

## Management of Broiler Breeders in the Absence of Beak Treatment

### INTRODUCTION

The beak treatment of young broiler breeders has been used as an aid to prevent cannibalism and mortality due to feather pecking since the 1970's, but within the next few years' beak treatment will no longer be allowed in many countries. The timescales for the implementation of the ban on beak treatment varies between countries but it has already been stopped in the UK (females), Sweden, Finland, Poland and Austria, without many major problems through the implementation of appropriate management strategies. Beak treatment is due to be stopped in The Netherlands in 2018, and in Germany currently about 80% of flocks are not beak treated, with a complete ban expected in 2016/2017.

The aim of this document is to detail the best management practices for birds in the absence of beak treatment. The information given here is based on internal experience and the experience from countries where beak treatment has already ceased.

### BACKGROUND

Despite being introduced as an aid to prevent damage and mortality as a result of feather pecking, it is important to note that beak treatment does not actually **prevent** feather pecking - it merely lessens the impact.

Pecking is a complex issue which is the result of re-directed scratching behavior. As such the application of appropriate management strategies to re-direct this negative behavior is the key.

Good management practices which ensure appropriate bird development and growth, and the provision of an adequate environment and stimuli which promote scratching and natural foraging behaviors are crucial. These can be implemented with ease and, as will be shown here, are part of the normal best practice management strategy for broiler breeders.

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## BEST PRACTICE MANAGEMENT IN THE ABSENCE OF BEAK TREATMENT

### STOCKMANSHIP

Good stockmanship plays a key role in minimizing and preventing the occurrence of feather pecking problems. Attention to detail and spending enough time with the flock to know what is normal and therefore, importantly, what is abnormal, will ensure that potential problems can be detected at an early stage and appropriately dealt with before they develop further.

### REAR

Best management practice for rear as given in the current Parent Stock Handbook will prevent/ease most feather pecking issues. However, there are some additional management strategies and some key management areas that need to be highlighted as having particular benefit.

1. *Environmental Enrichment* - environmental enrichment (such as bales of alfalfa hay, straw or the addition of pecking blocks) should be provided early on, no later than 14 days of age. The provision of environmental enrichment will promote natural foraging and scratching behavior. Alfalfa hay and straw are best provided in bags or containers that the birds can peck.
2. *Feeding and Drinking Space* - recommended available feeding and drinking space during rear should be adhered to (**Tables 1 & 2** and **Figure 1**). This ensures all birds can access feed and water uniformly.

**Table 1.** Recommended feeding space in rear.

Age	Females		Males	
	Track Feeder cm (in)	Pan Feeder cm (in)	Track Feeder cm (in)	Pan Feeder cm (in)
0-35 days	5 (2)	4 (2)	5 (2)	5 (2)
36-70 days	10 (4)	8 (3)	10 (4)	9 (3.5)
71-105 days	15 (6)	10 (4)	15 (6)	11 (4)

**Table 2.** Recommended drinking requirements post brooding.

Type of Drinker	Drinker Space
Bell Drinkers	1.5 cm (0.6 in)
Nipples	8-12 birds per nipple
Cups	20-30 birds per cup

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**Figure 1.** Uniform bird distribution around drinkers when adequate drinker space is provided for bell, nipple and nipple with cups.



Metal feeders are preferred to plastic feeders as they have a natural blunting effect on the beak. Spin feeding encourages natural foraging behavior and may also have a natural blunting effect on the beak as birds peck against concrete to pick up feed from the floor.

3. *Lighting* - for controlled environment rearing recommended light intensities are shown in **Table 3**.

**Table 3.** Recommended light intensity during rear.

Age	Light intensity
0-5 days	80-100 lux (8-10 fc)
6-10 days	30-60 lux (3-6 fc) in the brooding area* 10-20 lux (1-2 fc) in the house
11-147 days	10-20 lux (1-2 fc) in the house

\*If birds are reared in closed environment housing but will be in open-sided housing during lay the light intensity in the brooding area should be 60-80 lux (6-8 fc).

Light proofing to prevent any daylight from leaking into the house and ensuring that light is uniformly distributed throughout the house is key. A uniform distribution of light intensity will be achieved if the correct number of lighting points for the size of the house is in place. Refer to the manufacturer's instructions to determine how many lights are required as it will vary with house size and light type. In regions where there is a requirement to provide birds with some natural daylight, appropriate shading must be provided so that there is no direct sunlight shining into the house.

Lighting during rear must be dimmable. Dimmable lighting offers better control of light intensity in a uniform way; the removal of individual light bulbs to alter/control light intensity will lead to a non-uniform light distribution which may have a negative effect on bird behavior and possibly result in feather pecking. The use of dawn to dusk lighting programs (where light intensity is gradually increased at the beginning of the day and decreased at the end of the day to simulate dawn and dusk) may also be beneficial.

