

Welfare Problems, including Chronic Hunger, in Broiler Breeders

By Peter Bartlett

Word count: 977

Hongry rooster don't cackle w'en he fine a wum. (Harris, 1880)

Introduction

Broiler chicken strains have been selected for characteristics of rapid growth supported by high voluntary feed intake (Decuyper *et al.*, 2010). Today, the broiler is an extreme organism with a growth rate three times that of its Giant Junglefowl (*Gallus gallus*) ancestors (Paxton *et al.*, 2010). Rapid muscle growth and reproductive fitness are negatively correlated (Richards *et al.*, 2010). This gives rise to a broiler-breeder paradox where parent breed stock must be subjected to severe feed restriction programs so that they can reach sexual maturity (Decuyper *et al.*, 2010). The RSPCA Freedom Food assurance scheme is mitigating some of the welfare dilemmas caused by rapid broiler growth rate (Cooper & Wrathall, 2010).

Discussion

Greger (2010) imagined the public outcry following leaked plans for a biotechnology company to genetically engineer a bird so top-heavy that it is unable to mate, or so rapidly muscled that the ability of billions to even walk was impaired. He stressed that the historical pursuit of improvements in productivity via traditional methods of trait selection has already led to this reality. A commercial Ross 308 strain of broiler grows three times faster, uses one third the feed, but has twice the mortality rate compared to a 1950s strain of chicken (Havenstein *et al.*, 2003). Breeding companies argue that they balance economic traits with bird welfare and that emerging broiler strains reflect customer demands for production and welfare performance (Katanbaf & Hardiman, 2010).

The high production performance desired in the broiler generation destined for slaughter creates a production/welfare paradox for the parent breeder stock. To reach sexual maturity and then maximise egg and chick production, broiler breeders must overcome the strong negative relationship observed between bodyweight and reproductive efficiency (Decuyper *et al.*, 2010). To improve reproductive performance broiler breeders require feed restriction to reduce the birds' growth curve (Hocking *et al.*, 2002). The desired bodyweight during the rearing phase is controlled by feeding only 30% of an *ad libitum* diet (Decuyper *et al.*, 2010).

Dietary restriction has the welfare benefits of enhancing physical health (such as walking ability), mitigating metabolic disease and prolonging lifespan (Kasanen *et al.*, 2010; Richards *et al.*, 2010). A constant food supply cannot be considered natural therefore dietary restriction more closely aligns with the wild situation (Kasanen *et al.*, 2010). However, Eriksson *et al.* (2010) demonstrated that even a modest dietary restriction led to increases in cannibalism among fast-growing broiler hybrids. Also, prolonged feelings of hunger affect a broiler breeder's ability to learn and may lead to depression (Buckley *et al.*, 2010; Kasanen *et al.*, 2010).

Preventing chronic hunger stress is at the heart of regulations in The Netherlands (whose parliament includes a one-issue party for animal welfare) banning the use of skip-a-day feeding programs (Lange, 2010; Klis, 2010). However, a failure to enforce similar UK regulations has allowed welfare problems to persist (Cooper & Wrathall, 2010).

When drafting regulations for the European Union (EU), the European Food Safety Authority sought wide-ranging scientific and industry opinion and recommended that: "birds requiring less feed restriction should be selected as future breeders even if this may involve reduced selection pressure on high growth rates" (EFSA, 2010, p.3). Cooper and Wrathall (2010) shared the view that farming slower-growing strains of broilers will improve broiler breeder welfare.

Dwarf broiler breeder hens maintain good reproductive fitness without feed restriction. Offspring remain fast-growing because the dwarf gene is sex-linked and recessive (Decuypere *et al.*, 2010). However, the dwarf hen/standard cockerel size disparity necessitates artificial insemination, which carries a new set of handling-stress welfare problems.

An investigation of the broiler supply chain has led to another solution to reduce selection pressure on high growth rates (Cooper & Wrathall, 2010). The study revealed that global broiler-breeder companies were driven by the requirements of customers and were not motivated to spend time, money and effort in developing slower-growing strains without sufficient customer demand. Similarly, broiler meat producers, who operate under tight profit margins, were unlikely to rear slower-growing birds unless they could pass the inevitable higher production costs on to retailers. Retailers claimed that consumers want low-cost food. Retailers were fearful that consumers would choose to shop elsewhere to obtain key, price-sensitive products, such as bread, milk, chicken, pork and eggs, for the lowest cost. Consumer preference is therefore pivotal in driving a change to broiler meat production.

Cooper and Wrathall (2010) demonstrated that the RSPCA Freedom Food farm assurance scheme could be used to raise consumer awareness about the welfare benefits of slower-growing chickens and that the same scheme could deliver a product to solve the problem. Producers meeting the standards of the scheme gain a marketing advantage and as the consumer base grows, there is incentive for other producers to adopt the standards and join the scheme. The RSPCA consulted with industry, particularly with producers successfully supplying meat from slow-growing strains into niche markets. A target growth rate 30% below the standard Ross 308 growth rate was published and from 2006 to 2009 sales of broilers reared under the scheme increased from 2.9% to 6.6% of the UK market.

Conclusion

Broiler breeder research has been dominated by studies aimed at incremental production improvements relating to feed restriction techniques, resistance to disease, and egg hatchability. Some studies are now attempting to solve the welfare problems, such as chronic hunger, created by this thirst for production efficiency. In Finland, surveys have shown that consumers will pay more for chicken meat when improved animal welfare standards can be demonstrated (Pouta *et al.*, 2010). Brazil, the world's largest chicken meat exporter, has recognised that it must meet welfare standards of the European Union and Japan if it is to sell to those markets (Moura *et al.*, 2010). The three major global broiler-breeding companies – Hubbard, Cobb-Vantress and Aviagen – have responded to customer demands by developing strains that meet the requirements of the Freedom Food scheme (Cooper & Wrathall, 2010).

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