Important considerations for managing fully beaked flocks part two

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Due to changes in customer sentiment, restrictions on beak treatment practices have been introduced in some countries and are being considered by many others.

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Full (untreated) beaks are obligatory in European Union organic flocks, and this practice is being voluntarily extended to more barn and free range flocks on a customer by customer basis.

Free-range pasture with a shaded area.

Environment

A diverse, well-maintained hen environment reduces bird stress and has a beneficial impact on hens' behaviours. Environmental considerations include:

- **Consumable enrichments:** Non-soluble stones/grit, pecking blocks, straw, alfalfa. Enrichments which are edible or contain edible components, for instance forage-based material, are more likely to be effective than non-edible material. Foraging behaviour can be encouraged through addition of small quantities of grain or grit to the litter.
- **Non-consumable enrichments:** Hang ropes, egg flats, or CDs around the house.
- **Structural enrichments:** Verandas, winter gardens, elevated platforms, perches, and free-range paddocks are examples of structural enrichments to help keep hens stimulated. Higher usage of the free range area is associated with less stress. Providing a shaded area will encourage birds to range and provides shelter from the elements. Use of perches within the house environment can help avoid development of antisocial behaviour by providing a safe area for less dominant birds.
- **Recommended stocking density:** Consider reducing bird group size by introducing partitions. Maintain consistency in stocking density across the environment by ensuring consistency in range access, temperature, ventilation, enrichments, food and water availability, or other resources.

Disease management

Stress of any kind may lead to higher levels of adverse behaviour. One source of stress for poultry flocks is chronic disease or pathogen loads. Reducing disease levels through biosecurity, vaccination, and proactive management will greatly aid the productivity of a flock.

- **Viral diseases:** Chronic viral challenges such as infectious bronchitis, avian metapneumovirus, lentogenic Newcastle disease can impact flocks without causing high mortality. These underlying viruses, especially in combination with Mycoplasma or E. coli can create hen discomfort and lead to stress.
- **Bacterial diseases:** Although often secondary, Mycoplasma and E. coli can also be primary pathogens that increase bird discomfort. Other bacteria such as Enterococcus, Staphylococcus, Campylobacter, and Clostridium are present at higher levels in aviary and free range environments and if not properly managed can lead to management challenges.
- **Parasites:** The presence of red mite can lead to higher levels of stress which in turn increases the risk of feather pecking. Ensure there is an effective red mite prevention programme in place for the lifetime of the flock. Intestinal parasites can be problematic on litter and free range systems.

Feeding system management

A well-managed feeding system will not only support good performance but also promote good bird behaviour.

- **Access:**
  - Maintain constant access to feed throughout the day from transfer to 22 weeks of age.
  - From 22 weeks of age onwards, allow the birds to consume all the feed from the feeding system during the morning period. This will

Table 2. Optimal feed particle profile.

Particle size	Starter	Grower	Developer	Production
‹1mm	–	‹15%	‹15%	‹15%
1-2mm	Crumble	45-60%	25-35%	20-30%
2-3mm	Crumble	10-25%	25-40%	30-40%
›3mm	–	–	5-10%	10-15%

Table 3. Ratio of limestone particle size.

Particle size	Starter, Grower, Developer	Pre-Lay	Weeks 17-37	Weeks 38-48	Weeks 49-62	Weeks 63+
Fine (0-2mm)	100%	50%	40%	35%	30%	25%
Coarse (2-4mm)	–	50%	60%	65%	70%	75%

encourage consumption of small particles of feed.

Ensure feed is adequately distributed around the entire feeding system quickly to avoid separation of components. A track speed of 20m/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 120-130m. Loading hoppers positioned halfway along the feeding system aids distribution of feed.

- Stimulate feed consumption by running the system without adding additional feed.
- Check the presentation of feed within the system, ensuring adequate depth, while at the same time preventing spillage.
- Set the feed system at an appropriate height (level with bird's back) to allow birds to consume freely.
- Provide adequate drinker and feeder space to prevent competition and stress:

• Feed: 5cm/bird (with access on both sides), 10cm/bird (with access on one side), 4cm/bird with circular feeders.
• Water: Nipples/cups: 1 per 10 birds; circular drinkers: 1cm/bird; linear drinker: 2.5cm/bird.

Nutrition and diet nutrient specifications

Diets fed to fully beaked flocks should not only provide the nutrients required to achieve optimum production, but should also support favourable behaviour within the flock.

Some key points pertinent to feeding fully beaked flocks include: achieving fibre levels, optimising feed form, maintaining the consistency of nutrient supply, and fulfilling the nutrient needs of the bird.

