Impact of Exploitation System on Commercial Hogs' Behaviour

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Abstract
Rest is the etho-physiological activity with the most prolonged duration within the 24 hours: thus, males rest for about 61-62% of their time while females rest for about 66-68% of their time. Feed consumption in *ad libitum* feeding conditions lasts differently: thus, castrated males feed for about 16' 23" ± 0.44" while females feed for about 18'46" ± 0.62". Conflicts within the groups take place in 2.30 ± 0.34 sessions for attacks and in 0.45-0.83 session for defence fights. Attack sessions, foraging sessions, defecation sessions, and urinating sessions to differ between castrated males and females exploited in farming systems since neither feeding, nor living conditions are always acceptable and regular.

Keywords: behaviour, ethogram , exploitation system, fattening hogs

1. Introduction

Ethology (from the Greek *ethos* – character, physical behaviour) deals with the study of animal behaviour under normal life conditions: it is most often called „animal behaviour".
Behaviour is, by definition, an activity of the animal as a response to a certain event that takes place: [1,2]
- in its near vicinity (external sensorial stimuli);
- in its body (internal sensorial stimuli);
- in its "mind", as a result of its previous life experience.

Most behavioural aspects are, usually, studied after they occur, when they are recorded qualitatively and quantitatively (duration in minutes, frequency), using simple technical means (chronometers) or apparatuses (electronic devices, internal TV), which allows the distinction between several types of behaviour:
- feeding or ingestion behaviour;
- disposal behaviour;
- sexual behaviour;
- caring behaviour;
- care-soliciting behaviour;
- agonistic and antagonistic behaviour;
- place-searching behaviour;
- investigation behaviour.

In domestic animal, in general, and in swine, in particular, internal processes that can trigger behaviour occur usually rather in the body than in the "mind" of the animals, and are related to the secretion of the endocrine glands [3, 4].

2. Materials and methods

Our study was carried out on a group of 12 castrated swine males and on a group of 12 fattening swine females bred in a farming system, for which we have designed ethograms for each individual in which we recorded results of direct observation. We monitored mainly the feeding, water consumption, physiological acts (urination, defecation), relationships between swine (attack, defence), and other aspects (foraging, scratching, play, rest, etc.).

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3. Results and discussion

Forage and water consumption

Feeding was done in two sessions, at 8:00 in the morning and at 7:00 in the evening.

After a month of exploitation, the swine had consumed as shown in Table 1.

Water consumption is higher after the morning ratio in both sexes, the duration of forage consumption is uneven, i.e. sessions of 16'23" ± 0.44' in males and of 18'46" ± 0.62' in females (Table 2).

Table 1. Forage consumption in fattening swine

Number of animals	Ratios	Amount of feed	Drinking water sessions (seconds)	Duration of drinking water (seconds)
24	In the morning:		Males – 2.80±0.11	42±8
	maize			
	pumpkins + maize flour	1.0	Females – 2.90±0.20	
				32±5
		1.0		
	In the evening:			
	maize	1.0		
	green feed	0.2		

Table 2. Forage consumption and duration of sessions in fat swine

Exploitation system	Forage type	Duration of session (minutes, seconds)	
Family	Restricted	Females 18'46" ± 0.62'	Males 16'23" ± 0.44'

Time sessions during which forage consumption is maximal coincide with the period forage is supplied, in two ratios, at 8 in the morning and at 7 in the evening, the number of sessions being two in the morning and in the evening, with conditioned reflex development and waiting for the time of ratio.

Water consumption is very similar between the two sexes, the number of sessions being 4.60 ± 0.34 in females with a duration between 1'10" ±

0.16' and 4.80 ± 0.24 in males with a duration of 1'06" ± 0.12'. Water consumption in both sexes overlaps maximum forage consumption times between 8 and 9 in the morning and 7 and 8 in the evening, with less consumption over the night.

Minimal frequency of water consumption is between 10 and 11 in the morning, 2 and 3 and 4 and 5 in the afternoon, and 9 and 10 in the evening in males, and 9 and 10 in the morning, 5 and 7 in the afternoon, and 8 and 9 in the evening for females, which can be explained by a higher frequency of rest during these periods of time (Tables 3 and 4).

Table 3. Number of drinking water sessions and their duration

Exploitation system	Number of sessions (n)		Duration of a session (minutes, seconds)	
Family	Males 4.80 ± 0.24	Females 4.60 ± 0.34	Males 1'06" ± 0.12"	Females 1'10" ± 0.16"

Table 4. Maximum and minimal levels of water consumption (hour interval)

Exploitation system	Maximum level		Minimal level	
Family	Males	Females	Males	Females
	8-9	19-20	14-15; 16-17	17-19; 20-21

Movement of the hogs in the sty

Movements are more frequent before and after eating, i.e. 7 in males and more frequent in females, in sessions of 10.15 ± 0.25 with a duration of 32'08" ± 0.50" in males and sessions of 9.70 ± 0.32 with a duration of 30'40" ± 0.20in females (Table 5).

