Assessment of animal welfare in broiler flocks

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Animal welfare

Standards beyond legal requirements

Unacceptable animal welfare

Legal requirements fulfilled

Acceptable animal welfare

Good animal welfare
Animal welfare – definitions

- Biological functioning
- “Natural life”
- Subjective experience
Management

Genetics

Behaviour, health, stress physiology, production data, slaughterhouse data

Physical and social environment
Assessment of animal welfare
Welfare challenges in broiler chickens

• Genotype: Rapid growth
  – Leg health, circulatory disorders...

• Physical environment: Litter quality
  – Footpad lesions...

• Parental stock: Hunger
  – Frustration, stereotypies

• Transport related mortality and injuries
Welfare protocols

• Tools to «measure» overall animal welfare on flock level
• Selection of many welfare indicators, with a description of reliable assessment
• Purpose?
• Which indicators?
  – Resource based
  – Animal based
• Validity?
• Reliability?
• Feasibility?
• How to weigh the indicators?
• How to integrate welfare relevant data into balanced health/welfare judgements?
The Welfare Quality® protocol:

- Good feeding
- Good housing
- Good health
- Appropriate behaviour
  - Absence of prolonged hunger
  - Thermal comfort
  - Comfort around resting
  - Ease of movement
  - No painful management procedures
  - No disease
  - No injuries
  - Positive emotional state
  - Good human-animal relationship
  - Expressing social behaviour
  - Expressing other behaviour

[Image of chickens and book cover]
# WQ protocol for broiler chickens

<table>
<thead>
<tr>
<th>Principle</th>
<th>Welfare Criteria-example</th>
<th>Measures, example</th>
<th>Method description, classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good feeding</td>
<td>Absence of prolonged hunger</td>
<td><em>Measured at slaughterhouse</em></td>
<td></td>
</tr>
<tr>
<td>Good housing</td>
<td>Comfort around resting</td>
<td>Plumage cleanliness, litter quality, dust sheet test</td>
<td>Litter quality</td>
</tr>
<tr>
<td>Good health</td>
<td>Absence of injuries</td>
<td>Lameness, hock burn, foot pad dermatitis</td>
<td>Foot pad dermatitis-scoring system Gait scoring</td>
</tr>
<tr>
<td>Appropriate behaviour</td>
<td>Expression of social behaviours</td>
<td>At yet, no measure is developed for this criterion</td>
<td></td>
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The Norwegian Animal Welfare Program for Broiler Chickens

• Allowed max animal density 25 kg/m$^2$
• But: up to 36 kg/m$^2$
  – if participating in the industries Animal Welfare Program
Animal Welfare Program

- At least two yearly visits by veterinarian, or more often if needed
- Participation in a production control system
- Participation in a poultry competence course
- Fulfillment of requirements for operation and documentation of the production (strictest at >33 kg/m²)
- Revision through the Quality Assurance System
  - Yearly own revision, visit by external auditor at least every 3 years
Animal Welfare Program

- Footpad lesion scores decide animal density
- Poor result => reduced density in the next flock
- Continuous good results before density can be increased again
Footpad lesion scoring

• 100 feet from each flock are scored for footpad dermatitis and given a total footpad lesion score (0-200 points)
  – 0 = no lesions
  – 1 = discolouration, keratinization, beginning injury
  – 2 = severe injury

• A (satisfactory) 0-80 points
• B (not satisfactory) 81-120 points
• C (unacceptable) 121-200 points
Footpad lesions – recent results

<table>
<thead>
<tr>
<th>År</th>
<th>Prosentandel av flokkene i de ulike tråputeklasser</th>
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<tbody>
<tr>
<td></td>
<td>A (0-80 poeng)</td>
</tr>
<tr>
<td>2013</td>
<td>91,4</td>
</tr>
<tr>
<td>2014</td>
<td>96,7</td>
</tr>
<tr>
<td>2015</td>
<td>98,2</td>
</tr>
</tbody>
</table>
Gait scoring to detect lameness

(after Kestin et al., 1992)

0  No detectable abnormality, fluid locomotion, furled foot when raised
1  Slight defect difficult to define
2  Definite and identifiable defect, but it does not hinder the broiler in movement
3  An obvious gait defect which affects the broilers ability to maneuver, accelerate and gain speed
4  A severe gait defect, the broiler will only walk a couple of steps if driven before sitting down
5  Complete lame, cannot walk on its legs
Lameness in broiler chickens: a recent Norwegian study

- Lameness investigated in 59 flocks, 100 chickens per flock (Ross 308)
- 24.6% showed moderate to severe lameness
- Associations between lameness, first week mortality and transport mortality - but not with footpad lesions

Other relevant methods

• Transect walk: Based on a «walk-through» of the flock - observations of e.g. immobility, lameness, wounds, cleanliness, plumage condition, signs of disease.

• QBA: Qualitative behaviour assessment integrates and summarises the different aspects of an animal’s interaction with the environment, using descriptors such as ‘calm’, ‘anxious’, ‘timid’ or ‘confident’.

• Automated activity monitoring tools
Animal welfare throughout the production cycle

- Handling
- Depopulation
- Transport
- Stunning
- Killing
Wing fractures

- 11,609 chickens from 12 flocks were examined at arrival to the abbatoir, and after evacuation of the transport containers on the slaughterline.
- Ca. 0.8% at arrival to the abbatoir, and 2.5% due to pre slaughter handling.
- Need to be assessed at the slaughterline where wing fractures constitute a welfare problem (and not a post mortem finding!)

Slaughterhouse data

• Are there strong enough associations between on-farm welfare measures and welfare relevant slaughterhouse data to replace time consuming on-farm registrations with routinely collected slaughterhouse data?
  – Broiler chickens: «ChickenScore» (Animalia, NMBU, KLF, Nortura)
  – Turkeys: «TurkeyLator» (NMBU, Animalia, Nortura, Norsk Kylling)
Future welfare assessment systems?

- Improved animal based measures, including slaughterhouse and production data – covering the production cycle
- Identify feasible indicators reflecting lameness (i.e. post mortem, activity measures,...)
- Include wing fracture assessment at abbatoir?
- Farmers own revision?
- Risk based assessment?
- Improved industry standards
- Sertification systems?
- Niche products?
Positive indicators?

- Resources/management based measures: access to environmental enrichment
- Animal based measures: Observations of motivated behaviours
Acceptable animal welfare

Unacceptable animal welfare

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Legal requirements fulfilled

Beyond legal minimum standards

Good animal welfare