



PREVENTING PECKING AND CANNIBALISM IN LAYING HENS: A COMPREHENSIVE GUIDE

INTRODUCTION

The Hy-Line genetics laying hens are constantly selected for calm behavior in parallel to the prolific egg output. However, under certain conditions, pecking and cannibalism can be present among the hens. These behaviors can lead to injury, stress, and decreased egg production. Fortunately, with proper management and preventive measures, it is possible to reduce the incidence of pecking and cannibalism significantly.

UNDERSTANDING THE CAUSES

Before examining prevention methods, it's crucial to understand why pecking and cannibalism occur in laying hens:

- **Social Stress:** Overcrowding, limited space, and competition for resources like food and water can lead to social stress within the flock, causing hens to engage in aggressive behaviors.
- **Environmental Factors:** Inadequate lighting, temperature, sudden stress, poor ventilation, and dirty living conditions can contribute to stress and boredom, which may trigger pecking.
- **Nutritional Deficiencies:** Imbalances or deficiencies in the hens' diet can lead to nutrient deficiencies that affect their behavior and overall health.

PREVENTION STRATEGIES

- **Feather cover** – A poorly feathered bird at point of lay is more prone to stress during the laying period and develop anti-social behavior/feather pecking. Factors that contribute to feather quality include proper growth, nutrition, disease, management, overall stress, and uniformity. Pullets undergo three molts to transition from chick down to adult feather cover. To achieve the best feathering, the pullets must be healthy and free of stress for the duration of feather growth.
- **Condition pullets** in rear to become accustomed to audio and visual stimuli. Sound from mechanical noises such as initiating the feeding system is a good way to condition the bird to spontaneous noise. Use of a radio in the rearing house and talking are also effective means of familiarizing birds to sounds. Changing the colour of clothes and footwear frequently will also help condition birds to visual stimuli and result in calmer flock less prone to develop behavior issues.
- **Provide Adequate Space:** Ensure your hens have enough room to move around comfortably. Overcrowding is a major stress factor that can lead to pecking. Aim for at least 310 square cm of space per hen with a minimum of 8cm of linear feeder space per bird in the growing phase and at least 490 square cm with a minimum of 9cm of linear feeder space per bird in the production phase.
- **Achieve optimal body weight, conditioning, and uniformity** by the end of the rearing period. Body weights should be on breed target at light stimulation weeks with minimum 85% uniformity.
- **Good Ventilation and Lighting:** Maintain proper ventilation to control ammonia levels and humidity, which can cause stress. Adequate lighting, including natural light, helps regulate the hens' circadian rhythms and reduces boredom.

- **Feeding System:** A well-managed feeding system will not only support good performance but also promote good behaviour.
 1. Maintain constant access to feed throughout the day from transfer to 22 weeks of age.
 2. From 22 weeks of age onwards, allow the birds to consume all the feed from the feeding system during the morning period, this will encourage consumption of small particles of feed.
 3. Ensure feed is adequately distributed around the entire feeding system quickly, and to avoid separation of components. A track speed of 20 m/minute will distribute feed efficiently. Checking distribution of feed from the beginning to the end of the system is important especially for longer systems over 120–130 meters. Loading hoppers positioned halfway along the feeding system aids distribution of feed.
 4. Stimulate feed consumption at the beginning of lay by running the system without adding additional feed.
 5. Check the presentation of feed within the system ensuring adequate depth while at the same time preventing spillage.
 6. Set the feed system at an appropriate height to allow birds to consume freely.
 - **Environmental Enrichment (cage free systems):** Give hens things to do to prevent boredom. This includes hanging objects like mirrors, providing dust baths, pecking blocks, or scattering grains for them to scratch. These activities can divert their attention from pecking at each other. Provide items such as perches and nesting boxes.
 - **Quality Nutrition:** Ensure your hens receive a balanced and nutritious diet. The Hy-Line W-80 management guide has a detailed nutrition session. It's important to pay attention not only to the energy, protein, amino acids, and minerals in the diets, but mainly the vitamin and trace minerals premix. The vitamin and trace mineral levels (and the proportion between them) will have a key role in the behavior and other nutrient absorption.
1. **Fiber:** Increased insoluble fiber levels in layer diets have been shown to increase feeding time which has a positive impact on bird behavior. Fiber also has a positive effect on satiety, gut function and condition by stimulating gizzard activity and mechanical function. Typical fiber levels are 3.5–4.5%; however, higher levels can increase feeding time and reduction in boredom and is associated with decreased feather pecking.
 2. Elevated fiber levels are attainable by adding more high fiber materials such as sunflower, wheat feed, whole oat (hulls) or rape extract. Cellulosic products can also be used to increase the fiber level of the diet (based on supplier recommendation).
 3. Using a blend of fibers from a variety of sources is advisable. Forage within the house environment (straw, alfalfa) also serves as a supplementary source of fiber.
 4. **Feed particle size:** Feed particle size is nutritionally important and also engages hens in good feeding behaviour.
 5. **Proper particle size:** Utilize the Hy-Line feed particle size profile and aim for the majority of particles to fall between 1 and 3 mm. Particles above 3 mm should be kept within a maximum of 15% and not exceed 4 mm. The correct feed particle size will provide enough large particle size mash to stimulate a mechanical function to the intestine and enough small particles to engage the hens in longer feeding time.
 6. If the feed is too coarse, an excessive quantity of large particles may result in feed selection by dominant birds. This may result in aggressive competition and uneven nutrient intake.
 7. If the feed is too fine, the ration will be less palatable resulting in hens more likely to engage in explorative or boredom pecking.
 8. Adding fats and/or oils provide energy and also increases the homogeneity and palatability of mash feed.

