Development and evaluation of an online training-tool for the assessment of animal-based welfare parameters in cattle

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Why did we do what we did?

■ Guidelines for self-assessment of animal welfare introduced by BIO AUSTRIA

■ Utilization of animal-based parameters allows for a more valid welfare estimation

■ 3,400 cattle farmers encouraged to self-evaluate their farms

■ Possibility of observer calibration at predetermined prevalence by online training

Research objectives

- Establish an online training-tool

    - Investigate level of agreement with gold standard

        - Does training matter?

Data collection an processing

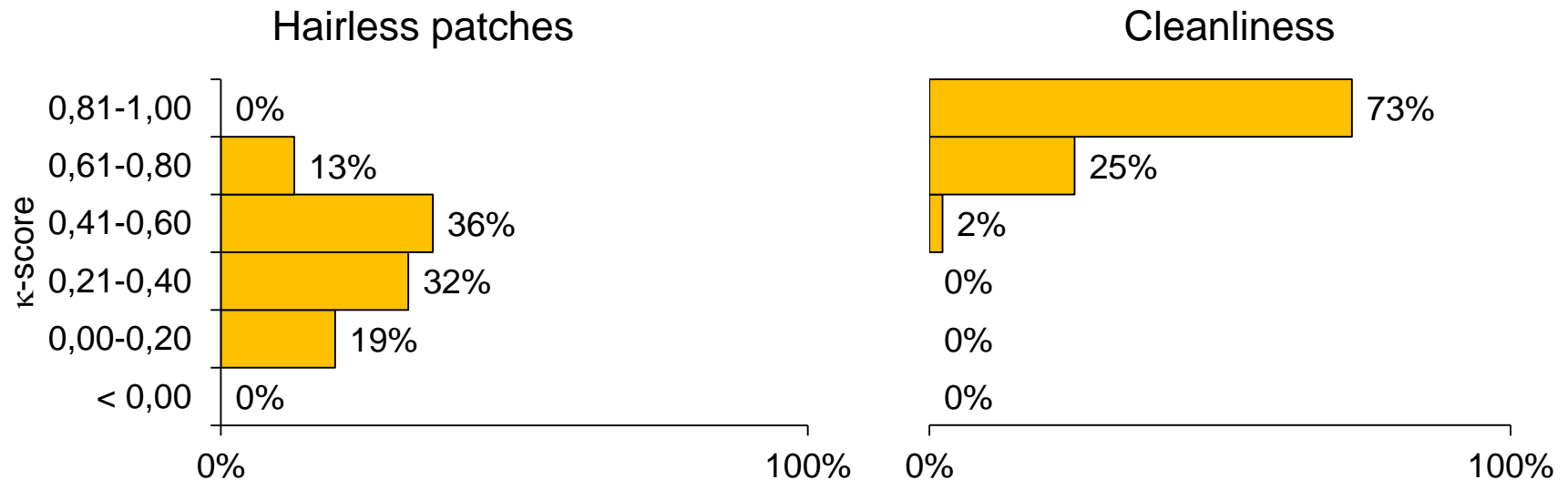**Weist das abgebildete Tier einen normalen Ernährungszustand auf?**

✖ Ja
✔ Nein

WEITER

Lösung: Hüftbeinhöcker und Schwanzansatz heben sich kaum ab. Gerade Linie zwischen Hüftbeinhöcker und Wirbelsäule. Schwanzgrube fast ausgefüllt.

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Results – distribution of κ-scores

Hairless patches

κ-score	
0,81-1,00	0%
0,61-0,80	13%
0,41-0,60	36%
0,21-0,40	32%
0,00-0,20	19%
< 0,00	0%

Cleanliness

0,81-1,00	73%
0,61-0,80	25%
0,41-0,60	2%
0,21-0,40	0%
0,00-0,20	0%
< 0,00	0%

■ $\kappa > 0.40$ achieved by 49–100 % of test persons

■ at least 80 % of test persons achieved $\kappa > 0.40$ in 8 out of the 10 measures (not for hairless patches and BCS)

Results – training effect

	BCS		Cleanliness		Hairless patches		Lameness		Resting comf. calves	
round	1	2	1	2	1	2	1	2	1	2
median	0.61	0.61	0.90	0.90	0.40	0.55[1]	0.57	0.71[2]	0.90	1.00
n	100	24	88	21	72	20	58	19	68	14

[1,2]…not sig., p = 0.146 and p = 0.055 resp., Wilcoxon signed-rank test

- 3-step BCS: 65–90 % agreement (Leach et al. 2009)

- 2-step lameness: PABAK = 0.59 (Brenninkmeyer et al. 2007)

- training effect for lameness scoring PABAK = 0.53 → 0.75 (March et al., 2007) and 0.59 → 0.70 (Brenninkmeyer et al., 2007)

Results – training effect

	p*-value at $\kappa = 0.40$
BCS; n = 24	**0.042 ↑**
Hairless patches; n = 20	0.141
Lameness; n = 19	1.000

*…Fisher's exact test

■ Significant improvement also for parameters hairless patches (κ-level: 0.60; n = 20; p = 0.033) and diarrhoea (κ-level: 0.80; n = 20; p = 0.018)

Results – correlation

Spearman rank correlation	r_S	n
Hairless patches*Swellings	0.395	65
Hairless patches*Lesions	0.168	65

- Low pairwise correlations of agreement values

Conclusion

- Animal-based parameters cannot be trained interchangeably

- At least half of the participants show acceptable agreement with the gold standard

- Reliability of benchmarking by self-assessment guaranteed only for parameters cleanliness and diarrhoea

- Improvement of agreement after repeating quizzes was found, though not sig. for hairless patches and lameness

- Training effect shown for males < 20 y with no (completed) agricultural education but actively working in agriculture

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