



Improving Feather Cover

*A guide to reducing the risk of injurious pecking occurring
in non-cage laying hens*

This guide summarises strategies available to **reduce the risk of injurious pecking** occurring in non-cage laying hens during both rearing and laying. Beak-trimming and alterations to lighting are commonly practised to control injurious pecking, but these are not ideal in terms of bird welfare. The strategies discussed in this guide offer many ways of reducing the risk of injurious pecking occurring, which may also offer other benefits.

What is injurious pecking?

Injurious pecking (**IP**) is an **umbrella term** covering a group of behaviours; gentle and severe feather pecking, vent pecking, and cannibalistic pecking.

Gentle feather pecking

Gentle feather pecking (GFP) consists of **gentle pecks to the tips of the feathers**. This type of feather pecking (FP) usually does not result in much damage and is often ignored by the recipient. It can indicate a welfare problem in the bird performing the behaviour, and precede more serious pecking.



Severe feather pecking

Severe feather pecking (SFP) causes the most damage to the recipient; it **consists of forceful pecks and pulls of feathers** that are frequently eaten and **results in feather loss** especially on the back, vent and tail area. Victims of SFP often initially move away, squawk or confront the pecker in response to receiving SFP, which are painful. If SFP continues, however, victims have also been observed to surrender to being pecked and remain still.

Cannibalistic pecking

Cannibalistic pecking occurs when SFP has led to feather loss and bald patches. Pecking can then continue on the skin, **leading to wounds and may eventually lead to the victim's death** due to excessive blood loss, tissue damage & infections.

Vent pecking

A separate form of cannibalistic pecking is **vent pecking**, where the **pecker pecks at the vent of the victim** and may pull out the inner organs. This type of cannibalistic pecking **can also develop in well-feathered birds** and is sometimes seen around the onset of egg laying.

Aggressive pecking

Although **aggressive pecking** often does cause damage, it is generally directed towards the head and neck of another bird. We don't include this as part of IP (or cover it in this guide) because the reasons (or motivations) for birds showing aggression towards each other are not the same as those underlying IP.

Why is it a concern?

- It occurs in the **majority of free range flocks**, in varying degrees of severity.
- It is a **welfare concern** as the removal of feathers is **painful** for the birds and it is associated with **increased mortality**.
- Where IP occurs there is an increased risk of cannibalism.
- The stress caused by IP can **increase the susceptibility** of the flock to disease and can directly **increase the spread of disease** through a flock.
- It can lead to **decreased productivity** and **increased feed consumption** as birds with poor plumage use more energy to keep warm.



How does it start?

Feather pecking is primarily a **redirected foraging behaviour**. Birds can start to forage or even feed on each other's feathers when they do not have a balanced diet or sufficient opportunities in their surroundings for normal feeding and foraging behaviour. Factors such as stress, disease and overcrowding can reduce normal foraging behaviour and trigger injurious forms of pecking.

Tip: Look for feather damage around the **back and on the base of the tail**, this is where SFP often starts. Pick some birds up and **check under the outermost feathers** for any signs of baldness particularly around the base of the tail. Also **listen to the flock** and see if you can hear any characteristic 'squawks' which could be from a victim of SFP.

What to look out for

Frequent inspections will enable you to monitor your flock for pecking and tackle any problems as early as possible. **Look closely at their behaviour** when you inspect the house, noting instances where one bird directs pecks towards the body feathers of another, particularly if this is done repeatedly, or appears to cause the pecked bird pain. Also **look out for feather eating**. Finally, keep an eye out for **plumage damage**. This might be difficult to spot – it generally starts with the tips of the tail feathers looking ragged, and perhaps broken. But there may also be some bare areas; look out for this on the back at the base of the tail, and in the downy feathers of the rump.

Purpose of this guide

Based on scientific evidence and experience from industry this guide will take you through **risk factors** which have been identified for IP and **strategies** that can be used to prevent it. Although there is no prescriptive cure, recent studies have shown the **more proactive the management** of a flock, the less likely it is to show high levels of injurious pecking. Consequently, **consider adopting as many of the strategies** as you can to prevent IP. This guide does not attempt to tackle any other welfare or productivity issues, although there may be indirect benefits when adopting some of the strategies suggested.

This advice guide has been split in two sections; **Strategies for Lay** and **Strategies for Rear**. There are **central strategies** that run through both periods and it is worth reading through both sections, even if you are only planning on applying them to one. The rearing section has been included as it is not always appreciated that pecking can begin during the rearing period. Although plumage damage may be difficult to spot due to moulting during rear, direct observations have **found IP as early as five weeks of age**. Furthermore, behaviour developed during this period can have a lasting effect on the flock during lay. So it may be that you can nip the problem in the bud by reducing the likelihood of injurious pecking developing at rear.

