POSSIBILITIES TO IMPROVE THE INSEMINATION MANAGEMENT AT SOWS

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Abstract: *In order to reduce unproductive days at sows in the waiting period, we recommend the implementation of management measures depending on sows parity and season, and the replacement of pluripers with gilts should be done in spring and autumn when the intensity of heat manifestation is the highest. The best results are obtained in November on the analyzed farm when the proportion of oestrus manifestation in sows regardless of parity and season is the highest. The weaning-estrus interval is the lowest in December, his duration being of 5.43 ± 1.10 days. In order to reduce parity and season influence on oestrus manifestation in sows and to minimize non-productive days we consider it necessary to improving the management of specific crop sowings on the duration of lactation, nutrition, animal welfare during the waiting period, in order to reduce the unfavorable effects of parity and the season.*

Key words*: sows, estrus, sowing, management*

INTRODUCTION

The Sows to whom they are assured with good welfare and a farm management consistent regarding physiological requirements, during lactation, after weaning piglets manifest estrus in the first 3-7 days, in case in which the lactation period was at least 15-17 days at pluriparous. The delay in the occurrence of heat is, largely due, to poor farm management but also to the early weaning of sows, when the proportion of primary sows exceeds 35%. At most sows exposed to the presence of the worm and who have undergone to fertilization grouped by administering fertility stimulants starting with 1-3 days after weaning, it has been observed that they tend to manifest heat faster. The sows exhibit heat in the presence of the worm, especially after applying pressure in lumbar area, being polyesther animals in which the estral cycle is repeated throughout the year, with higher intensity during spring and autumn. [3,5,9,11]

The average duration of the estral cycle at sows is on average 21 days with variations between 18-25 days, the proestrus lasts 2-3 days, the estrum 2-3 days, the metestrum 7-8 days and the diestrum 8-9 days, being influenced by:

- the climatic conditions of the area of exploitation;
- the system of nutrition applied in the farm;
- the state of maintenance of sows after lactation;
- the individuality of breeds and hybrids used in breeding;
- farm management;
- animal health status. [1,2,15]

The occurrence of heat at sows in the first days after weaning occurs sooner or later according to the age at which the lactating females were separated from the piglets. According to the opinion of the majority of the specialists, regardless of the age of weaning piglets, physiologically, the heat does not appear faster than 20-21 days after parturition. There are also exceptions, however, when some sows that have been fed with moldy or rich phytoestrogens, the heat to appear within the first 72 hours of calving. These heats are anovulatory and are not desirable, because they cause disturbances in milk secretion and quality, with negative effects on the health of piglets [4,7,12,13].

During the estrus period, the ovaries of the sows are heavily congested, maturing a number of 10 to 30 De Graaf follicles, depending on race, age, and maintenance and nutrition during the lactation period. The urethra is hyperemic, enlarged in volume and shows some antiperistaltic contractions, the uterine horns become rigid and the uterine lining is congested, the uterine neck is open, and the mucous membrane of the cervical canal is covered with mucus. The vagina is wetted with mucus, the vulva is congested and swollen, and at the vulva of some sows drains a transparent, mucus. [6,8,10]

From a behavioral point of view, heat at sows is manifested by a stinging squeeze, denial of food, increased water consumption, loud walks, jumps on other congeners, escape tendencies. Behavior gradually changes by the continuous increase of sexual arousal, the desire to mating progressively and becomes intense in the second part of the heat.

MATERIALS AND METHODS

The research was carried out on an industrial farm, where during one year the proportion of monthly manifestation of oestrus was monitored and the interval from the weaning of the piglets to the oestrus manifestation, with the aim of undertaking measures in order to improve the farm management. It should be noted that the duration of the oestrus is not only the stage in which the sow accepts sowing but also the stage of preparation in which it manifests interest for the worm, the oestrus and the period of transition to the metestrum, the reproduction management having an essential role in these periods, in order to reduce unproductive days.

