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Assessing farm animal welfare – guidelines for on-farm self-assessment

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The Animal Welfare Act from 2014 requires that livestock keepers shall execute an on-farm self-assessment. They have to assess and monitor appropriate indicators in order to evaluate the welfare of their animals. However, the Animal Welfare Act does not contain any secondary legislation, so there is a lack of more precise provisions regarding details and scope of the self-assessment system. In order to identify appropriate indicators which address the most important animal welfare problems known from practice, KTBL organised expert group discussions. The sets of largely animal-based indicators for cattle, pigs and poultry selected by the experts were published in 2016 in descriptive manuals. This paper discusses the benefit of on-farm self-assessments and presents the manuals.

Keywords
Animal welfare, indicators, on-farm self-assessment, animal welfare act, livestock husbandry

The requirements for on-farm self-assessment under the Animal Welfare Act (§ 11 Section 8 Animal Welfare Act) emphasise the high responsibility of livestock keepers for the welfare of their animals. The assessment serves to raise awareness and to enable identification of weaknesses and improvement of the management accordingly. The Animal Welfare Act requires to assess the extent to which production and management conditions allow the animals to avoid pain, suffering and injury as well as to achieve positive welfare (Kompetenzkreis Tierwohl 2016, Knierim 2016). In past years, the focus has been adjusted from an assessment of animal housing conditions and their handling towards more direct measures of welfare. Consequently, the law requires, in § 11 Section 8 Animal Welfare Act, the recording and evaluation of animal based measures (termed “Animal Welfare Indicators” in the Act).

The management skills of livestock keepers are one of the major factors influencing the welfare of farm animals. Society requires from farmers to be aware of welfare problems and to improve housing conditions and management measures in order to maintain or reach an acceptable animal welfare level. The animal-human relationship has changed over the years. Consequently, the necessity for explaining and justifying the actions of those responsible for managing livestock has increased. The Kompetenzkreis Tierwohl (2016) emphasises that, while improvements leading to better animal welfare must be economically viable, such actions are also morally required if impairments of farm animal welfare can be reduced.

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Benefits to the livestock producer from on-farm self-assessment

Any animal welfare assessment should be carried out in a scientifically and fact based way. Such assessments sharpen the view of the stockperson or animal owner and help to overcome a certain "blindness to one's own operations". It facilitates early identification of major risks for farm specific animal welfare problems and thus helps to continually improve management.

Additionally, on-farm self-assessment offers an opportunity of objectifying the divisive discussions in society on farm animal welfare (WBA 2015). The self-assessment system should reliably indicate whether the requirements of § 2 Animal Welfare Act are met or whether measures must be taken to improve animal welfare on the farm. The primary goal is to raise awareness and to strengthen the individual responsibility of the livestock keeper for a high level of animal welfare on their own farm. The on-farm self-assessment does not replace the daily routine inspections necessary to ensure good practice which the livestock keeper must conduct in accordance with § 4 of the Animal Welfare Regulation on the Husbandry of Farm Animals. However, it can build on them and complement them.

So far, no detailed specifications or provisions for the implementation of the on-farm self-assessment are available, because the Animal Welfare Act as of 2014 does not contain any secondary legislation regulating content, scope and frequency of the on-farm self-assessment. Federal competent authorities are responsible for enforcement of the provision regarding the on-farm self-assessment. First recommendations for implementation have already been developed from some Federal states.

The opportunities and possible risks of on-farm self-assessment are summarised in a SWOT analysis (Table 1). SWOT stands for Strengths, Weaknesses, Opportunities and Threats and is an instrument of strategic planning.

Table 1: SWOT analysis for a qualified on-farm own control of animal welfare

Strengths	Weaknesses
▪ Problem oriented, comprehensive application ▪ Strengthening the animal managers' self-responsibility ▪ "Measurability" of animal welfare ▪ Reliability for the animal manager ▪ Transparency ▪ Clear identification of starting points for improvement actions ▪ Fulfilling legal requirements	▪ Law makers have not established qualitive or quantitive requirements – possible results: "Everyone does something different" ▪ Time requirement ▪ The information contained, or quality of data recorded, can be adversely affected through error susceptibility/manipulation of data by the animal manager
Opportunities	**Threats**
▪ Continuous improvement of treatment of animals on the farm ▪ Demonstration of problem awareness ▪ Open communication ▪ Making discussions more factual ▪ Defence against unjustified accusations ▪ Positive economic effects	▪ Possible regulations through control officials where results are "negative" ▪ Possible public reactions where "negative" results are made public ▪ Excessive demands on the farm business in terms of high time and documentation inputs ▪ Rejection of the concept in practical farming

The strengths and opportunities of a solidly conducted on-farm self-assessment of animal welfare outweigh the identified weaknesses and threats. This applies to the individual farm as well as for farm animal production in general.

