

Ease of handling of sows on organic farms: assessment options and genetic selection

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Introduction

Piglets have to undergo several routine husbandry procedures in the first days after birth. This clashes, however, with the sow's behavioural need to be left undisturbed with her piglets during this period. Consequently, some sows tend to defend their piglets (Andersen et al. 2005, Jensen 1986). As many organic farms have farrowing crates with no fixation, sow defensive behaviour can be quite dangerous for the farmer. The aim of this study was to develop a behavioural scoring system for the ease of handling (EOH) of lactating sows and to determine the impact of EOH on reproductive performance.



Figure 1: Not aggressive sows make work easier

Material & methods

The experiment took place at the Training and Research Centre for Organic Farming Kringell from Aug 2015 to Dec 2017. The sows (n=68) were purebred German Landrace of different parity (1 to 11 litters). The litters (n=134) originated from mating with boars of the breeds Pietrain (37.3%), Danish Duroc (28.4%) und German Landrace (34.3%). All sows were kept in loose farrowing systems without fixation (FAT 2 system). During the first postnatal week, sow defensive behaviour was observed five times while piglets were removed from the pen for husbandry procedures. The following qualitative behavioural scores were used (table 1).

Table 1: Assessment of defensive behaviour

Category	Definition
No defensive behaviour	Sow doesn't make any threatening gestures or sounds.
Low defensive behaviour	Sow makes threatening gestures or sounds when the stockperson enters the pen, sow moves away from the stockperson and does not attack.
High defensive behaviour	Sow makes threatening gestures or sounds before the stockperson enters the pen, sow does not move away from the stockperson and is aggressive.

The five individual observations were summarized in one grade for EOH: **grade 1**: not defensive, **grade 2**: somewhat defensive, **grade 3**: highly defensive. The numbers of piglets born alive, stillborn piglets, weaned piglets, piglet losses, weight at birth as well as at day 35 were recorded to evaluate reproductive performance.

Statistical analyses were performed using SAS 5.1. Effects of parity, litter size and season on EOH were analyzed using a generalized linear model (GENMOD). For analyzing the effect of EOH on sow productivity traits a general linear model (GLM) was used, including fixed effects of sire breed, litter size, parity, season and EOH grade.

Literature

Andersen, I.L.; Berg, S.; Bøe, K.E. (2005): Crushing of piglets by the mother sow (*Sus scrofa*) – purely accidental or a poor mother? *Applied Animal Behaviour Science* 93, pp. 229–243

Grandinson, K.; Rydhmer, L.; Strandberg, E.; Thodberg, K. (2003): Genetic analysis of on-farm tests of maternal behaviour in sows. *Livestock Production Science* 83, pp. 141–151

Jensen, P. (1986): Observation on the maternal behavior of free-ranging domestic pigs. *Applied Animal Behaviour Science* 16, pp. 131–142

Marchant, J.N. (1998): Sow aggression towards the stockperson: relationships with approach test parameters and piglet survival. *Proceedings of the 32nd Congress ISAE, Clermont-Ferrand, France*, p. 109

Marchant, J.N. (2002): Piglet- and stockperson directed sow aggression after farrowing and the relationship with a pre-farrowing, human approach test. *Applied Animal Behaviour Science* 75, pp. 115–132

Results & discussion

64.9% of the examined litters had EOH grade 1, 23.1% had grade 2 and 11.9% had grade 3 (figure 2). In practice mainly sows with grade 3 for EOH are challenging, as these sows repeatedly show highly defensive behaviour. These animals decrease operational safety and adversely affect time management.