RESEARCH RESULTS

Taking Detection of the sows in the oestrum was carried out with trial worms, the first sowing being made at 12 hours and the second at 18-24 hours. At weaning at the age of 20-21 days and a waiting period of 6-7 days the oestrus manifestation and the weaning-estrus interval has reached the following values:

- in March the proportion of sows that showed estrus was 81.77 ± 2.41; the average duration of the interval weaning- estrus was 7.69 ± 1.32 days;
- the proportion of sows that showed estrus in April was 78.87 ± 3.32; the average duration of the interval weaning-estrus was 8.67 ± 2.34 days.
- the proportion of sows that showed estrus in May was 79.58 ± 2.45 sows; the average duration of the interval weaning-estrus was 8.46 ± 3.01 days.
- in June, the proportion of weaned sows that showed estrogen was 79.86 ± 2.65 animals, and the average duration of the interval weaning-estrus was 8.66 ± 2.44 days.
- the proportion of sows that showed estrous after weaning in July was 82.47 ± 2.32 sows, and the average duration of the interval weaning-estrus was 8.45 ± 1.27 days.
- the proportion of sows that showed estrous after weaning was 79.84 ± 2.51 sows in August, and the average duration of the interval weaning-estrus was 9.57 ± 2.81 days.
- in September, the proportion of weaned sows that showed estrogen was 79.97 ± 2.34 animals, and the average duration of the weaning- estrus interval was 8.80 ± 2.19 days.
- in October, the proportion of sows that showed estrous was 86.71 ± 2.12 sows and the average duration of the interval weaning-estrus was 6.71 ± 2.61 days.
- in November, the proportion of sows that showed estrous after weaning was 87.60 ± 1.13 sows, and the average duration of the interval weaning-estrus was 6.34 ± 2.52 days.
- In December, weighed sows that showed estrogen were 85.90 ± 1.88 animals, and the average duration of the interval weaning-estrus was 5.43 ± 1.10 days.
- In January, the proportion of sows that showed estrous was 84.33 ± 2.42 sows and the average duration of the interval weaning-estrus was 7.87 ± 1.92 days.

- In February the proportion of estrous manifestation after weaning piglets was 78.72 ± 2.35 sows, and the average duration of the interval weaning-estrus was 8.22 ± 1.48 days.

It is observed from the analysis of the data that the month with the highest proportion of oestrus manifestation after weaning was November with 87,60 ± 1,13, and the lowest weaning-estrus interval was registered in December 5.43 ± 1.10 days.

Analyzing the proportion of sows that showed estrous after weaning piglets according to parity and season we found that (table 1):

Table 1.

Proportion of sows in oestrus, after weaning, according to parity and season (X±Sx)

Specification	**Primiparous**	**Pluriparous**
Spring	$83,22 \pm 1,71^{A}$	$76,92 \pm 0,24^{b}$
Summer	$79,37 \pm 0,70^{b}$	$82,07 \pm 1,43^{A}$
Autumn	$83,66 \pm 0,57^{b}$	$87,36 \pm 1,13^{A}$
Winter	$84,43 \pm 1,84^{A}$	$81,53 \pm 1,36^{c}$

Test χ^2 A-a p<0,001; A-b p<0,01; A-c p<0,05; a-a p>0,05

- the proportion of primiparous sows that showed oestrus in the spring was 83.22 ± 1.71, while in case of pluriparous sows showed oestrous 76.92 ± 0.24. The difference was very statistically significant between the two groups (test x2 p <0.01).

- the proportion of primiparous sows that showed oestrous after weaning in the summer was 79.37 ± 0.70 and at pluriparous 82.07 ± 1.43. The difference between the two categories of sows was very statistically significant (test x2 p <0.01).

- the proportion of primiparous sows who showed oestrous after weaning during autumn was 83.16 ± 0.57, and in the case of plucking sows of 87.36 ± 1.13. The difference between the two categories of sows was very statistically significant (test x2 p <0.01).

