CONTROLLING FEATHER PECKING & CANNIBALISM IN LAYING HENS WITHOUT BEAK TRIMMING

A Compassion in World Farming Report
by Heather Pickett
July 2008

COMPASSION in world farming

Registered Charity No. 1095050

Compassion in World Farming is grateful to The Rufford Maurice Laing Foundation whose funding made this research possible.
EXECUTIVE SUMMARY

Hens are often beak trimmed to reduce the risk of welfare problems caused by feather pecking and cannibalism. The consequences of beak trimming for welfare include trauma during the procedure, pain due to tissue damage and nerve injury, loss of normal function due to reduced ability to sense materials with the beak and loss of integrity of a living animal.

This report reviews the evidence from the scientific literature and from practical experience which demonstrates that feather pecking and cannibalism can be controlled in non-cage systems without beak trimming through (i) the use of appropriate strains and selective breeding to further reduce the hens’ propensity to feather peck and (ii) good design of non-cage systems and implementation of a range of preventive management practices.

Experience in Switzerland, where both battery cages and beak trimming have been prohibited, indicates that, with experience, beak trimming can be avoided. Beak trimming has also been banned in Norway, Finland and Sweden.

Compassion in World Farming urges Defra not to act upon the Farm Animal Welfare Council’s recommendation to postpone the introduction of the UK ban on the beak trimming of laying hens, which is due to come into force on 1st January 2011. It would be a highly retrograde step to delay this important welfare reform. When Defra banned beak trimming in 2002 it accepted the argument that the correct way to prevent feather pecking and cannibalism is not to beak trim the birds, but to keep them in good conditions and to select for birds that are less prone to feather pecking and cannibalism. We urge Defra to adhere to this thinking and to maintain the 2011 commencement date for the ban on beak trimming.
**Introduction**

Feather pecking can be a major welfare problem in laying hens and can occur both in cages and non-cage systems. Feather pecking can be gentle or severe. Severe feather pecking can cause feather damage and result in denuded areas; if pecking of these denuded areas continues it can lead to wounding and the development of cannibalism. Cannibalism can also result from vent pecking. In order to control feather pecking and cannibalism, hens are often beak trimmed.


**Beak trimming**

Until 31st December 2010, beak trimming is permitted for laying hens in the UK provided (Statutory Instrument 2007 No. 1100):

- it is performed on birds less than ten days of age;
- no more than one third of the beak is removed;
- any subsequent haemorrhage from the beak is arrested by cauterisation.

The consequences of beak trimming for the welfare of laying hens include:

- **Trauma during the procedure**, including restraint and cutting, heating or infra-red treatment of an organ containing a high density of nociceptors (FAWC, 2007);
- **Acute and chronic pain** due to tissue damage and nerve injury (Cheng, 2006);
- **Loss of normal function** due to reduced ability to sense materials with the beak, leading to reduced feed intake and body weight for several weeks after treatment (Kuenzel, 2007);
- **Loss of integrity of a living animal** by the removal of part of its beak (FAWC, 2007).

In the UK, laying hens are generally beak trimmed manually using a hot plate to remove and cauterise the tip of the beak (FAWC, 2005). An alternative automated technique has been developed which uses an infra-red beam. The infra-red technique involves focusing a high intensity infra-red beam at the tip of the beak which penetrates the corneum, killing cells in the basal tissue. The beak tip is sloughed in ten to 21 days (Ibid.).

Infra-red treatment appears to have several advantages over hot-blade trimming as there is no open wound and mortality following trimming is reported to be lower (FAWC, 2005). Chicks trimmed using the hot-blade method display greater levels of head shaking, beak rubbing/wiping, investigation of other chicks’ beaks and whole body trembling after the operation compared with chicks trimmed using the
infra-red technique (*Ibid.*). However, the removal of the beak tip results in acute pain whether it is performed with the hot-blade or infra-red procedures (Kuenzel, 2007).

**Beak blunting as an alternative to beak trimming**

Pilot studies have demonstrated that the use of abrasive materials in the feed trough effectively shortens the beaks of laying hens and appears to have no effect on beak-related behaviour or production parameters. Beak blunting could therefore provide a possible alternative to beak trimming. However, more research is necessary to conclusively establish the impact of beak blunting on plumage condition (ADAS, 2005).

**Controlling feather pecking and cannibalism without beak trimming**

There is concern that if beak trimming is not used there may be high levels of feather pecking and cannibalism in non-cage systems. Compassion in World Farming does not believe that higher levels of feather pecking and cannibalism are inherent in non-cage systems. Scientific evidence and practical experience both show that feather pecking and cannibalism can be largely prevented by (i) the use of appropriate strains and selective breeding to further reduce the hens’ propensity to feather peck and (ii) good design of non-cage systems and implementation of a range of preventive management practices.

