

**VOCAL AND TACTILE COMMUNICATIONS BETWEEN
SOWS AND PIGLETS AFTER BIRTH, DURING THE FIRST
DAY**

**B. Krsnik, Ž. Pavičić, R. Yammine, T. Balenović, A. Pleli,
Angelina Nemet**

Summary

Nursing frequency and duration based on vocal and tactile communication between the sow and the piglets was video-taped during the first 6 hours after farrowing. The recording included 10 sows, divided in two groups and placed in two objects with different flooring. The sows differed in breed, age and parity. The obtained results were statistically analysed and compared applying the t-test. A significant difference ($P < 0.05$) was found considering frequency values of vocal communication between the sows in Objects A and B, and between the frequency and duration of vocal/tactile communication in Object A. During the research micro-climatic factors were also monitored in both objects.

Introduction

The interaction between the sow and her piglets during nursing and suckling consists of a number of signals (Algers et al., 1989), which could be defined as the physical form in which the message is expressed and transmitted through the environment (Slater, 1983). Pigs express themselves through vocal and tactile signals (Fraser, 1984; Algers et al., 1989), not to forget visual and hormonal (chemical) signals.

Vocal communication related to suckling behaviour, both as an impulse or a reflexion of the suckling itself, is characteristic to the behaviour of sows and piglets, although neither tactile communication nor the experience of the sow are considered to be less important.

Unadequate technology and environmental factors can, among other things, cause behavioural changes (Krsnik, 1977). Although the maternal behaviour is sow's contribution to the survival of her piglets (Cronin et al., 1994), commercial crates impose certain restrictions leading to a deficient expression of maternal behaviour (Baxter, 1982).

Prof. dr. Boris Krsnik, mr. Željko Pavičić, mr. Rayane Yammine, prof. dr. Tomislav Balenović, Veterinary Faculty, University of Zagreb; A. Pleli, Angelina Nemet, Pig farming, Sesvete, Zagreb, Croatia

The aim of this study was to determine the durations and frequencies of suckling based on vocal and tactile communication between sows and their litters during the first day.

Material and Methods

Ten sows of different strains ages and parities were kept in separate crates, in two objects (each 5 sows) with different flooring (Object A, wire floor; Object B full floor), and number of animals; Object A 168 crates (1,50 x 2,00 m), Object B 96 crates (1,75 m x 2,50 m). All crates had a separate space for sows, and were equipped with feeders, drinking devices, and heaters.

On the first day, each sow and litter were videotaped during 6 hours (from 08:00 to 14:00 h).

The cameras were placed on stands in front of the crates, and connected with video-recorders, so the entire material is preserved on video tapes.

The bioclimatic factors in farrowing facilities (air temperature - $at^{\circ}C$, draught - $W\ ms^{-1}$ and relative air humidity - $Ah\%$) were also controlled using a SOLOMAT 2000 device.

The obtained results were statistically analysed, and compared applying the t-test.

Average bioclimatic values were, in Object A: ($at^{\circ}C$ - 20,95; $W\ ms^{-1}$ - 0,3 and $Ah\%$ - 70.92) and in Object B: ($at^{\circ}C$ - 19,8; $W\ ms^{-1}$ - 0,3 and $Ah\%$ - 53,4).

Results and Discussion

The results are presented in Tables 1 and 2.

Table 1. - SUCKLING FREQUENCIES AND DURATIONS, BASED ON TACTILE AND VOCAL COMMUNICATION BETWEEN SOWS AND PIGLETS IN OBJECTS A AND B.

Sow litter	Suckling frequency			Suckling duration		
	vocal	tactile	total	vocal	tactile	total
A1	10	1	11	2910	181	3091
A2	4	6	10	690	1130	1820
A3	6	0	6	2365	0	2365
A4	10	0	10	2699	0	2699
A6	7	3	10	1789	815	2604
B1	3	6	9	1332	1617	2949
B2	5	3	8	1692	990	2682
B3	3	4	7	510	765	1275
B4	4	5	9	1259	1647	2846
B6	3	3	6	1246	663	1927

Table 2. - THE T-TEST RESULTS FOR SUCKLING FREQUENCY AND DURATION TOTAL VALUES BASED ON THE VOCAL AND TACTILE COMMUNICATION COMPARING OBJECT A AND B, AND THE VOCAL AND TACTILE COMMUNICATION INSIDE EACH OBJECT.