Strategies for Lay

- 1. Transition to Lay**
- 2. Placement Period Priorities**
- 3. Access to Range**
- 4. Encouraging Range Use**
- 5. Managing the Range**
- 6. Maintaining Litter Quality**
- 7. Foraging and Dustbathing**
- 8. Feeding the Birds**
- 9. Health and Hygiene**
- 10. Management at Lay**
- 11. House design**
- 12. Verandas**



Strategies for Rear

- 13. Litter Quality in Rear**
- 14. The Environment in Rear**
- 15. Rearing Facilities**
- 16. Environmental Enrichment**
- 17. Management at Rear**
- 18. Feeding the Pullets**
- 19. Diet Changes and Achieving Evenness**

If you have any questions regarding the guide or you see injurious pecking call the team at the University of Bristol (0117 331 9144).

Alternatively contact the Welfare Outcomes Advisor at AsureWel (animalwelfareadvisor@assurewel.org) or tel: 0117 314 5174).

Experiencing many changes when moving from the rearing to the laying house can be very stressful for pullets and can start them on the path towards feather pecking. Where possible the transition should be managed in ways that reduce the number of changes.

Matching conditions

Contact and visit your rearer if at all possible. Aim to **mirror/match** the rearing houses with the laying house for a '**seamless transition**'. The aim is to reduce the number of new things the birds need to adapt to, and hence the amount of stress they experience.

If possible, match:

- drinker and feeder type and heights
- time lights on and off
- type of light bulbs
- time feeders are run
- perch type/system



Get to know your rearer and their shed conditions

It is well worth visiting your flock at rear, to understand how they're reared and so the rearer understands your needs.

One study found that **rearing birds** on the laying farm reduced the risk of feather pecking.

To reduce the stress of transport, the journey length and the time that birds are without water and feed should be kept to a minimum.

Avoid mixing birds from different rearing groups at placement.

Timing of lay

Birds should be regularly weighed from arrival. If flocks arrive uneven, then producers should make every effort to even them out e.g. delaying lay whilst feeding up. Two studies have found that onset of lay before 19 weeks increased the risk of feather pecking, and before 20 weeks increased the risk of vent pecking. **Timing the onset of lay** is a skill, as one has to balance these considerations with the fact that producing large eggs is associated with vent pecking and problems with prolapses, yet earlier onset of lay reduces the likelihood of larger eggs. Your breed company should be able to offer advice on the timing of lay with regards to body weight and breed characteristics.

Early experiences of the laying farm

- Two studies have suggested that purchasing birds at a younger age, and consequently **allowing them range access at an earlier age**, increases range use and reduces feather pecking. It may also ease the birds' transition to the laying house.
- A few commercial rearers allow **their pullets access to the range** which may improve the use of the range in your adult birds.
- Ideally purchase from rearers who have **installed slats and perches**, so that their rearing houses match your intended laying house.

The placement period is a particularly stressful time for the birds. Those first few weeks after transfer lay the foundation for how the flock will perform. It is vital that the pullets are managed in ways that reduce the stress experienced at this time.

Immediate access to the Litter

Allowing access to good quality, friable litter **from day one** and throughout the whole laying period is the **single most important strategy** to encourage foraging behaviour and **reduce feather pecking**, particularly the severe forms.

The pullets would have had access to litter at rear and may be highly frustrated by its loss. In addition, by holding the pullets up on the slats you are increasing the effective stocking density. Both these factors can lead to injurious pecking.



Feather pecking is very rarely seen out on the range.

Preventing floor and eggs laid outside

Giving your pullets immediate access to the litter doesn't necessarily mean that floor eggs will be a problem.

- Lifting the birds up onto the slats after lights out for the first week will train them to sleep on the slats and encourage them to use the nestboxes.

Frequent floor egg collection when the hens are learning where to lay is essential and is usually highly cost effective in the longer term.

- Sequential lighting; staggered lighting so the lights on the slats are the last to go off can also help encourage them up onto the slats.
- For recently placed flocks give them **access to litter at least in the afternoon**, after the laying period is over.
- If eggs laid outside are an issue, then access to the range need only be allowed for a few hours a day at first, in the afternoon outside of laying times.

There is good evidence that flocks which range well – i.e. have many birds outside and using all areas of the range – have better feather cover.

To attract birds onto the range they must be able to:

- See the range
- Access it easily through wide popholes
- Easily reach it
- Find a range of features (artificial and natural shelter) offering them protection, and allowing them to forage, dustbathe and perch

What does the range look like through the popholes?



Barren – wet – unattractive – poor access



“we will be looking to enhance or improve the range area or increase the vegetation cover”
South West Free Range producer.



Accessible – visible shelter, forage, dustbaths and other hens



“we planted trees around the houses and already that’s made a difference”
John Chalcroft, Free Range producer

It is important to maintain **cover** on the area around the house to give hens protection. However they need **shelter** and interesting things to perch, forage and dustbathe in **throughout the range**. They will eat worms, insects, nuts, seeds, fruit and berries if they are available.

Artificial Shelters

Shelters **near the house** can give hens confidence to access the range by giving protection from weather and wild birds – they also keep dustbaths dry.

Shelters don't have to be expensive; old pieces of farm equipment which are not being used can work as long as they provide cover. Shelters should be raised to prevent attracting vermin.