Incandescent and LED lights are better than fluorescent lights. Fluorescent lights, if used, must be well maintained and replaced regularly to avoid flickering which can make birds nervous.

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Flickering may not always be detected by the human eye when lights are on full. A simple way to detect whether or not fluorescent lights are flickering and need to be changed is to slowly dim the lights. The lights will flicker at some point during the dimming process if they need to be changed or if there are maintenance issues that need to be rectified. High frequency fluorescent lights are also available which reduce visible flicker.

As a general principle warm light (with more red) is preferred to a hard white light.

4. *Stocking density* - if higher than recommended stocking densities are used then the potential for feather pecking issues may be increased particularly if recommended feeding and drinking space is not adhered to.
5. *Litter depth and floor feeding* - if birds are floor fed in rear litter depth should be a maximum of 2 cm (0.8 in). This will allow a natural blunting of the beak on the concrete as birds search for feed in the litter, it will also make it easier for the birds to find feed.
6. *Litter quality* - birds should have access to good quality, friable litter from placement. If necessary litter should be actively managed to keep it friable; any caked areas should be broken up and dispersed and if necessary fresh litter added. Friable litter will encourage scratching/natural foraging behavior as well as dust bathing.
7. *Metal vs plastic feeders* - metal track feeders have an advantage over plastic feeders as they have a natural blunting effect on the beak as the bird eats. In recent years the manufacturers of pan feeders have been looking at ways of developing a metal base which has a similar blunting effect on the beak to that of metal track feeders.
8. *Environment* - a consistent, draft-free environment which provides the correct temperature and adequate fresh air must be provided to maintain bird welfare and positive natural bird behavior. Poorly managed ventilation will also contribute to poor litter quality which will reduce foraging behavior.

### LAY

As for rear, best management practice for lay as given in the current Parent Stock Handbook will prevent/ease most feather pecking issues. Once again there are some key management areas that need to be highlighted as having particular benefit. All best management practices highlighted for rear also apply to lay.

#### Key points for lay include:

1. Metal chain feeders are preferred as they will have a natural blunting effect on the beak.
2. Continued environmental enrichment for at least 3-4 weeks after transfer or in day old to death facilities once the laying setup has been finalized will also be beneficial.
3. Completing transfer from rear to lay facilities correctly is an important area of management when it comes to feather pecking. Transfer should be completed as smoothly as possible to reduce the challenges the birds face at this time.

#### Best practice for transfer includes:

- Preparation. Ensure the laying house is laid out ready to receive the flock well in advance.
- Minimize environmental and equipment differences between rear and lay facilities.
- Ensure birds can find feed and water easily and quickly upon arrival.
- Provide extra feed upon arrival at the lay facilities.
- Maintain the same light intensity in the lay house as in the rear house for a couple of days after transfer (this means lights in the lay house must also be dimmable).
- Monitor crop fill and bird behavior after transfer to ensure birds are eating and drinking and have settled in well to the new facilities.

For more information on best practice management during transfer please see the document - Best Practice for Transfer (Rear and Move).

## NUTRITION

Well-balanced diets matching the breeder requirements at each age are essential for optimal body development, performance, and feather cover. A lack or deficiency of nutrients can challenge the birds, impair feather quality, and may lead to abnormal behaviors, like feather sucking and feather pecking. There are several nutritional tools which help to maintain feather cover and prevent/alleviate unwanted pecking behavior. For more information on nutritional recommendations for Parent Stock please refer to the current Parent Stock Nutrition Specifications.

### SODIUM

Even a marginal deficiency of sodium may cause pecking and therefore, it is important to ensure the amount of sodium in the diet is according to current recommendations; 0.18 - 0.20%. Chloride levels should be a maximum of 10% higher than sodium.

### PROTEIN

Feathers are 89-97% protein. Diets lacking in protein and essential amino acids, especially methionine and cystine, impair feather quality and can encourage birds to start feather pecking. The protein and amino acid contents of the diets need to be well-balanced according to current recommendations and fed in the correct amounts. If there are no feathers on the floor it could mean that overall feathering is impaired. An absence of feathers on the floor suggests any feathers dropped are being eaten by the birds; this will occur if birds are trying to obtain amino acids which are lacking in their diet. To support feathering and prevent pecking it is recommended to increase the 'safety margins' of some key amino acids in the diet. Trial results and field observations have shown improved feather quality by increasing the ratio, in comparison with lysine, of digestible methionine + cystine in the rearing diet by 20-25% and of all other essential amino acids, by 10% above current recommendations. The corresponding increases compared to lysine in pre-layer diet are 10% for digestible methionine + cystine and 5% for other essential amino acids. During the laying period digestible methionine + cystine can be increased by 5-10%, to support feathering: higher levels are not recommended as there will be a risk of large egg size.