PARTICLE SIZE	STARTER	GROWER	DEVELOPER	PRODUCTION
< 1 mm	1–3 mm diameter, crumble feed should contain < 10% fine feed particles	< 15%	< 15%	< 15%
1–2 mm		45–60%	25–35%	20–30%
2–3 mm		10–25%	25–40%	30–40%
> 3 mm		–	5–10%	10–15%

Ratio of limestone particle size.

PARTICLE SIZE	STARTER, GROWER, DEVELOPER	PRE-LAY	WEEKS 17-37	WEEKS 38-48	WEEKS 49-62	WEEKS 63+
Fine (0-2 mm)	100%	50%	40%	35%	30%	25%
Coarse (2-4 mm)	–	50%	60%	65%	70%	75%

Ratio of limestone particle size.

9. Feeding mash is preferred due to the longer feeding times, providing feed in a pelletised or crumb form will reduce the bird's feeding time
 10. Use large particle size limestone (2 mm to 4 mm) in the layer diets, larger particles not only support eggshell quality but also provide a mechanical stimulus which increases docility. The remainder of the limestone should be provided as a smaller particle size of 0 to 2 mm.
 11. Ensure large particles of limestone are adequately distributed through the feed, uneven distribution will result in uneven presentation and potentially variable intake by birds. Mix feed components adequately during the manufacturing process, add fat/oil to the diets to aid homogeneity of the feed.
- Consistency of nutrient supply
 1. Base the nutrient density of the diet on the bird's nutrient requirements (egg mass output) and feed intake. Birds eat quantities of nutrients not percentages so accurate estimation of feed intake when setting the diet nutrient specification is critical. A deficit in nutrient intake at any stage in lay may result in a stress reaction. This is particularly important in hot weather situations where provision of key nutrients is critical.
 2. Ensure a consistent supply of key nutrients to the bird through lay, transitioning to lower density feeds should be based on the existing feed intake and egg mass output rather than to an age.
 3. Minimise significant reduction in nutrient intake when transitioning through the feeding programme. Introduction to the next stage diet should be managed so any dietary changes should be subtle to avoid triggering a behavioural response. Daily nutrition intake should not vary by more than 5%.
4. Ensure an optimal amino acid intake and balance throughout both the rearing and laying period. Any shortfall or misbalance in amino acid intake may predispose to aggressive behavior. The main amino acids to consider are methionine, tryptophan and arginine.
 5. Birds respond well to consistent diets with minimal compositional change. Maintain the same raw material use between diets and ensure inclusion levels do not change more than 20% between diets.
 6. Low or variable intake of micronutrients can impact on bird behavior. Deficiency of vitamins B6 and Biotin are associated with feather pecking. Ensure the birds consume the fine particles of feed which tend to contain micronutrients. Check that the vitamin and trace mineral specification of the diets are adequate.
 7. Sodium deficiencies often lead to pecking issues. If adverse behaviors are observed, checking the sodium and sodium chloride levels in feed samples source from the feeding system can be a quick indicator of ration imbalance.
 8. Implement a consistent feeding schedule to reduce competition.

- Energy requirements

1. Provide sufficient energy to support egg mass output (see table at right) and also to maintain ideal body condition. Hens with inadequate levels of body fat and muscle tone are more prone to developing behavioral issues.

Feeding Phase	PEAKING	LAYER 2	LAYER 3	LAYER 4	LAYER 5
Period	First egg until production drops 2% below peak	2% below peak to 90%	89–85%	84–80%	Less than 80%
Metabolizable energy, kcals/bird/day*	295–310	290–305	285–300	280–295	275–290

Metabolizable Energy Requirement (kcals/bird/day). An approximation of the effect of temperature on energy needs is that for each 0.5°C change higher or lower than 22°C, subtract or add 2kcals/bird/day respectively.

2. Check the condition of birds: as a minimum it should be possible to feel a 2 cm layer of skin/subcutaneous fat around the abdominal area.
3. Maintain adequate muscle condition, a breast muscle score of 3 is required after reaching mature body weights at 33/34 weeks of age (Page 8 Hy-Line Brown management guide).

- **Beak Trimming:** Beak trimming is one of the most effective measures to prevent injury from pecking. When using hot blade beak trimming, its important to ensure the ideal blade temperature (around 650°C) with the proper technique to avoid hurting the hens or having excessive bleeding. The proper cleaning and maintenance of the debeaking machine, before and after the procedure will also ensure a uniform temperature distribution and better debeaking quality.
- **Monitor and Isolate Aggressive Birds:** Regularly observe your flock for signs of aggression. When inspecting the flock, if any aggressive hen is noticed (usually with blood on their face), remove this hen, debeak it, and change it to a different cage or pen.
- **Regular Health Checks:** Regularly inspect your hens for signs of injury or disease. Sick or injured birds are more likely to be targeted by their peers, so prompt treatment is essential.

CONCLUSION

Preventing pecking and cannibalism in laying hens is essential for their well-being and overall productivity. By addressing the underlying causes, providing a comfortable environment, and offering proper nutrition and enrichment, you can significantly reduce the occurrence of these issues in your flock. Remember that early intervention and diligent monitoring are key to maintaining a healthy and harmonious group of laying hens, ultimately leading to better egg production and happier birds.