Constructing your own shelters is a cheap, simple method of increasing cover on the range.

Natural Shelter

Increasing the **amount and variety of vegetation** or natural cover on the range will promote range use.

Greater and further ranging is associated with the presence of trees and hedges. Aim to plant trees which provide lots of cover.



Other animals

Having other animals (avoid pigs) on the range can give hens confidence and attract them out – alpacas and llamas may also help keep foxes away.



Foraging opportunities

Nipple drinkers outside can save birds going back indoors to drink, when provided in addition to indoor drinkers. Old tree trunks and other forms of cover add protection and interest.

< A block of maize or Miscanthus gives hens the opportunity to shelter, forage & dust bathe.

Many parts of the range need **active management** to ensure normal behaviour and good health.

Around the popholes

The area around the popholes must be kept **clean and well-drained**. Many producers use slats or stones to “wipe hens’ feet”. This helps to keep the litter clean and dry and to make the range more accessible. Woodchip or bark is also successful.

It is useful if popholes are hinged upwards to give a ‘roof’ to reduce driving rain getting onto the litter. Bales placed as a windbreak can also give protection from prevailing winds.



Old slats can be used outside the popholes and can really help to keep the litter inside the house dry.

Drainage



If gutters don't have soakaways, then long pipes can direct rainwater well out into the paddock.

Gutters should be well-maintained to **avoid puddles and wet litter**. If the hens have access to dirty water this can lead to health issues, such as **enteritis**.

Pasture management

Pasture rotation (or even temporarily fencing off poached areas) is good for parasite control and maintaining an attractive area for hens to forage in as well as keeping the litter cleaner.

Predator control

Electric fencing is effective in controlling foxes provided it is regularly checked and vegetation is managed to prevent it from shorting out.

Other animals, particularly **alpacas** and **llamas** may deter foxes. Having plenty of artificial and natural cover reduces the success rate of buzzards.



Regular cutting of long grass reduces the risk of crop impaction and mislaid eggs.

Good litter quality is vital for foraging behaviour and other positive behaviours such as dust bathing. Feather pecking is thought to be redirected foraging or ground pecking behaviour. Preventing access or having poor, capped litter causes frustration and the birds then need to find something else to forage in. Particularly if they are very crowded by being restricted to the slats it is highly likely the only foraging material they can easily find will be the feathers of other birds!

Litter maintenance

Maintaining good, deep, friable litter requires good housing design and maintenance. Without these, more effort is needed to achieve litter quality by **daily inspection**, careful management, **frequent** raking/forking over or rotovating plus refreshing and **topping up** of the litter areas.



Capped litter often leads to feather pecking.



Highly-absorbent wood pellet bedding can be used in problem areas of wet litter.

The litter **around the popholes** can be particularly difficult to keep dry and special attention and effort is required to keep it in good condition. Keeping the external area dry and well drained is key to keeping the litter inside the house dry. Prevent rain driving in through the popholes and have something to 'wipe' hens' feet outside.



Tip: add whole small bales of treated and dust extracted straw to the litter area. Don't cut the string on the bales - let the birds pull them apart.

- This will allow the litter to build up naturally and promote positive foraging.
- If floor eggs are a problem delay placing bales until the birds reach 20-30 weeks.



Hens dustbathing & foraging in good litter.

Hens have an **inbuilt need to forage** even when given a complete feed. It is very important to give them plenty to peck at in order to keep their attention away from pecking each other. Often hens both dustbathe and forage in the litter or outdoor dusty areas. Foraging can supplement the diet, meeting the need of individual hens. Eating some fibre is associated with improved feather cover.

Pecking objects

There are lots of ways to keep the hens occupied in a house. Producers have found lots of different, **inexpensive objects** can promote positive foraging behaviour.

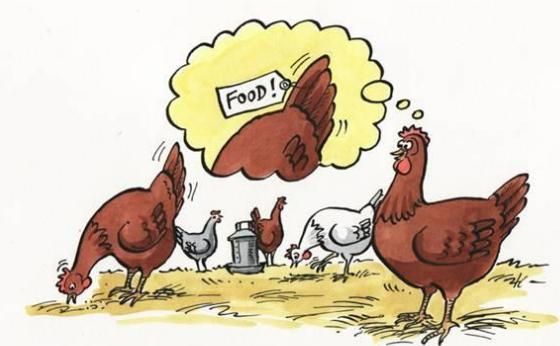


Pecking at blocks keeps hens occupied and blunts their beaks. Try using them on the slats.

Hens find alfalfa blocks, straw and hay attractive for foraging. These can be placed in haynets if you find they are being used up too quickly.



Hang up bottles, CDs or rope for hens to peck at.



Feather pecking is redirected foraging behaviour

"I think they feather peck because they get bored in the same environment all day" Sally McArdle, FR producer



Treated and dust extracted straw bales are used for foraging, perching and as a step up onto the popholes.

Dustbaths

An old tyre filled with sand or peat can provide an inexpensive dustbath. Provide dustbaths once the birds have learnt where to lay.