The Farm Animal Welfare Council has recommended that the introduction of the UK ban on the beak trimming of laying hens, which is due to come into force on 1st January 2011, should be postponed (FAWC, 2007 and 2008). The recent Farm Animal Welfare Council Opinion on the Beak Trimming of Laying Hens (FAWC, 2007) accepts in an uncritical manner the assertion that hens housed in barn or free-range systems will engage in feather pecking and cannibalism unless they are beak trimmed. The Opinion almost totally fails to examine the scientific evidence and practical experience that show it is possible to largely avoid feather pecking and cannibalism without resorting to beak trimming. This report will review that evidence and show that the correct way to prevent feather pecking and cannibalism is not to beak trim the birds, but to keep them in good conditions and to select for birds that are less prone to feather pecking and cannibalism.

**Evidence from the scientific literature**

*Providing opportunities for foraging*

In natural conditions, hens spend between 50 and 90 per cent of their waking time foraging, making up to 15 000 pecks a day (Webster, 2002; Picard *et al.*, 2002). Hens are still motivated to forage even when provided with adequate food (Cooper and Albentosa, 2003). Evidence suggests that feather pecking is redirected ground pecking behaviour associated with foraging (Blokhuis, 1986; Huber-Eicher and Wechsler, 1997). It therefore stands to reason that design and management aimed at providing
opportunities for hens to forage and increasing the length of time birds spend on foraging and feeding is likely to reduce the incidence of feather pecking. This has been confirmed by a number of studies:

Feeding high-fibre, low-energy diets or roughages reduces feather pecking (Van Krimpen et al, 2005). Hens that are provided with food in the form of mash rather than pellets are less likely to feather peck, as mash takes longer to eat so the hen spends more time engaged in feeding. Aerni et al (2000) state: "High rates of feather pecking and pronounced feather damage were only found in hens housed without access to straw and fed on pellets”. They conclude: “In order to avoid problems with feather pecking, it is recommended that laying hens are provided with foraging material and fed on mash”. El-Lethey et al (2000) similarly conclude: “Provision of foraging material and food form have significant effects on both feather pecking and indicators of stress”. Hartini et al (2002) found that the way in which food is presented, in particular that it is time consuming to eat, appears to be more important than dietary deficiencies in triggering cannibalism.

Norgaard-Nielson et al (1993) found that providing cut straw in the laying environment reduced feather pecking. Similarly, Steenfeldt et al (2007) found that access to maize silage, barley-pea silage or carrots decreased damaging pecking, reduced severe feather-pecking behaviour and improved plumage quality. McAdie et al (2005) found that environmental enrichment through the addition of simple string devices to the pens of non-beak-trimmed birds decreased feather pecking.

Providing adequate litter, maintained in a friable state, has been shown to reduce the incidence of feather pecking. For example, Zimmerman et al (2005) found that the use of nipple drinkers rather than bell drinkers and an improved litter management strategy contributed to a reduced level of feather pecking.

Conditions in the rearing environment are also important to reduce the future tendency of hens to feather peck. Huber-Eicher and Sebő (2001) found that early access to litter (from one day of age) increased foraging behaviour and reduced feather pecking. Similarly, Nicol et al (2001) showed that early experience with litter stimulated ground pecking and dustbathing and reduced the chance of feather pecking in later life. Riber et al (2007) found that chicks reared with broody hens showed higher ground pecking activity, earlier development of daytime perch use and significantly lower mortality due to feather pecking and cannibalism compared with non-brooded chicks.

Providing opportunities for resting and refuge
The provision of perches can reduce feather-pecking damage and the height of the perches is important. Wechsler and Huber-Eicher (1998) found that plumage condition was significantly better for hens kept in pens with high (70cm above floor level) rather than low (45cm above floor level) perches.
They recommend that housing systems for laying hens should contain adequate foraging material and high perches to avoid welfare problems with feather pecking and feather damage. Gunnarsson et al (1999) found that providing perches in the rearing environment significantly reduced the risk of cannibalism during the laying period.

Riber and Forkman (2007) found that inactive birds were more likely to become the targets of both gentle and severe feather pecking. They suggest providing distinct resting areas so that mixing of active and inactive birds can be avoided. Friere et al (2003) also recommend the provision of refuge areas where birds can avoid pecking.

**Encouraging ranging**

In free-range systems, increased use of the range is strongly associated with a reduced risk of feather pecking and vent pecking (Pötzsch et al, 2001). Green et al (2000) found that less than 50 per cent of the flock using the outdoor area on a fine sunny day was a significant risk factor for feather pecking, whilst Nicol et al (2003) found that the risk of feather pecking was reduced nine-fold in flocks where more than 20 per cent of birds used the range on sunny days.

