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SOW BEHAVIOUR DURING THE FIRST 6 HOURS AFTER FARROWING

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Abstract

The behaviour of four sows (Large white x Landrace) kept in a object equipped with farrowing crates (2000 x 1500 mm) with slated floors, was compared with the behaviour of four sows (Large white) kept in a object equipped with farrowing crates (2500 x 1750 mm) with full floors, using video-recorded data. Each sow was videotaped immediately after farrowing, during 6 hours. During the recording, air temperature, relative humidity and draught speed were measured in both objects. The results revealed that sows in both systems spent most time lying in side postures. The sows in crates with full flooring spent a longer time lying on the right side, sternal posture, sitting and standing, compared to sows kept in crates with slated floors. The total posture changing frequency was also higher in sows kept in crates with full flooring. The conclusion derived from these results is that housing conditions, crate space and microclimatic factors, respectively, influenced sow behaviour regarding duration and frequency of body postures.

Introduction

Keeping sows and their litters in farrowing crates is a usual, up to date, pig-breeding practice, which reduces piglet crushing and required human labour (Götz, 1991).

Farrowing crates were introduced in farrowing pens during the 1960-ies, to reduce piglet crushine by the sow (Robertson et al., 1966). Ever since the farrowing environment has been constantly improved (Blackshaw et al., 1994) in order to reduce piglet mortality, providing pig producers with certain benefits, such as better sow movement control, greater space utility and a more efficient waste disposal, compared with less restricted farrowing systems (Cronin et al., 1991). Nevertheless, the incareceration level and specific behavioural inventory restrictions during farrowing are a potential welfare abuse of female animals kept in farrowing crates (Higginson, 1985).

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Materials and methods

The research was performed on a pig-breeding farm, during winter period, in two farrowing objects with different crate dimensions and flooring.

Object A was equipped with 168 crates with slated floors. Each crate measured 2000 mm x 1500 mm. Object B was equppied with 96 crates with full concrete floor, measuring 2500 mm x 1750 mm each.

All crates in both objects had a restricted sow area, feeders, drinking devices and gas-heaters.

The sows kept in object A were Large white and Landrace cross-breds, while the animals in objects B were pure-bred Large white sows.

Each sow was video-taped with her litter during 6 hours after farrowing. The cameras connected to video-recorders were placed on stands in front of the crates, so the entire material is preserved on video tapes.

During the recording, microclimate parameters (air temperature, draught speed and relative humidity) were measured in the biozone of sows in each object, using the SOLOMAT 2000 measuring device.

Results

The obtained frequencies and durations of single body posture changing are presented in Table 1.

Table 1. - SOW BODY POSTURE CHANGING, DURATION AND FREQUENCY, REGARDING HOUSING CONDITIONS IN OBJECT A AND B

Object/sow	Lying on the left side		Lying on the right side		Sitting		Standing		Lying in sternal posture	
	(sec.)	(N)	(sec.)	(N)	(sec.)	(N)	(sec.)	(N)	(sec.)	(N)
A/1	17662	(2)	1189	(6)	552	(3)	2197	(8)		
A/2	9870	(2)	8563	(10)	619	(8)	301	(3)	2247	(4)
A/3	13691	(2)	4360	(1)	145	(1)	175	(2)	3229	(2)
A/4	16007	(3)	3875	(2)	69	(1)	1190	(4)	459	(2)
Total	57230	(9)	17987	(19)	1385	(13)	3863	(17)	5935	(8)
B/1	12637	(3)	5002	(3)	359	(7)	2886	(5)	716	(4)
B/2	11854	(2)	8377	(9)	539	(7)			830	(4)
B/3	8295	(7)	3510	(5)	524	(6)	1363	(9)	7908	(8)
B/4	11040	(1)	7836	(1)	1150	(3)	1574	(2)		
Total	43826	(13)	24725	(18)	2572	(23)	5823	(16)	9454	(16)

Total alteration frequencies and durations of each bodily posture were compared between objects, and the percentage difference is presented in Table 2.

Table 2. - PERCENTAGE DIFFERENCES OF BODY POSTURE CHANGING, TOTAL RESULTS, DURATION AND FREQUENCY, OF SOWS IN OBJECT A COMPARED TO SOWS IN OBJECT B

	Lying on the left side		Lying on the right side		Sitting		Standing		Lying in sternal posture	
	duration %	frequency %	duration %	frequency %	duration %	frequency %	duration %	frequency %	duration %	frequency %
Object A/ Object B	130.6	69.2	72.2	105.6	53.8	56.5	66.3	106.3	62.8	50

The results of microclimatic measurings are presented in Table 3.

Table 3. - MICROCLIMATIC FACTORS IN OBJECTS A AND B

Object	Air temperature (°C)	Relative air humidity (%)	Draught speed (m/s)
A	19.1	67.4	0.3
B	17.3	50.8	0.3

Lying on the left side

Sows placed in crates with a slated floor – object A, spent a longer time lying on the left side (57230 sec.) than sows kept in full floor crates – object B (43826 sec.). The posture changing frequency was higher in object B (13 times) than in object A (9 times).

The duratin of left side lying in sows kept in object A, differed 130.6% and the frequency by 69.2%, compared to the sows in object B.

Lying on the right side

Sows placed in object B, spent longer time lying on the right side (24725 sec.) than those in object A (17987 sec.). The posture changing frequency in object A was slightly higher (19 times) than in object B (18 times).

The duration of right side laying in sows kept in object A, differed by 72.7%, and the frequency by 105.6%, compared to the sows in object B.

