

Stalling-up and piglet losses

Raised standing areas and crate stall position influence nursing weight increases and piglet losses

Average piglet losses of 16% in all of Germany lead to great financial losses. Despite numerous improvement proposals for the design of farrowing pens, the percentage of piglet losses is currently growing faster than litter sizes. The present contribution describes the influence of larger standing areas and crate stall height on piglet losses.

Today, piglet losses amount to approximately 16%, which leads to great financial losses. Currently, growing litter sizes are entailing disproportionately increasing losses [1]. The reasons for these losses vary greatly. While the percentage of dead piglets doubles when the number of piglets born alive grows from 9 to 14, crushing losses increase even far more [2]. In standard pens, the number of crushed piglets grows with the litter number (30% of total losses). At 3%, genetic influence is small [3]. These two factors describe the great importance of the design of the environment and not least the housing technique. The fixing of the sows [4] and crate stall design [5] reduce crushing losses in particular because the relatively expensive farrowing pens must be built using as little space as possible. All forms of motion pens described in the literature increase potential piglet losses by 3 to 5% [6] and require approximately three times as much space as a 4 m² standard pen [7].

Diagonal stalling-up can save some space because it allows the piglet nest to be placed in a more favourable position [8] and thus probably leads to slightly lower crushing rates [9]. Many individual elements of the farrowing pen (size of the pen and the piglet nest, orientation and design of the crate stall of the farrowing pen, feeding- and drinking equipment, design of the sow's standing area) are designed differently by the manufacturers. A raised standing area of the sow is intended to reduce piglet losses due to crushing thanks to a better pen structure and because nursing piglets find their way back to the piglet nest more easily after they have been nursed. The question of whether this is

really the case and which importance the crate stall has in this respect is intended to be answered by the present study.

Material and methods

For more than one year (9th July 2004 until 29th July 2005), data were collected weekly on a Saxonian breeding farm which houses 2,600 productive sows. During the mentioned period, 1,010 litters from sows of the race DL were examined. A total of 12,141 piglets were weighed individually shortly after birth and once again exactly three weeks later, and the loss rate in the pen was registered. A distinction between different reasons for losses was made (crushed, culled, died). The weights were measured using a weighing bridge 032/20 NIRO and a display unit SR 2000B from TRU-TEST, registered electronically and evaluated with the aid of the statistics program SPSS. During the mentioned period, 437 pens from nine stalls featuring a diagonal stalling-up structure were occupied one to ten times. The pens were measured with regard to pen geometry and the height of the crate stall of the farrowing pen. 513 occupations of pens where the sow's standing area was 3 to 5 cm higher as compared with 497 occupations of pens featuring a level floor structure were studied. Crate stall heights vary between 18 and 40 cm. The distance was measured between the lower crossbar and the pen floor.

Results and discussion

Over an average of 936 litters, nursing weight increases in farrowing pens with

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Keywords

Farrowing pens, piglet losses, design of the standing area

Literature

Literature references can be called up under LT 06203 via internet <http://www.landwirtschaftsverlag.com/landtech/local/literatur.htm>.

Table 1: Piglet losses as a function of different floor design in the farrowing pen and the litter number of the sows

dependent variable	standing area	studied litters	average value	standard error	significance 1 %
total losses	increased	513	13.5	1.1	
	not increased	497	11.3	0.7	
died %	increased	513	4.0	0.7	
	not increased	497	4.0	0.4	
culled %	increased	513	4.4	0.5	a
	not increased	497	2.4	0.3	b
crushed %	increased	513	5.0	0.7	
	not increased	497	4.9	0.4	

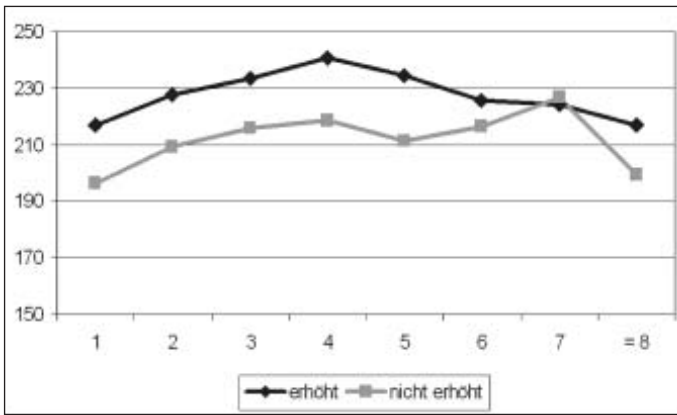


Fig. 1: Comparison of nursing weight increases on differently designed standing areas as a function of age