Conducting on-farm self-assessments – guidelines for practical application

To establish an assessment protocol as guidance for livestock keepers, KTBL organised three working groups. They comprised cattle, pig or poultry (domestic fowl and turkey) experts from research and consultancy. With regard to already existing indicator systems (KTBL 2014), they developed proposals in which suitable indicators for self-assessments were selected and a short written description of the required methods is given (Zapf et al. 2015a, b). In 2016, these indicators were further developed including methodical instructions that are easy to understand for practical application. The KTBL guidelines for farmers "Animal Welfare Indicators – Cattle" (Brinkmann et al. 2016), "– Pigs" (Schrader et al. 2016) and "– Poultry" (Knierim et al. 2016) are work documents addressing livestock keepers. They are suitable for the use in the stable, having washable pages and robust ring binding and represent a practicable instruction manual for the farmers according to the present level of scientific knowledge. Thereby, the guidelines support livestock keepers to carry out self-responsible and systematic inspections of the welfare condition of their animals.

A procedural chart is proposed for every production type indicating which indicators, when, and on which animals should be recorded, e. g. how a random sample should be selected (Figure 1).

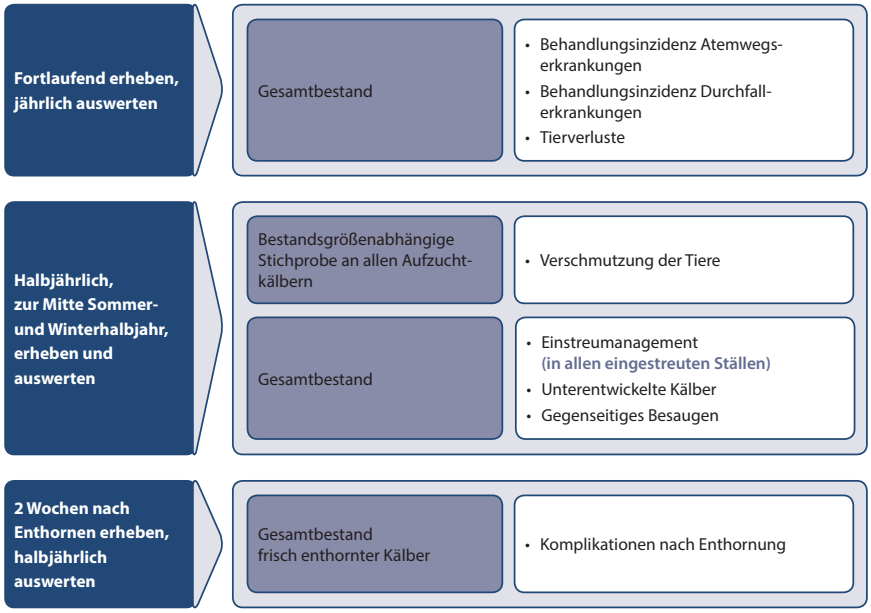


Figure 1: Time schedule for assessments for calves up to an age of 6 months, according to KTBL guidelines for farmers "Animal Welfare Indicators – Cattle" (Brinkmann et al. 2016)

The procedural chart connects the respective indicator descriptions in the form of fact sheets. Each fact sheet contains a short factual explanation of the indicator, a photo classification table or calculation formula as well as further advice (Figures 2 and 3). The suggested set of indicators shall enable the farm animal manager to accurately record the extent to which their animals are affected by particular relevant animal welfare problems. For this reason, the indicators should completely be recorded in order to reduce the risk for overlooking important animal welfare problems.

Jung- und Legehennen

2.7 Brüche und Deformationen des Brustbeins

Was und warum?
Veränderungen des Brustbeins sind meistens feine Risse oder Brüche und können durch Kollisionen mit der Haltungseinrichtung und durch Druckbelastung beim Ruhen entstehen. Sie werden durch Osteoporose begünstigt. Sie sind Schäden, die außerdem meist zu Schmerzen und Verhaltenseinschränkungen führen, da die Brustmuskulatur, die am Brustbein ansetzt, zur Bewegung der Flügel gebraucht wird. Auch das Ruhen auf einer Sitzstange kann in der akuten Phase Schmerzen verursachen. Wenn die Tiere die Futter- und Wassereinrichtungen nicht mithilfe von Aufstiegshilfen erreichen können, ist eventuell auch die Futter- und Wasseraufnahme nicht möglich.
Kollisionen mit Haltungseinrichtungen werden durch scharfkantige, rutschige und harte Anflugbereiche (z. B. Metallsitzstangen) und ungünstige Anflugwinkel begünstigt, vor allem wenn die Tiere diese nicht aus der Aufzucht kennen. Schreckhafte Herden können bei Störungen auffliegen und sich hierbei verletzen. Wenn die Tiere nicht bedarfsgerecht ernährt werden, macht zudem erhöhter Kalziumentzug aus den Knochen das Brustbein instabiler. Hierzu trägt auch geringere Bewegung bei.