Tip: Use a 50:50 mix of red mite powder and straw in dustbaths can help to control redmite.



With feed costs as high as they are, the last thing any producer wants to see is bald hens that have to increase their feed intake to keep warm. The approach taken to feeding the birds can itself have profound effects on the risk of feather pecking occurring in a flock.

Mash

Considerable scientific evidence shows that **feeding mashed feed** rather than pellets, increases the time spent eating , and decreases IP.

Ensure that if feeders are used as perches, they **don't present the vents** of perching birds at hen head height.

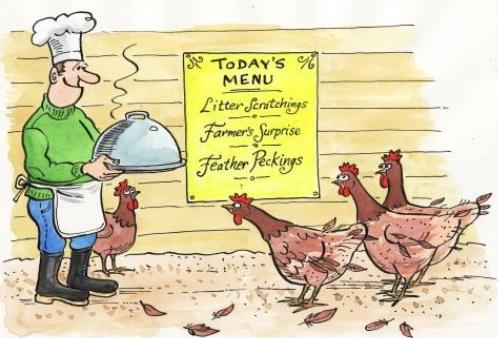


Reducing chain feeds

Reduce the number of chain feeder runs, particularly during the **middle of the day**, when birds should be ranging. The sound of the chain feeder can bring them in off the range. But, make sure birds are not hungry e.g. by putting a source of fibre such as alfalfa or carrot peelings on the litter and/or the range, or by increasing the volume of food in each feed.

By widening the gap between the feeds in the middle of the day you are also encouraging the hens to eat the less tempting, finer particles of feed. But make sure the birds are never short of feed, hunger can trigger injurious pecking

Minimising diet changes



With ever increasing feed prices it is important to avoid the temptation to buy a poorer nutrient specification than the hens require.

Two studies suggest that more than three diet changes during lay, or diet changes from a palatable to an unpalatable diet, may be associated with increased injurious pecking.

- **Avoiding change from high to low protein diets** may reduce the likelihood of IP starting.
- Ensuring that feed changes do not occur repeatedly over a short time, may reduce the associated stress and onset of injurious pecking.
- **Masking the changes between diets** by mixing diets may help prevent disruption to the birds arising from diet change.

Increasing dietary fibre

There is evidence that low energy diets, and diets diluted with fibre are associated with reduced plumage damage, IP and mortality. Five studies have found that **providing extra insoluble fibre**, such as whole oats, wheat, corn, alfalfa, maize/barley/pea silage and carrots can reduce all types of injurious pecking, plumage damage and mortality. But ensure that when these extra sources of fibre are provided that none is left to attract vermin.

Improving bird health benefits production rates. Poor health (e.g. injuries, high mite and worm burdens) is also associated with increased feather pecking. Although the direction of cause and effect is uncertain, it is **important to have a Flock Health and Welfare plan** in place. We have recent evidence that encouraging good range use is associated with a reduced worm burden.

Worms

Intestinal worms **can cause stress** and are a common source of enteritis. Given what we know at present:-

- **Monitor worm burdens** throughout the flock life through post mortems and faecal egg counts.
- Worm when tests show high egg or worm counts.
- Try to avoid treating via water when the birds have access to puddles, which dilute the dose.
- Aim to **ensure every bird receives an effective dose** (repeat egg counts 2 weeks after worming).
- **Paddock rotation** can help reduce the problem.



Maintain dry, well drained range to avoid parasite build up and the birds drinking dirty water.

"A healthy flock often has better feather cover "
South West Free Range producer



Maintain health and reduce stress

Red mite

Mites, even in moderate numbers, can cause considerable stress. Effective control should include **regular monitoring** and **prompt** and effective treatment protocols agreed with your vet.

Turnaround

"On turn around we double disinfect"
Richard Morris, FR producer

Mucking out, cleaning and disinfecting should be conducted to a **high standard** to prevent the carry over of diseases from one flock to the next. Cleaning and disinfecting should be tailored to the farm to address problems that are specific to the farm.

Biosecurity

- Aim to have a **single age site** to reduce disease transfer. This can also effectively rid the site of Mycoplasma.
- Adopt a **proactive approach** to bird health, reviewing and acting on strategies in the **Flock Health Plan** drawn up with your vet.
- Access by people and vehicles to the site should be restricted and **wheel washers** should be used.
- Have **dedicated clothing** for each house (including boots) and use **clean boot dips** at the correct rate of dilution for every house.



Fearfulness is often associated with feather pecking: non-feather pecking flocks are less fearful, as are non-feather pecking individuals, and birds with less feather damage. Flocks should be managed in ways which make them least fearful by exposing them to non-threatening changes.

Inspections

Flocks should be **regularly walked** and **attention paid to the behaviour of the birds**. It will help in spotting injurious pecking earlier as well as managing it.

