



Type and level of production provided by the requestor

Type of production: broiler

Level: husbandry

Keywords: behaviour, health and body condition, management, mutilation, skeletal damage



Background context provided by the requestor

This query concerns cannibalism, the causative factors and management in free range broiler systems (slaughtered at 56 days + old).



Question raised by the requestor

What management measures, including emergency measures can be taken in case of a cannibalism outbreak in broiler flocks, including free-range flocks?



Answer

Cannibalism in poultry production pertains to the type of injurious pecking that target the skin, vent, or toes (Rodenburg et al., 2013). Such cannibalistic pecking may ultimately result in the death of the victim due to blood loss, tissue injury, and secondary infections (Fossum et al., 2009; Rodenburg et al., 2013). Cannibalistic behaviour be an escalation of severe feather pecking (SFP), which inflicts damage on the plumage by forcibly removing feathers (Cronin & Glatz, 2020). The resulting featherless patches can subsequently become targets for cannibalistic pecking, leading to open wounds (Leishman et al., 2022).

This issue is particularly prevalent among poultry species or categories that have longer production cycles (such as laying hens and turkeys), making it less frequent in conventional broiler flocks, which typically have shorter lifespans. For instance, in laying hens, severe feather pecking can manifest at any point during the rearing phase, but it tends to escalate as the hens approach sexual maturity (16-18 weeks) (EFSA, 2023a). In broilers, the sexual development of females starts around 18-20 weeks, whereas it might already be developed around 11 weeks of age in males (EFSA, 2023b). Consequently, there is a lack of knowledge on cannibalism within broiler flocks, despite this being a growing area of interest due to the increased use of slower-growing broiler genotypes that have longer lifespans in alternative systems. Indeed, the sexual maturity of broiler males occurs close to, or even within, the finishing period of slower-growing broilers, which may increase group stress due to aggression linked to hierarchy establishment or resource competition (EFSA, 2023b).

In this document, we review the broiler literature when available, otherwise, we assume the management measures for cannibalism are the same across poultry species and briefly review findings from species such as laying hens and turkeys. Once outbreaks of SFP or cannibalism are in progress, they are difficult to control (Cronin & Glatz, 2020). However, there are some management practices that can be applied in the case of outbreaks that may help mediate the problem.



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Treatment and management of victims

Dead birds should be removed as soon as possible and wounded birds should be isolated to a separate cage or sick pen until healed before returning to the flock (Cronin & Glatz, 2020), or culled. Leaving an injured or dead bird in the flock will result in it being further pecked, reinforcing and exacerbating pecking behaviour among the birds performing SFP. Where possible, victims should be returned to a different pen (not their home pen) to minimise the risk of the victim being attacked again (McAdie & Keeling, 2000). Some studies have found that applying wound treatment such as a lotion made of water, aloe vera gel, tea tree oil, calendula, and methyl anthranilate (Bist et al., 2023), in addition to isolating wounded birds, was effective at reducing SFP and cannibalism. Some veterinary resources suggest treating with a wound spray (i.e., pruning tar) which helps cover the wound for healing, while also making it easier to identify the pecking birds due to residue from the wound treatment on their beaks (Wakenell, 2016).

Light management

Changing the lighting plan is a common emergency management strategy for SFP and cannibalism. The light intensity may be dimmed in the event of a pecking outbreak since this reduces overall activity levels. This may be easier to do in closed environmentally-controlled sheds with artificial lighting (Cronin & Glatz, 2020; Kjaer & Vestergaard, 1999). Manipulating light colour can also be used to manage pecking outbreaks. In laying hens, using red light has been used as an emergency measure to reduce SFP and cannibalism because it makes it more difficult for birds to perceive details like wounds to peck at. Some studies in laying hens found that red light and low light intensity (10 lux instead of 25 lux) reduced severe feather pecking (Huber-Eicher et al., 2013; Shi et al., 2019). Jacobs (2015) recommended reducing the light intensity to approx. 5.4 – 10.8 lux to manage outbreaks in small and backyard laying hen flocks. It should be noted that dimming light intensity or using red light should only be used as emergency measures as long-term application can impair social recognition, expression of motivated behaviours (other than injurious pecking) and eye health.

Other housing and management adjustments

In the event of an SFP or cannibalism outbreak, there are several housing and management strategies that could be employed to help mitigate the problem. In laying hens, the recommendations are to reduce the general nervousity of the flock by attractive and separate areas (ITAVI, 2019):

- Rest area: perches distant from feeders; perches should not allow cloaca pecking (50 cm vertical space around each perch).
- Activity area: frequently renewed enrichments and clean friable litter.

In the barn, temperature, humidity, and air speed must be kept within appropriate ranges (ITAVI, 2019). Increasing ventilation can help regulate temperature and reduce ammonia and dust levels. Sudden changes in environmental conditions should be avoided to minimise stress in the birds.

Decreasing stocking density or reducing bird numbers by partially depopulating flocks may help to reduce SFP incidence (Glatz & Bourke, 2006). Similarly, increasing the number of feeders and drinkers may help mitigate pecking by providing foraging opportunities (Jacob, 2015). Increasing the frequency and quantity of feeding may also help mitigate SFP and cannibalism related to hunger or nutritional imbalances, as feed restriction has been shown to increase feather pecking behaviour in laying hens (Van Krimpen et al., 2005). As a cannibalism prevention measure in laying hens and broiler breeders, the addition of salt to the water at a concentration of 1 g/L for 1 week is suggested (van Niekerk et al., 2011).



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The addition of foraging-related enrichment materials is a preventative technique that could also be applied to mitigate outbreaks of SFP. After an outbreak of cannibalism, McAdie and Keeling (2000) added hay to each pen and vitamin B to the water. In addition, whole oats were scattered on the floor of each pen every day thereafter to help mitigate the problem (McAdie & Keeling, 2000). However, in the case of severe outbreaks, the addition of enrichment alone may not be effective to reduce the problem. Bist et al. (2023) found that pecking blocks did not show a reduction in SFP of laying hen pullets, possibly due to the high rate of SFP before the treatment.

In case of SFP outbreaks, providing hiding places can help protect victimised birds. If the birds have outdoor access, making this area more attractive may help reduce the density indoors and provide distractions for the birds (van Niekerk et al., 2011). For example, one could add dry and friable litter and/or foraging material (i.e., scattered grain, roughage), enrichment materials, and partitions to hide behind.



Conclusions

Cannibalism outbreaks typically develop from SFP and are challenging to control once established. Measures that can be taken in the event of an outbreak include removing dead birds, isolating or treating wounded individuals, and separating peckers to prevent further spread of SFP and cannibalism. Other management measures such as reducing light intensity or using red light can help suppress pecking behaviour, while housing adjustments such as lowering stocking density, increasing feeder and drinker access, and minimising disturbances can alleviate stress and competition. Increasing or adding enrichment, especially foraging enrichment, and nutritional support may also assist in mitigation. Prompt, multifaceted intervention may help limit the severity of the outbreak and minimise losses and welfare impacts.



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