Wann und wie oft?
- Aufzuchtstall: In der 16. Lebenswoche erheben und auswerten.
- Legestall: Beim Einstallen und in der 37. und 61. Lebenswoche erheben und auswerten.

Welche und wie viele?
50 Tiere je Herde möglichst zufällig aus verschiedenen Stallbereichen greifen, bei Volierensystemen aus allen Ebenen.

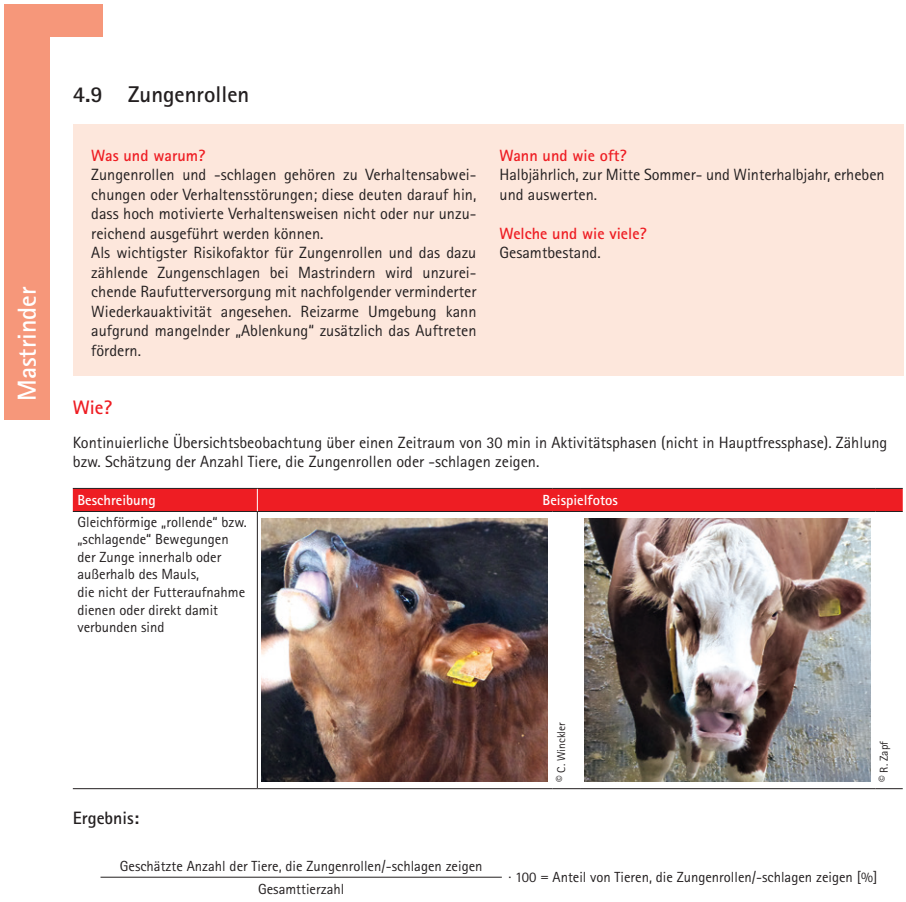
Wie?
Beurteilung des Brustbeins durch Anschauen bei guter Beleuchtung sowie durch Entlangfahren mit Daumen und Zeigefinger rechts und links des Brustbeinkiels von oben nach unten. Deformationen und Brüche werden mit Daumen und Zeigefinger ertastet. Sie sind bei befiederten Tieren oder geringeren Schäden oft nicht sichtbar, nur ertastbar.

Bonitur	Beschreibung	Beispielfotos
0	Ohne Deformation oder Bruch	
1	Deformation (Abweichung in jegliche Richtung von gerader Brustbeinlinie) oder Bruch (Auflagerungen, Zusammenhangstrennungen Brustbein)	 © C. Keppler  © C. Keppler  © C. Keppler

Ergebnis:

$$\frac{\text{Anzahl der Tiere mit Bonitur 1}}{\text{Gesamtzahl der untersuchten Tiere}} \cdot 100 = \text{Anteil Tiere mit Brüchen oder Deformationen des Brustbeins [\%]}$$

Figure 2: Example from the KTBL guidelines for farmers – poultry: indicator description including scoring scheme for keel bone damage in laying hens (Knierim et al. 2016)



Mastrinder

4.9 Zungenrollen

Was und warum?
Zungenrollen und -schlagen gehören zu Verhaltensabweichungen oder Verhaltensstörungen; diese deuten darauf hin, dass hoch motivierte Verhaltensweisen nicht oder nur unzureichend ausgeführt werden können.
Als wichtigster Risikofaktor für Zungenrollen und das dazu zählende Zungenschlagen bei Mastrindern wird unzureichende Raufutterversorgung mit nachfolgender verminderter Wiederkauaktivität angesehen. Reizarme Umgebung kann aufgrund mangelnder „Ablenkung" zusätzlich das Auftreten fördern.