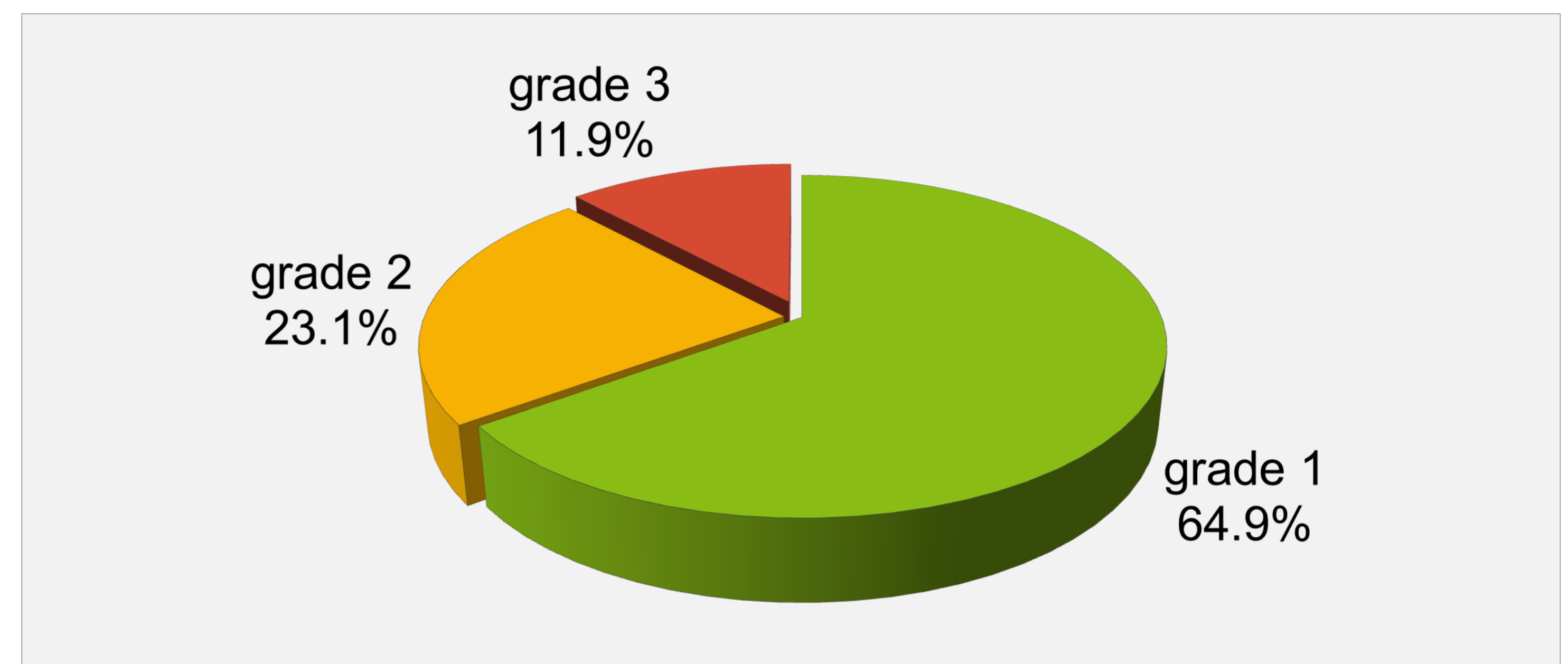


Figure 2: Distribution of EOH grades (n = 134)

Litter size, parity and season did not have a significant influence on EOH. Furthermore the reliability of EOH was 61.2%.

The results show that EOH had no influence on sow productivity traits, apart from average piglet weight at day 35 (table 2).

There is a significant difference between grade 1 and grade 3 regarding the average piglet weight at day 35.

Table 2: Differences between the groups of EOH in reproductive performance

EOH	Grade 1	Grade 2	Grade 3
Weaned piglets, n	10.06	10.40	8.70
Litter weight at day 35, kg	93.62	106.64	84.26
Piglet weight at day 35, kg	10.38 ^a	10.33 ^{ab}	9.31 ^b
Piglet losses, n	2.44	2.41	1.89
Piglet losses, %	18.62	17.53	14.82

Least squares means; letters label significant differences between groups ($\alpha = 0.05$); n = 134

Other studies show similar results regarding the correlation between survival rate of piglets and defensive behaviour (Grandinson et al. 2003, Marchant 1998). As EOH had no negative influence on sow productivity traits, removing aggressive sows from the herd will not reduce output.

Conclusion

A qualitative behavioural scoring system for EOH of lactating sows was developed in this study. As there is no negative correlation between EOH and sow productivity traits, selection for sows with less defensive behaviour leads to an improvement of operational safety and time management while not reducing output.