### TRACE MINERALS AND VITAMINS

Dietary trace minerals, especially zinc and selenium, affect feather development and quality. The maximum contents of these trace minerals in poultry diets are, however, strictly regulated in certain parts of the globe. Using organic forms of these trace minerals may give an advantage in bio-availability while still allowing the regulated maximum inclusion rates to be adhered to.

B-complex vitamins are linked to a wide range of metabolic processes in the body, including feathering. As water soluble vitamins they are not stored in the body and need to be provided daily in the diet. In case of any gut malfunction, like dysbacteriosis (a microbial imbalance in the gut), diarrhea, wet droppings, high feed passage, etc, extra supplementation of vitamin B-complex is recommended.

### EATING-UP TIME

Increasing the eating time has been shown to reduce feather pecking behavior. Longer eating times can be achieved by:

- *Feeding high-fiber, low-energy diets especially during the growing period.* These diets allow larger daily feed portions and therefore increase feed clean-up time. Raw materials high in insoluble fiber are preferred. If included in the feed in a coarse particle size, fibre-rich raw materials (like oats, oat hulls, sunflower meal) will provide sufficient structure to stimulate gizzard development and the function of the whole gastrointestinal tract. By increasing the fill of the gastrointestinal tract low-density, high-fibre diets will also promote satiety of the birds and reduce the risk of pecking. Recommended minimum crude fiber level in Starter 1 is 4%, Starter 2 is 5%, Grower is 8%, Pre-Breeder is 5%, and the Breeder 4%.

**Note: if energy levels of the diet are reduced, nutrient levels must be adjusted to ensure that energy to nutrient ratios remain the same.**

- *Feeding a coarse mash instead of pellets or crumble diets.* This will prolong the eating time and also improves nutrient digestion and absorption.

## WHAT TO DO IF PECKING ISSUES DO OCCUR

Adhering to the best practice management advice given above should prevent most feather pecking however, if pecking issues do occur **immediate action** must be taken on the first signs of any potential problems. The management practices and advice given below will help if pecking does occur. **These strategies must be applied in combination to achieve the most benefit.**

- Stockmanship is paramount to limiting the impact of feather pecking should it occur. The key is to be aware of what is going on in the flock and knowing what to look out for. Knowing what is normal for the flock and therefore what is abnormal will allow potential issues to be spotted early.
- Depending on flock age, one of the first indications that feather pecking might occur is the development of feather sucking and a lack of feathers in the litter. The stockman must be aware of, and on the lookout for, these signs and act immediately if they are seen.
- Lighting can be used to help reduce pecking issues. If pecking does develop then reducing light intensity may help: at lower light intensities hens can see fewer details and therefore may be less likely to feather peck. However, if light intensities are low to begin with then this option does not exist. The use of red light may also help, again for the same reasons.
- Diet nutrient content. Feather pecking can be an indication of a dietary deficiency. If problems of feather pecking occur then an immediate test of diet nutrient content must be undertaken. Importantly, other strategies to help combat pecking should be introduced while waiting for any test results to come back. Nutrients of particular importance are:
  - Sodium
  - Methionine and cystine
  - Balance of amino acids
- Environmental enrichment - such as scratch feeding, or alfalfa hay/straw bales or toys such as hanging CDs on string and half-filled bottles of water will keep the birds occupied and interested in their environment. If environmental enrichment is already in place and pecking occurs then new, different forms of enrichment should be provided.
- The addition of salt and liquid methionine to drinking water may be beneficial: 1 kg salt/1000 litres (3.3 lb/220 gallons) water and 0.05 g (0.002 oz) of liquid methionine/bird/day.

## CONCLUSIONS

In the absence of beak treatment normal best practice management strategies for broiler breeders should be employed. Good management practices which ensure appropriate bird development and growth, and the provision of an adequate environment and stimuli which promote scratching and natural foraging behaviors are key.

## KEY POINTS

- Adopting general best management principles as given in the current Parent Stock Handbook will prevent/ease most feathering pecking problems.
- Stockmanship and being aware of what is normal for the flock and when things change within the flock is crucial. Any potential problems must be dealt with **immediately**.
- Provide environmental enrichment.
- Ensure adequate nutrition is provided.
- Adhere to recommended feeder and drinker space.
- Transfer from rearing to lay facilities must be completed as smoothly as possible minimizing the changes to the environment.
- Strategies such as the use of metal feeders and appropriate litter depth when floor feeding which allow natural blunting of the beak are helpful.
- Uniform light distribution must be achieved throughout the house.

If signs of feather sucking or feather pecking are seen a **combination** of management strategies should be employed:

- Reduce light intensity or use red light.
- Analyze dietary nutrient content.
- Provide environmental enrichment or a different form of environmental enrichment.
- The addition of salt and liquid methionine to drinking water may be beneficial.

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