Wann und wie oft?
Halbjährlich, zur Mitte Sommer- und Winterhalbjahr, erheben und auswerten.

Welche und wie viele?
Gesamtbestand.

Wie?

Kontinuierliche Übersichtsbeobachtung über einen Zeitraum von 30 min in Aktivitätsphasen (nicht in Hauptfressphase). Zählung bzw. Schätzung der Anzahl Tiere, die Zungenrollen oder -schlagen zeigen.

Beschreibung	Beispielfotos
Gleichförmige „rollende" bzw. „schlagende" Bewegungen der Zunge innerhalb oder außerhalb des Mauls, die nicht der Futteraufnahme dienen oder direkt damit verbunden sind	© C. Winckler © R. Zapf

Ergebnis:

$$\frac{\text{Geschätzte Anzahl der Tiere, die Zungenrollen/-schlagen zeigen}}{\text{Gesamttierzahl}} \cdot 100 = \text{Anteil von Tieren, die Zungenrollen/-schlagen zeigen [\%]}$$

Figure 3: Example from the KTBL guidelines for farmers – cattle for fattening bulls: tongue rolling (Brinkmann et al. 2016)

In order to minimise work load for recording and documentation, data that are already available are included, e. g. milk recording data, treatment data, slaughterhouse findings, monitoring for antibiotics and data from the identification and information system for animals. However, for recognition of certain animal welfare problems it is additionally required to directly assess animals in the stable (Figure 1).

These guidelines are just recommendations in the form of expert advice. There is no legal requirement to apply them in the present form. They represent just one possibility to detect farm specific animal welfare problems and, at the same time, to fully comply with the Animal Welfare Act.

Recording of indicators– required documentation

Throughout the selection and compilation of suitable indicators, attention was paid to ensuring that the livestock keepers can conduct the assessments personally. It is an advantage if the farmer carries out the assessments themselves, but it is also possible to delegate the inspections to a third party, e. g. an advisor or a veterinarian. Such outsourcing should only be done if the flow-back of information to the livestock keeper is guaranteed and if the livestock keeper is involved at least to some extent in the data collection. This aids recognition and awareness of possible animal welfare problems on the farm.

Specialist advisers or the farm veterinarian should be consulted where further diagnostics are needed to solve specific welfare problems.

For the sake of early prevention of problems on the farm and facilitation of positive developments, it is advisable to establish a systematic and regular animal welfare assessment as part of the ongoing farm management system (Andersson et al. 2015). Numerous farms already practice and benefit from systematic recording of certain measures such as feed and water consumption, livestock performance and health data as well as animal losses. Incorporation of further welfare indicators, especially in computer-supported management systems, would further increase efficiency.

The Animal Welfare Act contains no instructions regarding documentation of the collected data. However, for a systematic analysis of farm performance this is recommended, because only this allows the livestock keeper to assess long-term changes and effects of management actions on the farm animals. This also represents one of the important differences to the daily animal controls. Their main objective are immediate actions, e. g. in the case of animal sickness, or of too high barn temperatures. Additionally, the farm internal documentation can serve the farmer as evidence of compliance with the Animal Welfare Act for the competent authorities.

Conclusions

The on-farm self-assessments required by the Animal Welfare Act aim to strengthen the responsibility of farmers for their animals. The recorded data help to assess animal welfare on farm and may foster improvement of housing conditions and management. The KTBL guidelines serve, first of all, the stockpersons and managers of cattle, pigs and poultry as a weak point analysis and for optimising farm management.

Within the framework of a project supported by the Federal Ministry for Food and Agriculture (see www.ble.de/ptble/innovationsfoerderung-bmel/), clarity, practicability and reliability of the practical guidelines including the selected animal welfare indicators and associated recording methods are being tested and, where necessary, further developed on more than 100 commercial animal farms starting spring 2017.

On top of this, IT-supported mobile solutions on the basis of the guidelines will be developed for the on-farm welfare self-assessment. Furthermore, for the evaluation of the indicators regarding acceptability of welfare levels, a broad expert survey will be carried out.

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