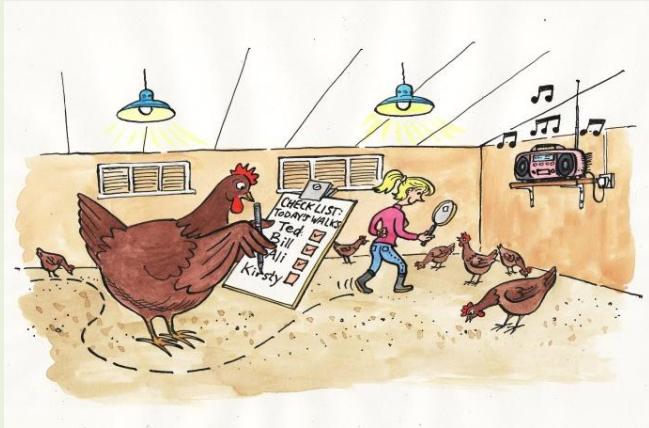


Dedicated clothing and boots for each house should be used to avoid spreading disease.

Gradually get the birds used to expecting the unexpected by **varying the route** you walk the house. Wear **different coloured clothing** from day to day and have different people inspecting the birds. This also has the advantage of a fresh pair of eyes spotting potential problems.

Uneven flocks

Having a wide range of weights within the flock can lead to bullying, and consequently fear in the lighter birds. Aim to avoid buying in pullets with a very wide weight range and try to even up flock weights before lay. Give the birds refuges such as perches where they can escape from bullies.



Ideally have two people inspecting together and talking as they go around.

Avoid large contrasts

There is increasing evidence that some birds find large and abrupt contrasts in noise, light levels and temperature frightening or stressful. Thus, having 2 smaller, quieter fans might be preferable to 1 large noisy one operating intermittently. Eliminating draughts and reducing excessive wind entering the shed can assist in keeping the temperature of the shed even as well as helping to improve litter quality. Verandas will also help to even out extremes of temperature and light.



Increasingly producers are using radios in their houses. Playing the radio (music and speech) from time to time in different parts of the house allows hens to become accustomed to varied sounds and can help to produce a calmer more resilient flock.

The layout of the house is important for social dynamics and normal behaviour. Hens need refuges from bullies and easy access in and out of popholes To reduce the risk of keel fractures, access between levels needs to be easy with nothing in the way of landing. Try to avoid birds competing for resources and allow plenty of space



Wide ramps give easy access between levels, reducing the risk of injury.



Perches

- To control vent pecking avoid perches which present the vent at bird eye-level.
- Anything birds perch on should be over 40 cm above what is below.



Providing nipple drinkers reduces the risk of feather pecking.

Nestboxes

There is a link between using **nestbox lights** and vent pecking. If they are used for training then they **should be dimmable** and once the hens have successfully learnt to lay in the nests (normally around peak production), the nestbox lights should be gradually dimmed and **turned off**.

Tip: Having space at the end of a nestbox run enables birds to move easily to the other side and reduces the risk of smothering when competing for preferred positions.



Verandas have so many advantages it is surprising that they are not universally used, especially as they **can be simply constructed from inexpensive materials**. Verandas create a halfway house between the main house and the range, giving pullets in particular the opportunity to get used to brighter conditions and fresher air before going out onto the range, also reducing the risk of predation and contamination from wild birds. They shield the main house and litter from driving rain and wind and enable hens to clean any mud off their feet and to dry off a bit before entering the main house.

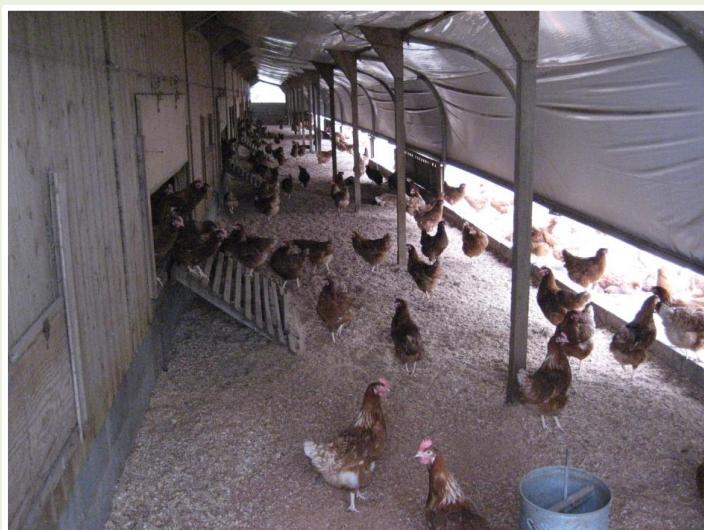
Verandas are an ideal location for supplementary foraging materials and dustbaths. They ease congestion in the main house and give hens an area to use in bad weather. Indeed in countries like Switzerland when snow makes the range inaccessible the 'winter garden' is the solution. Many scientific studies have established a reduced risk of injurious pecking with good litter and warmer temperatures in the main shed and verandas help to achieve these good conditions.



Note the good feather cover in these flocks.

Some examples of inexpensive verandas based on a polytunnel design. Most use a simple framework, often with mesh sides that can be rolled up in warm weather. It is always a good idea to be able to provide unhindered access to the range or to use wide popholes offset from those into the house.