A number of measures can be used to encourage birds to make full use of the range. Nicol et al (2003) found that use of the range was increased by the presence of trees and/or hedges on the range. Laying hens show reduced signs of fear if the flock also contains cockerels (Oden et al, 2005) and this may encourage birds to range. Bestman and Wagenaar (2003) recommend keeping cockerels with layers, providing vegetative or artificial cover on the range and limiting flock size to around 500 birds to stimulate birds to use the outdoor range. It is also important to ensure that there are sufficient popholes to make it easy for hens to find their way out of the house. In some systems, the whole length of the house can be opened to encourage birds to go outside.

**Limiting group size**

The risk of feather pecking is generally lower in hens kept in smaller groups than in larger groups (Bilcik and Keeling, 2000; Nicol et al, 1999). Some free-range systems use multiple small houses, providing the ideal combination of ample space, good access to outdoor range and small social group size. It is also possible to use partitions within larger houses to allow birds to establish stable social groups by forming smaller sub-groups in different parts of the house.

**Selection of birds with a lower propensity to feather peck**

It is widely acknowledged that some strains of hens are much less likely to engage in feather pecking and cannibalism than others. McAdie and Keeling (2000) point out: “It has been repeatedly documented that feather pecking differs between strains of hens... It has also been demonstrated that feather
pecking traits can be selected for or against." FAWC (1997) state that genetic selection can reduce feather pecking and cannibalism "significantly and substantially". Hocking et al (2004) conclude that there is a strong genetic basis for feather pecking and cannibalism and that these behaviours are not strongly related genetically to other behavioural traits. Therefore, “It should be possible to select birds that exhibit the normal range of behaviours but that do not have a propensity for feather pecking and cannibalism.”

Whilst pointing out that “genetic tools” cannot provide the entire solution to feather pecking, Preisinger (2000) looks to the future with optimism: “If future stocks with a low propensity for feather pecking, which are currently being developed, are housed in well designed and properly managed systems, poultry farmers will be able to control feather pecking without the need for beak trimming.” Together with improvements in management and enriching the environments of the birds, Jendral and Robinson (2004) describe genetic selection as a “realistic option” to completely remove the need for beak trimming.

The development of commercial strains of hen with a lower propensity to feather peck is already well underway and breeding companies are reporting progress to the Beak Trimming Action Group, which was set up by Defra in 2002 to co-ordinate information, research and best practice on the subject with the overall aim of enabling the UK poultry industry to successfully adapt to the introduction of the ban on beak trimming in 2011.

**Evidence from practical experience**

Many of the measures recommended in the scientific literature to control feather pecking and cannibalism are supported by practical experience, which also indicates a range of other diverse measures that are beneficial in reducing the risk of feather pecking. These include (Defra, 2005):

- **Matching housing conditions in rear and in lay**, e.g. same drinker and feeder systems and time of feeding;
- **Using good quality pullets**, i.e. correctly reared to an agreed lighting programme, healthy, well-feathered and of even weight;
- **Improving bird temperament**, e.g. by getting birds used to loud noises and people walking through the flock;
- **Maximising use of the range area**, e.g. by providing shelter, making water available outside and allowing hens onto the range as early as possible in the day;
- **Careful pullet transfer and transportation**, e.g. by moving birds at night, minimising time on the vehicle and careful handling;
• **Ensuring good management**, e.g. by paying attention to detail, spending sufficient time with the hens to recognise normal and abnormal behaviour, being conscientious and diligent, maintaining good records and adequate training;

• **Ensuring good house design and layout**, e.g. by careful planning of the positioning of feeders, drinkers, nest boxes, perches and lighting;

• **Maintaining good quality litter**, e.g. by using good quality material, careful design of the litter area, access arrangements and drainage, and raking or forking the litter when weather conditions are poor;

• **Minimising changes when moving pullets from the rearing farm to the laying farm**, e.g. limiting any period of restricted access to areas of the house following transfer to the laying farm;

• **Careful changes in feed**, e.g. by using a period of overlap between new and old feeds;

• **Ensuring uniformity of the flock**, e.g. by ensuring weight lost in transit between the rearing and laying farm is regained within around two weeks of arrival;

• **Preventing disease**, e.g. by ensuring pullets are given all recommended vaccinations, thorough cleansing and disinfection of the house between flocks and high standards of hygiene;

• **Preventing pest challenges (especially red mite and vermin)**, e.g. by minimising harbourages and incorporating pest-proofing features in housing and equipment design, treatment with an approved acaricide between flocks, prompt clearing of any food spillages and prompt repair of any damage to double-skinned walls and roofs;

• **Ensuring optimal nutritional intake**, e.g. by matching the nutritional composition of the feed to the requirements of the bird at all stages of its life;

• **Delivering the onset of lay**, e.g. to 20 weeks.

