat.
Gentle handling	Avoid handling birds by the head, wing, neck or tail.
Injuries	Injuries, particularly to the head and body, must be minimised.
Position of the bird	Beaks must be square to the cutting bar and held at an angle of 15–30° so that a block cut can be achieved.

Trimming	
Beak hardness	Judge beak hardness by pressing the beak gently with the fingernail. The cauterisation time (2 seconds recommended) for the strain can be adjusted according to the beak hardness.
Temperature while trimming	Trimming rate must be reduced as temperature increases. As a guide, the beak-trimming rate should be reduced from 10 birds/minute to 8 birds/minute when the environmental temperature reaches 28–30°C and then ceased when the environmental temperature reaches 33°C.
Lighting source	The operator must be able to clearly identify the region where the upper beak must be cut.
Tip of quick	Making the cut at the tip of the quick reduces beak regrowth but still enables nerves in the beak stump to recover, averting long-term chronic pain.
Beak on cutting bar	The beak must be aligned squarely on the cutting bar to avoid beaks being cut longer on one side than the other; if this occurs it is difficult for the birds to eat and drink.
Cauterisation	The cauterising time must be adjusted to the bird's age and the length of beak removed at the first trim. Two seconds is a good starting point.
Re-cauterise	The re-cauterising time must be adjusted to the bird's age and length of the beak. A time of 0.5 seconds is a good starting point to prevent bleeding.
Beak-trimming rate	The beak-trimming rate should be maintained at 10 birds/minute.
Bleeders	The incidence of bleeding in birds must not exceed 1%.
Rounding beaks	The beak should be rounded off on the edges by using a horizontal rolling motion during the later stages of cauterisation.
Severity of trim	Severe trimming may be necessary in some circumstances: the beak is trimmed such that the upper beak length is 8–10 mm and the lower beak 4 mm longer. This should be contemplated only as a last resort if all aspects of the accepted beak trimming process have been undertaken correctly and cannibalism is still occurring.
Angle of cut	Beaks need to be tilted at an angle of 15–30° when placed on the cutting bar or in the gauge plate, so that an inward 'V' shape is achieved.
Correct settings	Beak trimmers should monitor closely all aspects of the beak-trimming process to ensure effective cauterisation, minimise injuries and make sure that excessive amounts of beak are not removed.
Blade cleaning	Beak residue must be scraped from the cutting blade every 15–30 minutes.
Vocalisation	Birds should not vocalise excessively after the operation.

Glossary

Albumen	Viscous high-protein white surrounding the yolk of eggs
Allo-pecking	The pecking of one bird by another
Beak trimming	Partial removal of the upper and lower beaks
Biosecurity	Preventing the introduction and spread of infectious agents to a flock
Bleeders	Birds who suffer loss of blood from the beak after trimming
Block cut	Cutting both beaks in one motion
Cannibalism	Pecking and consuming the flesh of other birds, resulting in blood-staining of birds, broken skin, raw wounds, injured vents, and sometimes death
Catcher	Someone who removes the birds from the pen
Cauterise	Use of extreme heat to seal wounds and prevent infection
Chicks	Term used for a bird before it changes feathering from fluff to feathers (usually three to four weeks)
Cleaning	Removal of any organic or inert material from a surface with water or cloth
Comb	The red appendage on the top of the bird's head
Feather eating	Pecking at and consuming loose feathers of other birds and feathers in the litter
Feather pecking	Pecking directed at the feathers of other birds
Feather pulling	Pulling on the feathers of other birds

Feather removal	Plucking feathers from the skin of other birds
Feather sucking	Sucking on the feathers of other birds
Head pecking	Pecks directed at the heads of other birds
Infection	Swelling and redness of body parts owing to infection with bacteria or other pathogens
Layers	Hens that are sexually mature (usually 22 weeks or older)
Marek's disease	Disease caused by a herpes virus with abnormal growths in the peripheral nerves, central nervous system, organs and other tissues, which results in severe mortality in pullet flocks.
Model Code of Practice for the Welfare of Animals: Domestic Poultry	A set of poultry-keeping standards that farmers should follow
Nares	The nostrils of birds
Neuroma	A mass of nerves that sprout and form a bundle after a nerve is cut
Pain	A sensation that makes the bird feel uncomfortable
QA (quality assurance)	A process that aims to maintain consistent standards
Qualitative	Process used to give a value of a variable without using measurement
Quantitative	Process involving measurement of a variable to provide a value
Sanitising	Using chemical agents to kill bacteria or other pathogens
Self-pecking	Pecking directed by the bird at itself
Stereotype pecking	Repetitive pecking at objects
Stress	Abnormal reaction of bird to poor handling and trimming
Tail pecking	Pecking at the tail feathers of other birds
Thermocouple	Thermometer on the beak-trimming machine, used to measure blade temperature
Tissue pecking	Pecking at bare areas on the skin of other birds
Toe pecking	Pecking directed at blood vessels in the toes of young birds
Vaccination	Technique that utilises the bird's immune system to protect it against pathogens
Vent	The outside opening of the cloaca, through which a chicken emits eggs and droppings from separate channels
Vent pecking	Pecking directed at the vents of other birds
Wattles	The two appendages under the bird's chin
Workplace trainer	A person who trains staff in new procedures in accordance with national competency standards

Further reading

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