Sitting

Sows placed in object B, spent longer time sitting (2572 sec.) than sows kept in object A (1385 sec.). The changing frequency of this posture was higher in animals kept in object B (23 times) than i object A (13 times).

The sitting duration in sows kept in object A differed by 53.8%, and the frequency by 56.5%, compared to the sows in object B.

Standing

Sows in object B, stood altogether longer time (5823 sec.) than sows kept in object A (3863 sec.) Standing frequency was slightly higher in object A (17 times) than in object B (16 times).

The duration of standing in object A differed by 66.3%, and the frequency by 106.3%, from object B.

Sternal posture

Sows placed in object B, spent longer time lying in the sternal posture (9454 sec.) than sows kept in object A (5946 sec.). The frequency of this posture was higher in object B (16 times) than i object A (8 times).

The duration of lying in sternal posture in object A, differed by 62.8%, and the frequency by 50%, compared to the sows in object B.

Microclimatic conditions

During the research the air temperature was 19.1°C in object A and 17.3°C in object B, the relative air humidity in object A was 67.4% and 50.8% in object B. The draught speed in both object was 0.3 m/s.

Discussion

In our research the sows exchanged 5 postures (lying on the left side, lying on the right side, sitting, standing and lying in sternal posture), which agrees with the findings of Blackshaw et al. (1994) and Götz (1991).

Blackshaw et al. (1994) studied different keeping conditions for sows and their litters in farrowing crates during the period from the 1st to the 60th day after farrowing, and found that sows in both environments exchanged postures more actively during the period from the 1st to the 5th day, than later. In our research, sows also frequently exchanged postures, especially in object B.

Götz (1991) observed three primiparous sows and their litters, during the first four days of nursing and found that in the beginning the sows most of the time spent in side (lying) postures. Krsnik (1976) observed the behaviour of sows 24 h after farrowing, and found, that during the observed period, the sows most of the time spent lying in side postures.

These data are in accordance with our results, with a remark, that sows in object A spent longer time lying on the left side, and those in object B on the right side. The explanation for frequent side laying in postparturient sows is their nursing readiness during the first week after farrowing, which later on decreases (Götz, 1991).

Sows take sternal posture when they feel cold (Hörning, 1993), when they want to avoid piglet activity on the under (De Passillé and Robert, 1989) and also during the separation of the sow and the litter (Krsnik, 1976).

According to Ivoš et al. (1981) the optimal temperature for sows in farrowing objects with classic flooring should be 18°C, and in objects with slated flooring 22°C. Furthermore, Hörning (1993) emphasizes values from 15 to 20°C as the optimal biozone temperature for sows in farrowing pens. According to Hilliger (1972), Mehlhorn (1979) and Ellersiek (1982) the optimal air humidity in farrowing objects ranges from 60 to 80%, while the optimal draught speed according to Hörning (1993) is from 0.10 to 0.20 m/s.

In our research, the air temperature was 19.1°C in object A and 17.3°C in object B, which is within the range of 15 to 20°C quoted by Hörning (1993) as optimal for sow biozone.

The relative air humidity was 67.4% in object A and 50.8% in object B. The value obtained in object B is lower from the optimal 60 – 80% mentioned by Hilliger (1972), Mehlhorn (1979) and Ellersiek (1982).

Draught speed in both objects was 0.3 m/s, which surpasses the 0.10 – 0.20 m/s mentioned as optimal by Hörning (1993).

According to the quoted results and authors, the microclimatic factors in both objects were not satisfactory, which explains why the sows spent a relatively long time lying in sternal posture.

Sows spend only a slight time sitting, which is a posture that serves in fact as passing from lying into standing posture. Besides, the long hours of standing in individual housing show the animals desire for activity (Hörning, 1984).

Regarding duration of other body activities, the sows spent a relatively short period sitting and standing. The animals in object B spent a longer time in the mentioned postures.

According to the results obtained, we can conclude that housing conditions, crate space and microclimatic factors, respectively, influenced sow behaviour regarding duration and frequency of body postures.

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VLADANJE KRMAČA PRVIH 6 SATI NAKON PRASENJA

Sažetak

Vladanje četiri krmače (veliki Yorkshire x landras) smještenih u objektu s prasilišnim boksovima (2000 mm x 1500 mm) s rešetkastim podom, uspoređeno je s vladanjem četiri krmače (veliki Yorkshire) smještenih u objektu s prasilišnim boksovima (2500 mm x 1750 mm) s punim podom, primjenom podataka dobivenih iz video snimaka. Svaka krmača snimljena je, neposredno nakon prasenja, u trajanju od 6 sati. Za vrijeme snimanja mjerena je temperature, relativna vlaga i brzina strujanja zraka u objektima. Prema dobivenim rezultatima, krmače su u oba sustava držanja najviše vremena provodile u bočnim ležećim položajima. Krmače u boksovima s punim podom provele su duže vremensko razdoblje ležeći na desnoj strani, trbuhu, te sjedeći i stojeći, od krmača u boksovima s rešetkasnim podom. Osim toga ukupna učestalost promjene položaja bila je veća u krmača u boksovima na punom podu.

Prema dobivenim rezultatima možemo zaključiti da uvjeti smještaja krmača s obzirom na vrst poda, veličinu boksova i mikroklimatske čimbenike u objektu, utječu na određene razlike u vladanju krmača s obzirom na vrijeme i učestalost promjena tjelesnih položaja.

Ključne riječi: vladanje, prasenja, pod, prasilišni boks.

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