If hens with a low propensity to feather peck are used and the above design and management practices are adopted, feather pecking and cannibalism can be controlled in non-cage systems without beak trimming. Case studies of free-range systems for laying hens across the European Union, carried out by Compassion in World Farming, demonstrate how breed choice and preventive management practices can enable farmers to successfully use non-beak-trimmed birds. Two Swedish farms used a white strain of hen that is less likely to feather peck and kept cockerels with the hens. They experienced few problems with feather pecking and achieved mortality rates of 2-3% and 5-6% respectively, with non-beak-trimmed birds. One UK farm used a system where the whole length of the house can be opened to encourage birds to go outside and used the Columbian Blacktail breed of hen, which they found ranged well. The farm overcame initial problems with feather pecking by slightly reducing group size and stocking density, achieving excellent feather condition and a mortality rate of 1.5% with non-beak-trimmed birds (Arey, 2004).
Experience in Switzerland, where both battery cages and beak trimming have been prohibited, indicates that, with experience, beak trimming can be avoided (FAWC, 2007). Battery cages have not been permitted in Switzerland since 1992 and beak trimming has been prohibited since 2001 (Fröhlich, 2008). Some of the factors that are likely to be important in the success of non-cage systems without beak trimming in Switzerland include:

- **Breed choice:** The majority (60%) of laying hens in Switzerland are white-feathered strains, which are less prone to feather pecking and cannibalism and are well suited to non-cage systems (Fröhlich, 2008);
- **Outdoor access:** The majority of laying hens in Switzerland have outdoor access, with 81% of flocks having access to a wintergarden and 65% of flocks having access to both a wintergarden and free-range area (Fröhlich, 2008);
- **Housing conditions:** Almost all laying hens in Switzerland (over 99%) have access to litter and the majority (over 80%) have access to raised perches (Häne et al, 2000);
- **System design:** Many systems in Switzerland are structured to provide separate areas for separate functions and “traffic trails” or roadways to allow hens to move between tiers or from one part of the system to another without disturbing other birds (Jendral, 2005);
- **Rearing conditions:** All pullets in Switzerland are reared with access to litter and many also have access to perches (50%) and a wintergarden (32%) (Huber-Eicher, 1999).

Beak trimming has also been banned in Norway, Finland and Sweden.

**Conclusions and recommendations**

Beak trimming, both by hot-blade and infra-red techniques, has several adverse consequences for laying hen welfare and should be avoided. Evidence from the scientific literature and from practical experience demonstrates that feather pecking and cannibalism can be controlled in non-cage systems without beak trimming through (i) the use of appropriate strains and selective breeding to further reduce the hens’ propensity to feather peck and (ii) good design of non-cage systems and implementation of a range of preventive management practices.

Experience in Switzerland, where both battery cages and beak trimming have been prohibited, indicates that, with experience, beak trimming can be avoided.

In order to control feather pecking and cannibalism without beak trimming, the following measures should be adopted:

- **Genetic selection:** Strains of hen that are less likely to feather peck should be chosen and selective breeding should be used to further reduce the propensity of hens to feather peck;
- **Feed type:** Feed should be provided in a form that is time-consuming to eat;
Foraging: In both the rearing and the laying environment, a sufficient quantity of good quality litter material should be provided and maintained in a dry friable state to provide opportunities for foraging; environmental enrichment should also be provided in both the rearing and laying environment and consideration should be given to rearing chicks with broody hens to encourage early development of foraging and perching behaviour;

Resting and refuge: High perches and refuge areas should be provided both in the rearing and laying environment and the system should be designed so as to separate resting and active birds and to allow hens to move between areas without disturbing other birds;

Group size: Hens should ideally be housed in small groups and partitions should be provided in larger houses to allow birds to form smaller sub-groups;

Ranging: In systems with outdoor access, ample popholes should be provided, consideration should be given to keeping cockerels with the hens and cover should be provided on the range to encourage hens to make full use of the outside area;

Onset of lay: The onset of lay should be delayed to 20 weeks;

Minimising changes: Steps should be taken to minimise the impact of changes in housing (between rear and lay) and diet;

Controlling pests and disease: Steps should be taken to minimise the risk of disease and pest challenges.

Compassion in World Farming urges Defra not to act upon the Farm Animal Welfare Council’s recommendation to postpone the introduction of the UK ban on the beak trimming of laying hens, which is due to come into force on 1st January 2011. It would be a highly retrograde step to delay this important welfare reform. When Defra banned beak trimming in 2002 it accepted the argument that the correct way to prevent feather pecking and cannibalism is not to beak trim the birds, but to keep them in good conditions and to select for birds that are less prone to feather pecking and cannibalism. We urge Defra to adhere to this thinking and to maintain the 2011 commencement date for the ban on beak trimming.

REFERENCES