	Frequency			Duration		
	t-test	Df*	P=	t-test	Df*	P=
Total A:B	1.52554	8	P>0.05	0.470465	8	P>0.05
Vocal A:B	3.08221	8	P<0.05	1.98793	8	P>0.05
Tactile A:B	-1.71791	8	P>0.05	-2.27083	8	P>0.05
A voc.: tact.	3.31095	8	P<0.05	3.61727	8	P<0.05
B voc.: tact.	-0.84853	8	P>0.05	0.269479	8	P>0.05

*Degrees of freedom

From the 1st to the 14th day of age, the piglets approached the sow attracted by her voice (Lewis and Hurnik, 1986), starting already from the first hour after farrowing (Blecha and Kelley, 1981). In our research the frequency of suckling based on sow vocal communication was higher in Object A than in Object B, while the suckling frequency based on piglet tactile communication was higher in Object B. The duration of suckling based on sow vocal communication ranged from 8,28% - 13,47% in Object A and from 2,36% - 7,83% in Object B. The duration of suckling based on piglet tactile communication ranged from 0,84% to 5,23% in Object A and from 3,07% to 7,63% in Object B.

A significant difference ($P<0,05$) was found considering frequency values of vocal communication between the sows in Objects A and B, and between the frequency and duration of vocal/tactile communication in Object A.

However, environmental factors may alter the expression of behavioural patterns of sows (Cronin et al., 1994; Krsnik and Yammine, 1992), as-well-as those of piglets. Low air temperature (17.1°C) and draught speed (exceeding 0,2 ms⁻¹) influence indirectly piglet resistance and their health (Krsnik et al., 1992), while low air temperature of only 10°C reduces the absorption of immunoglobulines (Castrén et al., 1982). In our research, the average air temperature in Object A was 20,95°C and in Object B 19,8°C. Draught speed values, in both Objects were 0,3 ms⁻¹, which is higher than recommended for piglets of this age.

In the context of the present discussion, we must also consider the way in which the animals were kept and housed. It is known that sows kept in farrowing pens have a higher activity level than sows in farrowing crates, while on the other hand the duration of suckling is longer in piglets kept in farrowing crates (Blackshaw et al., 1994). In our research, the animals in Object A were kept on a wire floor, and those in Object B on a full floor, which in a way may also effect the frequency and duration differences of vocal-tactile communications.

Moreover, the total number of animals placed in farrowing units also differed, Object A (168 sows) and Object B (96 sows), which may also influence the activities in question, as confirmed by a work (Algers, 1989) saying that in large farrowing units signal covering may occur resulting with irregularities or even the omission of suckling bouts.

This research was performed as a contribution to the understanding of mother-young relations. The obtained numerical differences considering the frequency and duration of vocal-tactile communications are attributed to the unequal bioclimatic and housing conditions, as-well-as to a different number of animals in farrowing units.

Acknowledgments

This work was supported by grant No. 3-03-340 from the Ministry of Science and Technology of the Republic of Croatia

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GLASOVNE I TAKTILNE KOMUNIKACIJE IZMEĐU KRMAČA I PRASADI NAKON PRASENJA, NA DAN PRVI

Sažetak

Učestalost i trajanje sisanja zasnovanog na glasovnoj i taktilnoj komunikaciji između krmače i prasadi tijekom prvih 6 sati nakon prasenja, snimljeno je na video-trake. Snimano je 10 krmača, podijeljenih u dvije skupine, smještene u dva različita objekta s različitom vrstom poda. Krmače su se međusobno razlikovale po pasmini, dobi i broju praseња. Dobiveni rezultati statistički su obrađeni i uspoređeni pomoću t-testa. Značajna statistička razlika ($P < 0,05$) zabilježena je s obzirom na vrijednost učestalosti glasovne komunikacije, između krmača u objektu A i B, te s obzirom na učestalost i trajanje vokalne/taktilne komunikacije u objektu A. Tijekom istraživanja, u oba su objekta kontrolirani i mikroklimatski čimbenici.

Primljeno: 15.2.1996.