Fibre

Increased insoluble fibre levels in layer diets have been shown to increase feeding time, which has a positive impact on bird behaviour.

Fibre also has a positive effect on satiety, gut function, and condition by stimulating gizzard activity and mechanical function. Typical fibre levels are 3.5-4.5%; however, higher levels can increase feeding time and reduction in boredom and are associated with decreased feather pecking.

Elevated fibre levels are attainable by adding more high-fibre materials such as sunflower, wheat feed, whole oat (hulls), or rape meal (Fig. 3). Cellulosic products can also be used to increase the fibre level of the diet (based on supplier recommendations). Using a blend of fibres from a variety of sources is advisable.

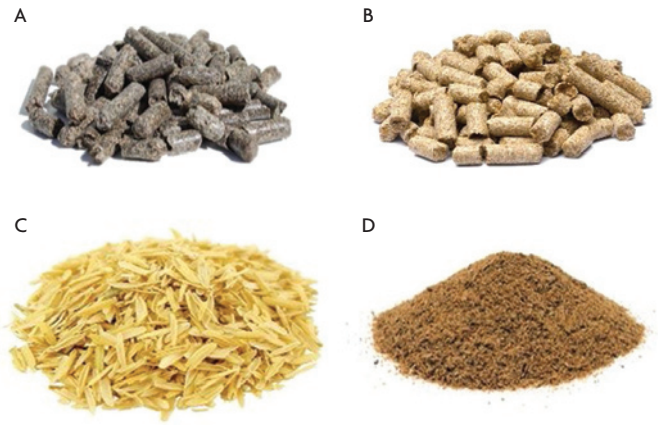

Fig. 3. Raw materials which contribute to the fibre density of the diet. Images courtesy KW Alternative Feeds. A. Sunflower meal (pellets), B. Wheat feed (pellets), C. Oat hulls, D. Rapeseed meal.

Feed particle size

Feed particle size is nutritionally important and also engages hens in good feeding behaviour. Utilise the Hy-Line feed particle size profile (Table 2) and aim for the majority of particles to fall between 1 and 3mm.

Particles above 3mm should be kept within a maximum of 15% and not exceed 4mm. 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.

- If the feed is too coarse, an excessive quantity of large particles may result in feed selection by dominant birds. This may lead to aggressive competition and uneven nutrient intake.
- If the feed is too fine, the ration will be less palatable, resulting in hens more likely to engage in explorative or boredom pecking.
- Adding fats and/or oils provides energy and increases the homogeneity and palatability of mash feed.
- Feeding mash is preferred, due to the longer feeding times relative to feeding pellets.
- Use large-particle limestone (2-4mm) in 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 in smaller particles of 0-2mm (Table 3).

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.

Consistency of nutrient supply

- 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.
- Ensure a consistent supply of key nutrients to the bird through lay. Transitioning to lower density feed should be based on existing feed intake and egg mass output, rather than age.
- Minimise significant reduction in nutrient intake when transitioning through the feeding programme. Introduction to the next stage diet should be managed to avoid triggering a behavioural response. Daily nutrient intake should not vary by more than 5%.
- 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 birds to aggressive behaviour. The main amino acids to consider are methionine, tryptophan and arginine.
- 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.
- Low or variable intake of micronutrients can impact bird behaviour. Deficiency of pyridoxin and biotin is associated with feather pecking. Ensure birds consume fine particles of feed, which tend to contain micronutrients. Check that the vitamin and trace mineral specification of the diets is adequate.
- Sodium deficiencies often lead to pecking issues. If adverse behaviours are observed, check sodium and sodium chloride levels in feed samples sourced from the feeding system.

Energy requirements

- Provide sufficient energy to support egg mass output (Table 4) and maintain ideal body condition. Hens with inadequate levels of body fat and muscle tone are more prone to developing behavioural issues.
- Check the condition of birds: at a minimum it should be possible to feel a 2cm layer of skin/subcutaneous fat around the abdominal area.
- Maintain adequate muscle condition. A breast muscle score of three is required after reaching mature body weights at 33-34 weeks of age. ■

Table 4. Metabolisable energy requirements. *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 2 kcals/bird/day, respectively.

Feeding phase	Peaking	Layer 2	Layer 3	Layer 4	Layer 5
Period	First egg until production drops 2% below peak	2% below peak to 89%	88-85%	84-80%	Less than 80%
Metabolisable energy, kcal/bird/day*	315-330	310-325	305-320	300-315	300-315