Verandas should be an addition to the house design and not be included as part of the total floor space.



Injurious pecking is an abnormal behaviour. It is likely that it occurs because other behaviours cannot be performed, or are not learnt properly. One of the **most influential** of these behaviours is ground pecking; chicks learn from a mother hen to peck at the ground to forage for food, and with the lack of a mother hen, and litter which may not be very stimulating, this foraging behaviour may not develop properly.

Why is litter quality so important?



Numerous studies have shown that providing high quality, stimulating litter reduces the performance of injurious pecking at lay. Furthermore, a number of studies have suggested that the effect of litter access during rear can last until at least 45 weeks of age.

What causes poor litter quality

Several problems can lead to litter that is not sufficiently stimulating or rewarding. Wet litter in particular, may be caused by leaks in the roof or water system, inadequate ventilation or high stocking density.

How to improve litter condition

- **Provide feed on the litter on chick paper, and continue to scatter grain (oats) widely and evenly on the litter throughout rear.** This will encourage the pullets to work the litter, keeping it friable.
- **Provide treated and dust extracted straw bales for the pullets to break down** (or plastic wrapped bales). This is a good source of enrichment for the pullets and will help keep the litter dry.
- **Ensure that there are no leaks** which could wet the litter e.g.. from drinkers. This should be done before the chicks are placed and monitored throughout rear. If there is a leak the wet litter should be removed and replaced with clean dry litter
- **Actively manage your litter** (rotovating, topping up, mucking out).
- **Use hyper absorbent pellets in problem areas.** Use this in addition to your current litter
- **Be aware of problem areas for damp litter,** such as under perches, and supplement litter accordingly.



Leaks in the nipple line cause wet litter.

The overall house environment and climate can have an influence on preventing injurious pecking. Environmental conditions need to be carefully controlled and monitored.

Lighting

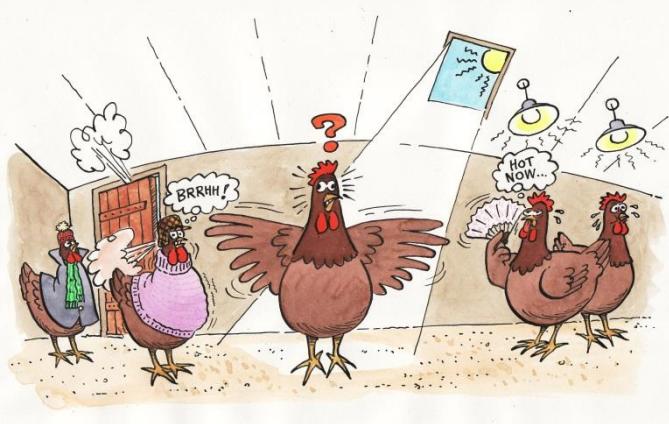
Dimming the lights should not be the first method used to control IP but rather a last resort or emergency measure.

Lighting in the rearing house can affect pullet behaviour. It is important to:-

- **Ensure light intensity is even throughout the house**
- **Avoid spots and shafts of bright light**
- **Avoid sudden changes in light levels.**

Monitor and maintain a consistent climate

Sudden or extreme variations in house climate can be a source of stress to birds. Recent work has found that the more variation in temperature within the house the more likely injurious pecking was to occur. Discussions with industry experts also suggest that climate can have a big effect on the evenness of the flock.



Ammonia

Ammonia depresses feed intake, can inflame the trachea and make birds more susceptible to diseases such as Infectious Bronchitis and, if really high can lead to blindness or abnormal eye development.

Pullets should not be subjected to concentrations of atmospheric ammonia that are higher than 25 ppm. In practice aim for a maximum of 15 ppm. This should be a good balance between retaining environmental temperature and ammonia levels the pullets can live with.

- **Avoid large variation in temperature, humidity and air quality** and maintain sufficient oxygen levels in the house. This helps to keep your flock even, keep the litter dry and to ensure the birds are comfortable rather than repeatedly stressed by fluctuations in climate.
- **Ensure that fans are working properly**, and vary them according to external weather conditions. Minimum ventilation to remove stale gases and moisture should be maintained even in cold weather.
- **Draught free environment.** If pullets are driven into small areas of the house to keep away from cold draughts, this is likely to prove stressful, and may trigger feather pecking.

The facilities provided to the pullets can affect the risk of injurious pecking occurring in a flock at rear and their effect can last into the laying period. Pullets should be able to express their natural behavioural needs and an opportunity to experience things they are going to encounter in the laying environment.

Access to the range

Allowing **range access at rear** has been shown to have a hugely protective effect against injurious pecking. It both occupies the birds during the rearing period, and also increases range use at lay. Increased range use at lay has been repeatedly associated with reduced injurious pecking. To avoid creating a draughty environment when the chicks are young, let them out just for few weeks before they are due to be placed.



Verandas or winter gardens may provide a 'halfway house', if full range access is not possible.



