

CPRC Update – Daylength and its impact on turkey welfare and productivity

Like broilers, it is probable that daylength has an impact on both productivity and welfare in turkeys and therefore it is economically relevant to understand its consequences. Welfare issues seen in broiler research may be more pronounced in turkey production where age and bird size at market have changed considerably over the last decade. These changes likely mean new challenges for modern strains as previous research was performed some time ago on birds that did not grow as quickly or reach the same market body weights. The challenges include both bird productivity and welfare. However, research and literature are lacking on the effects of lighting programs on modern commercial turkeys.

The Approach

M.Sc. student, Catherine Vermette, Dr. Hank Classen and the research team at the University of Saskatchewan aimed to determine the effect of graded levels of daylength on the welfare and productivity of modern commercial turkeys. A more complete understanding of lighting effects can be achieved by using graded levels of daylength to allow prediction of response criteria associated with productivity and welfare.

Productivity and welfare parameters assessed included growth, mortality, meat yield, behaviour, bird mobility and leg abnormalities, skin lesions and ocular measures. Productivity parameters assessed were not only economically relevant, but applicable to welfare when behaviour and bird health measures were incorporated. These measures together provide a description of welfare in turkeys. Results will provide scientific evidence for recommendations on lighting programs that are known to positively affect the welfare of turkeys and optimize productivity in Canadian flocks.

The Experiments

Four graded levels of daylength (14, 17, 20, and 23 hours) were used to raise male and female turkeys to 18 weeks of age. The research included two trials with two replications per trial. Each trial consisted of 4 lighting treatments with two room replications for each lighting program. Productivity and welfare parameters were assessed at regular intervals during the course of the trials.

The Findings

This study's findings show that daylength affected turkey productivity in an age and gender dependent manner and use of longer daylength during the production cycle of males and female turkeys also affected a number of other measures indicative of reduced welfare.

At young ages, growth rate increased with increasing daylength, although this was reversed in older birds, sooner in males than females. In terms of mortality, shorter daylength

treatments had beneficial effects on older birds and had a more pronounced effect on males. Carcass characteristics were affected by daylength in an age, but not gender dependent manner. Furthermore, the incidence of culling was increased with 23 hour daylength regardless of gender or age.

In general, longer daylengths had negative welfare implications in regards to turkey health and behaviour for both genders, but with a more pronounced effect in males. Mobility decreased with longer daylength for both genders, but the proportion of birds with poorer mobility associated with pain was only evident in males. Similarly, the incidence of breast blisters increased with increasing daylength, only in males.

The Recommendation

Lighting program recommendations derived from this research for meat turkeys are dependent on gender and the age at which birds are marketed. For both genders regardless of age beyond early brooding, 23 hours of daylength was found unacceptable due to reduced welfare, with birds experiencing poorer mobility, increased ocular size and increased mortality. In addition, for toms and older hens, the rationale for not recommending 23 hours daylength includes reduced growth rate.

For hens marketed at a younger age, a maximum of 20 hours of daylength is recommended, while the recommendation for older hens and toms is between 14-17 hours of daylength.

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For more details on any CPRC activities, please contact The Canadian Poultry Research Council, 350 Sparks Street, Suite 1007, Ottawa, Ontario K1R 7S8, phone: (613) 566-5916, fax: (613) 241-5999, email: info@cp-rc.ca, or visit us at www.cp-rc.ca.

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