

Research in the welfare of broiler poultry

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Introduction

Poultry meat is now one of the most abundant and least expensive animal food products, due to the highly intensified and large-scale nature of the current poultry industry. Unfortunately, this decreased cost to the consumer seems to have come at an increased cost to the poultry themselves, especially in terms of their welfare. Currently, broiler chickens are generally kept in large colonies at high densities on litter with near continuous lighting. They are bred for rapid growth especially of the breast muscle, to the virtual exclusion of all other traits that may affect fitness (Webster, 1995). The birds are collected by hand (several birds held upside down in each hand), and transported in packed conditions to the abattoir. Animal welfare associations such as the RSPCA are constantly rallying for improvements in the methods used for growth, transportation and slaughter of poultry, in an effort to reduce problems such as leg weakness, skeletal deformities, stress, bruising and increased mortality (Bekoff and Meany, 1998). The studies discussed here are focussed on determining those factors of poultry husbandry that require improvement (such as litter moisture and air ammonia, and increased temperatures), as well as testing out alternative procedures (such as mechanical collection) which would enhance poultry welfare.

Discussion

Stamp Dawkins, *et al.* (2004) set out to experimentally manipulate stocking density under a range of commercial conditions at ten major broiler producers to determine the effect of stocking density on the welfare of broiler chickens. The intention was for the results to be used to make suggestions to the European Union regarding the adoption of standards for broiler chickens. The research was carried out as follows; producer companies stocked birds to five different final densities, and records were made of temperature, humidity, litter and air quality. Welfare was assessed through measurements of mortality, physiology, behaviour and health, with an emphasis on leg health and walking ability. The authors found that environmental differences provided for the chickens have more of an impact on welfare than has stocking density itself. Litter moisture and air ammonia were correlated with higher faecal corticosteroid ("stress hormone"). Corticosteroid concentrations were also correlated with mortality, suggesting that stress on birds and their risk of dying depend on the extent to which producers can control the house environment. This study seemed to focus more on measurements of mortality, whereas perhaps there is a need to emphasize adverse impacts other than outright death. The implications of this study are that although very high stocking densities do affect chicken welfare, there are other more important factors in the birds' environment. Legislation which limits stocking density but does not consider the environment that the birds experience (such as that suggested by the European Union) could have major effects on poultry producers without the hoped-for improvements in animal welfare.

A study done by Knierim and Gocke (2003) compared the effect of catching broilers by hand and machine (for transfer to the abattoir) by measuring rates of injuries and numbers of birds that have died en route to the abattoir. Observations of the catching process were made (over a period of one year) at a number of commercial broiler houses, and then carcasses were examined at the abattoir after evisceration. All types of injuries were significantly more frequent in broilers caught manually than in those caught mechanically, and the proportion of birds showing one or more injuries was significantly higher after manual catching. It became clear to the authors that by the start of the investigation, the familiarisation of the catching team with the machine was incomplete. Constant improvement over the investigation period of the number and type of injuries after mechanical collection suggested that the machine's full potential was only gradually exploited. Also, there were considerable difficulties in achieving constant stocking densities in the transport containers for both manually and machine collected birds. The results of this study suggest that the use of a broiler-catching machine could lead to a considerable reduction in the risk of injury to the birds as compared

to the manual collection method currently used commercially in many countries. A decrease in injuries would lead to a decrease in the associated pain and stress from injuries. The authors suggest that further improvements could be made to the machine-catching process to decrease injuries further.

A study by MacCaluim et al. (2003) compared the aversion of broiler chickens to vibrational and thermal stressors. Specially constructed "choice chambers" consisting of four chambers of differing conditions (no stressors applied, vibrational stressor only, thermal only, vibrational and thermal) linked via a central zone. The central zone was spotted with barriers to discourage birds from remaining in that area, whilst allowing them to traverse it. The number and length of visits to each chamber was measured, along with samples of postural behaviour at five-minute intervals. It was found that there were significant effects of the thermal stressor on both the total time spent in each compartment, and the number of visits, but no effect of vibration. The authors suggested that the study may not have been sensitive enough to discriminate between response to the stressors, and that some birds may have found it difficult to negotiate the exit from a moving compartment into a stationary central zone. Also, it may have been that birds had not been given a long enough training period to overcome fear of the novel surroundings. More research needs to be done in this area, but this study has shown that, when given control over their exposure, broiler chickens will avoid raised environmental temperatures via behavioural thermoregulation. It suggests that if such thermoregulation were possible during transport, welfare of the chickens would be improved.

Conclusion

These studies have demonstrated current procedures and conditions, to which broiler poultry are submitted, have significant room for improvement. Further research and lobbying of regulatory bodies is required to ensure the welfare of broiler chickens is enhanced.

References

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