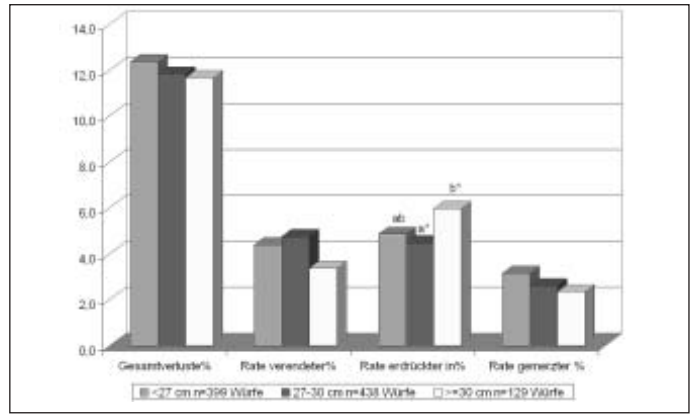


Fig. 2: Influence of crate stall height on the loss situation (standardized for 12 piglets in the pen)

raised standing areas were significantly larger than in pens with a level floor (230 g vs. 210 g) (error probability 1%). With the exception of larger litter numbers ≥ 6 this difference was independent of the age of the sows.

In the group of farrowing pens with raised standing areas, nursing weight increases (13.9%) straggle 3% less than in the group without larger standing areas (16.8%). Therefore, a positive effect on the fitness characteristics of the sows or piglets seems to be discernible at first glance. Whereas a raised standing area of the sows does not lead to any improvement with regard to the crushing losses, the number of piglets culled due to injuries and underweight, however, increases significantly by 2.0%. This difference is reflected entirely by the amount of total losses. At 5%, however, the rate of crushed piglets was at a good level in both pen types.

At 1.45 kg and larger straggling (+3%), the piglets of young sows were 150 g lighter

than those of old sows. This leads to the assumption that the raised standing area had a negative effect on the relatively light piglets of the young sows because the distance from the teats and in particular the upper teat row became too large. For this reason, the system is evaluated rather negatively [10] and has not been able to gain wide acceptance in housing practice. These piglets are malnourished, and a larger number of them must be culled. Contrary to the good intentions of the stall equippers, raised standing areas rather led to a proven deterioration of the loss situation on the examined farm [11]. This mainly applies to the piglets of young sows.

Since the distance from the teats is important, the question arises which role crate stall height plays because the crate stall forms a kind of barrier in front of the upper teat row. The crate stalls, which are often only attached in the front, must not only carry the piglets' own weight for years, but also withstand the forces of the more and more large-bodied animals. This generally leads to the

crate stall lowering to the rear. In almost 1,000 litters, it has been studied which consequences this may have. Assumed crate stall height was the lowest point which limits the back end of the sow at the lower crossbar.

When the basket height was changed from 27 cm to more than 30 to 35 cm, weight increases grew while losses diminished. At the same time, the crate stall of course also limits the lying-down motions of the sows [12], which leads to slightly larger crushing rates at basket heights of more than 30 cm. At slightly more than 30 cm, the "ground clearance" of the crate stall seems to be optimal. A combined influence of standing area design and crate stall height was not able to be proven. Some manufacturers also attach the crate stall in the rear again. This provides considerably more stability. However, it also results in a dangerous "narrow spot" for the piglets [9]. Since crate stall height sinks due to ageing processes, it should in principle be 35 cm in new buildings, but no more.

Conclusions

Basically, a raised standing area must be seen rather negatively with regard to the percentage of culled and died piglets. The relatively weak piglets of young sows face an increased loss risk due to the larger distance from the upper teat row. Regardless of the standing area design, this problem is aggravated if the teats are covered by the lower crossbar of crate stalls attached too low. If, however, the baskets are too high (> 35 cm above the level of the slatted floor), the crushing risk grows. According to practical experience, protective bars (3 to 4 cm) provide true advantages with regard to the loss situation only in very narrow pens (< 160 cm) where the danger exists that the sow crushes piglets in the piglet nest while lying down.

dependent variable	standing area design	age	losses in %	standard error
total losses	increased	young sows	15.3	2.23
		old sows	11.6	0.52
	not increased	young sows	11.3	1.22
		old sows	11.4	0.56
died %	increased	young sows	3.5	1.44
		old sows	4.6	0.33
	not increased	young sows	4.1	0.79
		old sows	3.9	0.36
culled %	increased	young sows	6.3	0.98
		old sows	2.5	0.23
	not increased	young sows	2.5	0.53
		old sows	2.4	0.25
crushed %	increased	young sows	5.5	1.38
		old sows	4.4	0.32
	not increased	young sows	4.6	0.76
		old sows	5.1	0.35

Table 2: Piglet losses on differently designed standing areas as a function of the age of the sows