It is important to expose the pullets at rear to the types of feeders and drinkers that will be used at lay to enable a smooth transition.

Matching the general house layout during rearing as closely as possible to the laying site where the pullets will move later, will reduce the stress and novelty of the transition.

Feeders and drinkers

Nipple drinkers have been shown to **reduce the risk of injurious feather pecking** and should be used as a **primary water source**. But, providing a few bell drinkers can help to enable closer matching between rear and lay and some birds may have a strong preference for these.

Try to match the type of feeders used at lay. Chain feeders are the most common. Pan feeders can be provided early in rear to make sure the chicks find food early on, while other feeders may be used additionally to provide variety and enable closer matching between rear and lay. However, compartmentalised hoppers with dividers (where birds have to insert their heads to feed) should not be used. These can abrade feathers and the presence of worn feathers can promote feather pecking.

Tip: If your current set up uses bell drinkers consider using a few quill drinkers, which can easily be installed. This can help get the pullets used to drinking from nipples and ease the transition to a laying house which uses nipple drinkers.

Most producers are aware of the importance of early life experiences on the flock and how it can dictate the future performance of the flock. It is important that a hen's behavioural needs are met from an early age and there are a variety of methods available to a rearer to ensure this.

Creating a 3D environment

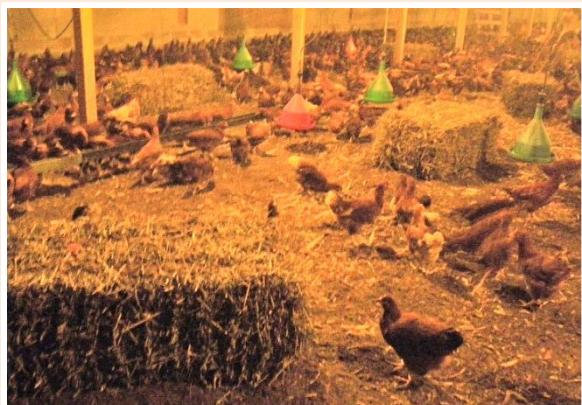
Studies have shown that **providing access to perches before four weeks of age reduces the likelihood of injurious pecking**. This may allow the birds to spread more throughout the house, and promote behavioural synchrony; roosting birds can get out of the way, and are less likely to be disturbed by active birds. **Installing different levels** in the rearing house, such as slatted areas, particularly if rearing for multi-tier systems, may achieve a similar effect.

Providing these structures early in life means that the birds will be used to them by the time they are moved to the laying house. Matching these structures to those that will be available in the laying house will make the transition between the two houses smoother.



Perches should be accessible at all ages.

Where possible provide enrichments on slatted areas, so that birds continue to have plenty to peck at whilst there, and do not associate being on slats with pecking at other birds.



If straw bales are being used too quickly try placing them in haynets. Egg cartons in haynets can also be a long lasting alternative.

Enrichment objects

Providing objects for the pullets to peck at promotes positive foraging behaviour, this is especially important when the birds are young and learning what to peck at. Providing environmental enrichments keeps the pullets occupied and encourages them to peck at these rather than other birds.

Here are some commonly used examples of enriching the rearing environment:

- **Hanging objects;** Bottles, CDs, Wellington boots, Rope
- **Providing pecking blocks** throughout the house
- **Treated and dust extracted straw bales** can increase the foraging opportunities for the pullets and help improve litter quality.
- **Dustbaths** – all chickens have a natural desire to dust bathe. Ensuring the litter is deep and dry should allow the pullets to satisfy this need.

It is important to note that these enrichments should also be available during the laying period.

Attention to detail is key for producing healthy, uniform and robust pullets which are ready for the environment and stressors of the laying house.

Inspections

- Perform at least 3 inspections per day.** Try and have a variety of different people walking the flock each day, wear different coloured overalls, and vary your routes through the house, and discuss the flock as you walk. In this way the pullets become more used to disturbances and will be better prepared for unexpected, sudden changes.

Experience of the problem is important. It may help to spot injurious pecking behaviour earlier, as well as in managing it. Talk to others who have had the problem, and visit them if possible.



Reducing fear and stress

- Avoid subjecting pullets to multiple stressors at the same time.** Some stresses are unavoidable, but for those you can control, try and stagger them. For example; avoid changing diet at the same time as vaccinating.
- Get the pullets used to low-level disturbances and noise.** For example, playing a radio intermittently (at different times and on different stations) in the rearing house may make the flock calmer. Delaying putting radios when the chicks are very young to avoid clustering of chicks attracted to them.



Get to know your rearer and their shed conditions

Talk to the producer

Liaise with the farmer to whom you are supplying the birds. Perhaps visit the laying unit and/or encourage the farmer to come and visit you, to facilitate close matching of rearing and laying environments. If the laying farm is too far away then perhaps exchange photos so that both of you have a better idea of where the pullets are going to or are coming from.

Diet affects the risk of injurious pecking occurring in a flock. The following different aspects of diet and feeding have been shown to affect injurious pecking.