Table 5. Movement of the hogs in the sty

Exploitation system	Frequency		Session numbers		Session duration	
Family	Males	Females	Males	Females	Males	Females
	6-9	6-9; 18-20	10.15 ± 0.25	9.70 ± 0.32	32'08" ±0.50"	30'40" ± 0.20"

Fights within the group

There have been 2.30 ± 0.34 attack sessions and 1.45 ± 0.83 defence sessions in males and 1.90 ± 0.15 attack sessions and 1.90 ± 0.10 defence sessions in females. As for the duration of attack sessions in the two sexes, there are differences during the last time of the fattening period detrimental to females. Defence fights take place upon challenge, aggressed animals draw back through the forage front for either the resting area or for physiological reasons.

Disposal behaviour

Urinating is done in an almost even number of sessions in both sexes, with a preference for dark, moist, and draughty areas of the sty. It lasts for 4.70 ± 0.40 sessions in males and in 4.90 ± 0.20 sessions in females. The average duration of a session is almost even, i.e. 12-13" in males and 11-12" in females. (Table 6)

Table 6. Number of sessions and frequency of urinating in fat swine

Session number		Average duration of the session (seconds)		Maximum frequency	
Males	Females	Males	Females	Males	Females
4.70 ± 0.40	4.90 ± 0.20	12-13"	11-12"	6-8; 10-12; 16-20	7-8; 19-20

Defecation lasts 34-35 seconds in males and 21-22 seconds in females, with 3.30 ± 0.40 sessions in males and 2.45 ± 0,20 sessions in females. Ratios rich in cellulose increased intestinal transit and dejections were rather soft in consistency. Defecation occurred in all individuals, no matter the sex, by the margin of the sty, which shows special care in organizing rest, feeding, and drinking areas.

Other etho-physiological aspects we could mention are as follows:

foraging in the sty lasted for 3'30' seconds ± 11" in males, and 1'15' seconds ± 31" in females, the number of the sessions being 2.66 ± 0.28 in males and 1.55 ± 0.21 in females: this activity occurred in the dejection area because the configuration of the brick-paved sty did not allow foraging;

scratching is a necessity before rest, more precisely between 8 and 9 in the morning in males and between 9 and 10 in the morning in females, mainly before and after supplying ratios: due to the treatment of the swine with both internal and external antiparasitic substances, scratching was less significant during our monitoring;

rest is the most frequent and most lasting of all etho-physiological activities – animals rest more during the night though they wake up sometimes to drink water or to urinate or defecate: resting sessions represent 60-62% in males and 66-68% in females, with 17-18 rest sessions of 42-50 minutes in males and 18-19 rest sessions of 51-55 minutes in females (Table 7).

Table 7. Duration of rest sessions and number of rest sessions in fat swine

Session duration (minutes)		Session number		Percentage of the daytime (%)	
Males	Females	Males	Females	Males	Females
42-50	51-55	17-18	18-19	61-62	66-68

Rest is the etho-physiological activity with the longest duration, particularly in the case of fattening swine, no matter the system of exploitation (intensive or family) [5, 6].

4. Conclusions

In fattening swine exploited in family system, the duration of forage consumption is uneven, with sessions of 16'23" ± 0.44" in males and 18'46" ± 0.62" in females, in two ratios, depending on the

way feed is supplied (in the morning and in the evening).

Fights within the group had 2.30 ± 0.34 attack sessions and 1.45 ± 0.83 defence sessions in males and 1.90 ± 0.15 attack sessions and 1.95 ± 0.10 defence sessions in females. As for the duration of attack sessions in the two sexes, the differences are significantly in favour of the females during the last period of fattening.

Rest is the etho-physiological activity with the longest duration over the 24 hours of a day: thus, males rest for 61-62% of their time while females rest for 66-68% of their time, in 17-19 sessions lasting 49-50 minutes in males and in 18-19 sessions lasting 51-55 minutes in females.

References

1. Cociu, M., Etologie, Ed. All, Bucureşti, 1999, pp. 19
2. Petroman, I. şi colab., Producerea cărnii de porc, Ed. Mirton, Timişoara, 1996, pp.34-36
3. Dinu, I., Influenţa mediului asupra producţiei la po rcine, Ed. Ceres, Bucureşti, 1978, pp.15-25
4. Petroman, I. şi colab., Creşterea porcinelor, Ed. Mirton, Timişoara, 2002, pp.78
5. Petroman, P., şi colab, Psihologia suinelor, Ed. Mirton, Timişoara, pp.56
6. Sas, E., Petroman, I., Cercetări de etologie la suinele crescute în sistem intensiv, Rev. Zootehnie şi Medicină veterinară, 1996, 10, 1-12