

Poultry welfare in developing countries

Welfare issues in commercial broiler production

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This information note considers three aspects of welfare that have been highlighted as concerns within commercial broiler production (Weeks and Butterworth, 2004): leg health, metabolic disorders, and hunger in breeding birds. General issues of health and disease are considered elsewhere (see review on Poultry Health and Disease Control in Developing Countries).

LEG HEALTH

The incidence of leg disorders is a major issue in broiler production and often leads to lameness. The most recent large-scale study in the United Kingdom found that 27.6 percent of the birds assessed close to slaughter age showed poor locomotion, and 3.3 percent were almost unable to walk (Knowles *et al.*, 2008). These figures arose even though the participating farms had good culling procedures, with severely lame birds identified and killed humanely to avoid further suffering. A similarly high prevalence of lameness has been found in other studies around the world over the past 15 years. Assuming the worldwide prevalence of leg disorders is similar to that in the United Kingdom this equates to 12.5 billion broilers experiencing leg problems worldwide per year. Although breeding companies are directing far more attention and resources to finding ways of selecting against leg disorders, negative correlations with meat yield can sometimes hinder progress.

There are several causes of lameness in broiler chickens, broadly divided into infectious and developmental causes, although the two are interrelated. One of the main factors contributing to both types of leg problems is genotype. Through intensification of production and genetic selection over the last 50 years, broiler growth rates have increased from 25 g per day to 100 g per day – a 300 percent increase. Owing to the rapid growth of broiler chickens, it is possible for them to reach slaughter weight at less than 40 days of age. The problem is that this rapid growth places stress on the skeleton, resulting in skeletal abnormalities. Rapid growth can result in valgus varus deformation, ruptured tendons, separation of the proximal epiphysis, bending and rotation of the tibia, osteochondrosis, degenerative bone disease and microfractures. It has also been demonstrated experimentally that rapid growth increases the risk of a range of infectious leg conditions including arthritis and tenosynovitis. Generally, the risk of lameness increases rapidly with bird age, up to the point of slaughter. The innervation of chicken legs is similar to that in humans, so leg disorders may be painful to poultry (European Commission, 2000) and some causes of lameness may be associated with more pain than others. When birds are given analgesic (pain-killing) drugs, their walking ability generally improves. In addition, one study showed that lame birds preferentially select food containing an analgesic drug, a feeding pattern not observed in non-lame birds,

which suggests that birds might actively seek to control their own pain levels.

Environmental and management factors that increase the risk of chickens developing lameness include diet, lighting regime and antibiotic use (Knowles *et al.*, 2008). It is also generally accepted that stocking density has an effect on lameness, although there is conflicting evidence. Dawkins, Donnelly and Jones (2004) report that other environmental and management factors such as air and litter quality within the house may have more of an effect on bird welfare than stocking density. Nonetheless, high stocking density does seem to exacerbate other welfare problems, and the EU Broiler Directive (2007) sets limits on stocking density for farms where leg health problems are apparent.

Lameness is not the only leg problem affecting broiler chickens. Contact dermatitis (pododermatitis) appears to be increasing in prevalence in some countries. Signs of contact dermatitis include the appearance of lesions, ulcers or scabs on the footpads (see photo), hocks or breast. In severe cases, extensive areas of skin may turn black. This results from these parts of the birds' bodies being in prolonged contact with irritant substances derived from faeces, such as ammonia. Lesions can act as a gateway for bacteria, which may spread through the bloodstream and cause joint inflammation.

METABOLIC DISORDERS

There are a number of problems associated with poultry metabolism, and they often have a genetic cause. The major issues result from a very high metabolic rate, efficient feed conversion and rapid growth. Rapid growth places pressure on poultry's internal organs. This can lead to cardiovascular diseases, the most prevalent of which are ascites and sudden death syndrome. Ascites is the accumulation of fluid in the lungs and abdomen caused by



Varying severity of footpad dermatitis in broiler chickens

deficiency of the cardio-pulmonary system in adequately oxygenating the blood pumped through the large muscle mass of the modern-day broiler chicken. This can result in right-side ventricular failure. The condition appears to be more prevalent at high altitudes, although it affects birds worldwide. In 1996, a world-wide survey estimated the incidence of ascites in broilers to be approximately 4.7 percent. Selection based on oximetry or serum levels of cardiac-derived Troponin-T has reduced the incidence of ascites in broiler flocks in recent years, but it is still an important cause of loss, accounting for up to 50 percent of total mortality in commercial flocks of birds reared to 42 days.

HUNGER IN BROILER BREEDERS

When considering the welfare of broilers it is important to consider all stages of production. The welfare of broiler breeders is often compromised by routine feed restriction. To compensate for the negative effect of selection for growth rate on reproductive performance, food is restricted during both the rearing and the laying phases to prevent birds from becoming too fat and heavy, which would compromise egg production and fertility. These birds are almost certainly experiencing extreme hunger, at least during the rearing phase, when they are often given less than half of their voluntary food intake

AVOIDING WELFARE PROBLEMS IN BROILERS

Several sources provide advice on avoiding welfare problems in broilers. These include national government codes of practice, such as the United Kingdom's Department for Environment, Food and Rural Affairs (DEFRA) code (www.defra.gov.uk) and assurance schemes guidance, such as the Royal Society for the Prevention of Cruelty to Animals (RSPCA) Freedom Food scheme, which details and specifies high standards of management and provision (www.rspca.org.uk/freedomfood).

The following are some important practical tips for avoiding welfare problems:

- Demand good stock from hatcheries, and contact the breeding companies if leg health problems are experienced.
- Produce plans for preventing or coping with emergencies such as equipment breakdown or fire.
- Inspect flocks at least twice a day, and check individual birds. Check that all birds can move freely with gait scores of less than 3 (gait scores are described in Knowles *et al.*, 2008).
- Check that there are no signs of breast or leg lesions. Such symptoms are usually associated with wet and dirty litter. If lesions are apparent, take steps to improve litter condition and ventilation.
- Keep basic records detailing the number of birds in the house, maximum and minimum temperatures, etc.
- Keep good records of mortality and the causes of mortality. Record spontaneous mortality separately from culling figures.
- Birds that cannot move sufficiently well to have easy access to feed and water should be culled, as they are unlikely to recover and culling will prevent them from experiencing further suffering.
- Manage the litter, keeping it as dry and friable as possible. Do not allow ammonia levels to rise too high. Consider topping up

the litter frequently, to allow birds to rest and dust-bath and to minimize the risk of skin lesions and ulcers.

- Avoid high stocking densities, as these are associated with depressed health and welfare.
- Providing perches at a height of 10 to 30 cm above the floor can improve leg health. Allow a minimum of 2 m of perch length per 1 000 birds.
- Average growth rates of more than 45 g per day from hatch to slaughter may be associated with welfare problems.
- Ensure that birds have a period of darkness in each 24-hour period, to allow them to rest.
- Make sure that wild birds, cats, dogs or rodents cannot enter the chicken house.
- Check for the appearance of panting, which may indicate that the birds are too hot. Good ventilation is essential. In hot climates, consider roof insulation as a way of reducing the impact on birds.
- Ensure that the house is thoroughly cleaned and disinfected between flocks.

REFERENCES

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