Ensuring adequate protein in the diet

Protein is an essential element of the diet and several studies have highlighted a link between inadequate dietary protein and injurious pecking at lay. It is important to:-

- Carefully monitor protein levels in the diet**, especially methionine. If you suspect a problem with the feed, then you should contact your feed supplier immediately so the problem can be investigated and, if necessary resolved.
- Avoid large drops in protein and amino acid levels when diets are changed**. Speak to your nutrition adviser to discuss how best to achieve this.
- Ensure that there is a **balanced ratio of amino acids** in the diet.

It is now recognised that the timings of the chain feeder runs should allow a larger gap in the middle of the day to ensure the smaller less 'tasty' but very important finer feed particles are eaten. This should be put into practice at rear and continued at lay.

Chickens require 13 essential amino acids to be present in the diet, in an appropriate balanced ratio.

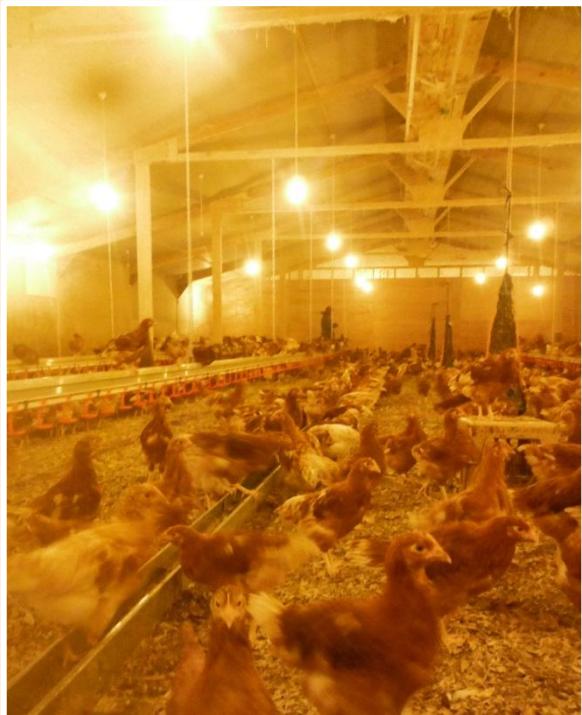
Ensuring adequate fibre in the diet

A number of studies have found **lower levels of injurious pecking** both at rear and during lay, where **extra fibre was added to the diet**. This may be due to dietary fibre improving the efficiency of the hens' guts. If there is too little fibre in the diet the hens may consume feathers in an attempt to replace this fibre.

Alternatively adding fibre to the diet may simply **increase the time spent eating**, reducing the time available for the birds to start feather pecking.

Your nutritionist should be able to advise you what the correct balance of amino acids is for your birds.

The form in which the food is given may affect the time birds spend eating: feeding finer grain food has been associated with lower levels of injurious pecking.



Both diet changes and flock unevenness can be sources of stress for the pullets; both should be managed to reduce the stress placed on pullets.

Diet changes

A recent study found that with every diet change observed the risk of injurious pecking increased 62 fold. If a new diet is less palatable it may provoke the pullets to search for other pecking opportunities. Or the change may be to a diet with lower protein content, which itself may cause injurious pecking to develop.

- Use other enrichments around the time of diet changes.** If a diet change is needed, then make sure there are other things available to occupy the birds such as straw bales and hanging rope. Scattering or providing pans of feed filled with the ration the pullets were previously on will help to make the diet change a more gradual process.
- Make as few changes to the diet as possible.** Consult with your nutritionist regarding the fewest dietary changes you can manage with.

Achieving evenness

Some characteristics of the flock itself may also affect their likelihood to begin injurious pecking. Flocks which are uneven, for example that have a wide variation in body weights, or which are mixed from different batches, have a higher propensity to show injurious pecking.

- Avoid mixing chicks from different batches or different breeds.**
- Frequently weigh a representative sample and monitor the evenness of your flock.**
- Ensure that all feeders and drinkers are easily accessible to all pullets, so all can feed.**
- Also check that your lighting regime is working correctly;** make sure the timers are working correctly, so that the birds are receiving the appropriate day length.
- If your flock is very uneven it may be necessary to cull the smallest birds and then try to investigate the cause.**



Placing extra enrichments in the house around the time of a diet change can help relieve the stress of a diet change. Egg cartons in haynets offer a cheap, long-lasting foraging enrichment for the pullets.

Monitor body weights closely. Try to attain the correct liveweight and evenness (>80% within 10% of the mean liveweight) in each flock.

Rearing your own pullets is an option., and can provide benefits. However, you need an isolated site for rearing and you should never rear pullets alongside laying birds.



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Any recommendations suggested in this advice guide are implemented at your cost and risk. You remain responsible for complying with all current legislation in relation to the welfare and management of your flock/s and you should still consult with your veterinary surgeon and other advisors as normal with respect to the operation of your business. The University of Bristol shall under no circumstances whatever be liable for any loss of profit, loss of business, loss of revenue or any indirect or consequential loss arising under or in connection with any recommendations suggested in this advice guide.