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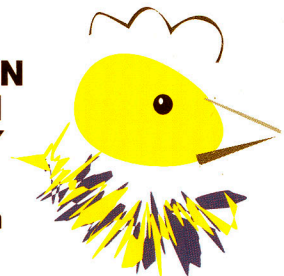
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The Welfare Quality® broiler welfare assessment protocol: possibilities for simplification

Ingrid C De Jong[1], Tomas Perez Moya[1], Henk Gunnink[1], Vincent Hindle[1], Andy Butterworth[2], Paolo Ferrari[3], Valentina Ferrante[4], Roselien Vanderhasselt[5], Frank Tuyttens[5] and Kees Van Reenen[1]

[1]Wageningen UR Livestock Research, Centre for Animal Welfare and Adaptation, Lelystad, The Netherlands
[2]University of Bristol, Langford, United Kingdom
[3]Research Centre for Animal Production, C.R.P.A. S.p.A, Reggio Emilia, Italy
[4]University of Milan, Dept of Animal Science, Milan, Italy
[5]Institute for Agricultural and Fisheries Research, Melle, Belgium

ingrid.dejong@wur.nl

The Welfare Quality® project developed a standardized welfare assessment method for broiler chickens. Stakeholders suggested that a reduction in assessment time might improve the probability of adoption in practice. The aim of the project was to determine whether or not there is scope for simplification of the protocol to reduce assessment time. In total 180 broiler flocks in 4 countries were assessed (134 in 2011, 46 in 2008). Additional slaughter plant visits were performed for 150 flocks. End scores were calculated for all flocks according to the full WQ assessment protocol. Potential strategies for simplification were analysed using (a) prediction calculations of criterion scores for each simplification strategy from prevalence for individual measures, (b) comparison of the gold standard (full protocol) with simplification strategies at final flock score level, and (c) at principal and criteria level. Analysis of correlations between animal-based measurements on-farm showed one correlation of interest with regard to further potential for simplification, this was the relationship between severe hock burn and high gait scores ($r=0.615$ overall; $r=0.448$ standard broilers; $r=0.443$ slower growing birds; $P<0.01$). High correlations were also found for slaughter plant measures and clinical scores on-farm (e.g. foot pad dermatitis $r=0.732$ overall; $r=0.609$ standard broilers; $r=0.723$ slower growing birds; $P<0.001$). Two simplification strategies were analysed further: (1) prediction of gait scores from hock burn measures on-farm; (2) replacement of on-farm measures with slaughter plant measures (predicting clinical scores and gait score on-farm from slaughter plant measurements of foot pad dermatitis and hock burn). Analysis of the possible simplifications showed close agreement for flock scores, as well as scores at both principle and criterion level. Additionally, there was a high correlation ($r>0.75$) between the full assessment protocol and the simplified model at principal and criterion level. Both simplification strategies appear to have potential for reduction in performance time. Further study will be required to validate the results of the data-based simplification strategies, in flocks displaying more variation in end score categories. The current findings provide a step forward towards practical implementation of a broiler welfare assessment protocol.

Keywords: broiler welfare assessment implementation simplification

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The Welfare Quality® broiler welfare assessment protocol: possibilities for simplification

Ingrid C. de Jong[1], Tomas Perez Moya[1], Henk Gunnink[1], Vincent Hindle[1], Andy Butterworth[2], Paolo Ferrari[3], Valentina Ferrante[4], Roselien Vanderhasselt[5], Frank Tuyttens[5], Kees van Reenen[1]

Introduction

The Welfare Quality® project developed a standardized welfare assessment method for broiler chickens. Stakeholders suggested that a reduction in assessment time might improve the probability of adoption in practice. The aim of the project was to determine whether or not there is scope for simplification of the protocol to reduce assessment time

Methods

180 Broiler flocks in 4 countries were assessed (134 in 2011, 46 in 2008). Additional slaughter plant visits were performed for 150 flocks. End scores were calculated for all flocks according to the full WQ assessment protocol (Welfare Quality®, 2009).

Potential strategies for simplification were analysed using
a prediction calculations of criterion scores for each simplification strategy from prevalence for individual measures,
b comparison of the gold standard (full protocol) with simplification strategies at final flock score level, and
c at principle and criteria level.

Results

Analysis of correlations between animal-based measurements on-farm showed one correlation of interest with regard to further potential for simplification, this was the relationship between severe hock burn and high gait scores (r=0.615 overall; r=0.448 standard broilers; r=0.443 slower growing birds; P<0.01). High correlations were also found for slaughter plant measures and clinical scores on-farm (e.g. foot pad dermatitis r=0.732 overall; r=0.609 standard broilers; r=0.723 slower growing birds; P<0.001).

Two simplification strategies were analysed further: (1) prediction of gait scores from hock burn measures on-farm; (2) replacement of on-farm measures with slaughter plant measures (predicting clinical scores and gait score on-farm from slaughter plant measurements of foot pad dermatitis and hock burn). Analysis of the possible simplifications showed close agreement for flock scores, as well as scores at both principle and criterion level. Additionally, there was a high correlation (r>0.75) between the full assessment protocol and the simplified model at principle and criterion level. As an example the correlations between the golden standard and the simplified model where gait scores are predicted from hock burn on farm are shown in figure 1 and 2.
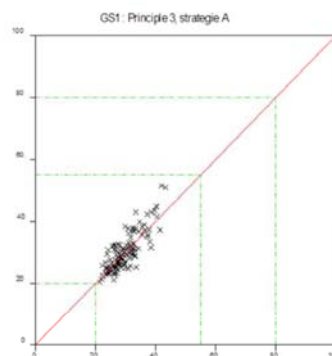
Figure 1. Figure 1. Score for principle 3 (good health) for the golden standard (GS) on the Y-axis against the simplified model (gait score replaced by hock burn on-farm) on the X-axis. R_{sp}=0.79
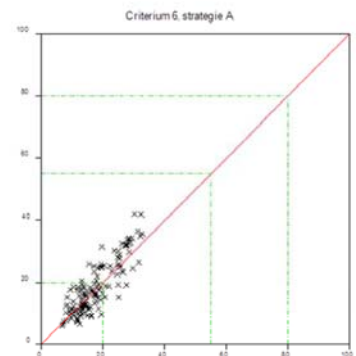
Figure 2. Score for criterion 6 (absence of injuries) for the golden standard (GS) on the Y-axis against the simplified model (prediction of gait scores from hock burn on-farm) on the X-axis. R_{sp}=0.81

Conclusions

Both simplification strategies appear to have potential for reduction in performance time. Further study will be required to validate the results of the data-based simplification strategies, in flocks displaying more variation in end score categories. The current findings provide a step forward towards practical implementation of a broiler welfare assessment protocol.

Wageningen UR Livestock Research
P.O. Box 65, 8200 AB Lelystad, The Netherlands
Contact: ingrid.dejong@wur.nl
T +31 320 238192
www.wageningenUR.nl/livestock

[1] Centre for Animal Welfare and Adaptation (CAWA), Wageningen UR Livestock Research, Lelystad, The Netherlands
[2] University of Bristol, Langford, UK
[3] Research Centre for Animal Production, C.R.P.A. S.p.A., Reggio Emilia, Italy
[4] University of Milan, Dept. of Animal Science, Milano, Italy
[5] Institute for Agricultural and Fisheries Research, Melle, Belgium