- the proportion of primiparous sows that showed estrus in the winter was 84.43 ± 1.84, while the pluriparous sows showed heat in percent of 81.53 ± 1.36. The difference between the two categories of sows was statistically significant (test x2 p <0.05).

The average length of days of oestrus weaning interval according to parity and season is shown in Table 2

Table 2

The average duration of the interval weaning-estrus, according to parity and season

Specification	**Primiparous**	**Pluriparous**
Spring	$7,94 \pm 0,47^{a}$	$8,60 \pm 1,23^{a}$
Summer	$8,86 \pm 1,22^{a}$	$8,92 \pm 1,11^{a}$
Autumn	$8,20 \pm 0,57^{a}$	$6,37 \pm 0,41^{a}$
Winter	$7,37 \pm 0,32^{a}$	$6,98 \pm 0,67^{a}$

Test t A-a p<0,001; A-b p<0,01; A-c p<0,05; a-a p>0,05

The average of weighing - estrus interval during spring was 7.94 ± 0.47 for primary sows and 8.60 ± 1.23 days for primiparous sows. The difference was statistically insignificant between the two categories of sows (test t p> 0.05).

In the summer, the average weaning - oestrus interval was 8.86 ± 1.22 days for primary sows and 8.92 ± 1.11 days for plucking sows. The difference was statistically insignificant between the two categories of sows (test t p> 0.05).

The mean weighing interval - oestrus during autumn was 8.20 ± 0.57 days for primary sows and 6.37 ± 0.41 days for primiparous sows. The difference was statistically insignificant (test t p> 0.05).

In winter, the average weighing - estrus interval was 7.37 ± 0.32 days for primary sows and 6.98 ± 0.67 days for primiparous sows. The difference was statistically

insignificant between the two categories of sows (test t p> 0.05).

In order to reduce unproductive days, we recommend for improving reproduction management the following steps:

- weaning piglets at the age of 20-21 days;
- the detection of sows in the oestrus twice during a working day;
- the use for the detection of the oestrus of the trial boars;
- supplementation with gilts in the periods of the year when the oestrus manifestation is more deleted;
- supplementing the nutrition of sows pending with feed containing higher amounts of estrogen and high in protein;
- scheduling the replacement rate of pluriparous in the spring and winter months when the sowing interval is the lowest;
- using the season's benefits in order to reduce unproductive days;
- using the best management practices according to sow parity and season.

Figure 3. Implementation of measures to improve reproductive management in sows.

CONCLUSIONS

In order to reduce the unproductive days of weaned sows and the influence of parity and season on breeding performance, measures are needed to improve farm management, ensuring optimum welfare and nutrition conditions. We recommend that sowing of sows found in oestrus to be done at 18 - 24 hours between seeding, the first sowing being carried out 12 hours after the oestrus. The month with the highest proportion of estrous after weaning piglets at 20-21 days was November when 87,60 ± 1,13 sows were sown in the first 7 days of waiting. The lowest weaning-estrus interval was recorded in December with duration of 5.43 ± 1.10 days.

There are found statistically significant differences between primiparous and seasonal sowing, for which reason we propose some measures in order to improve the management of reproduction in the analyzed farm and to minimize unproductive days in the breeding sector.

REFERENCES

[1]. HARRIS D. L., 2000, Multi-site Pig Production, Iowa State University Press;

[**2**]. **HEBER LOREDANA, PETROMAN CORNELIA, PETROMAN I., BĂLAN IOANA, MARIN DIANA, IVAŞCU GABRIELA, POPOVICI C.,** 2011, Pork and carcasses quality in swine exploited in family farms, Scientific Papers Animal Science and Biotechnologies, vol 43, pg. 406-408;

[3]. HERMANSEN J. E., AARESTRUP LARSEN VIVI, ANDERSEN BENT HINDRUP, 2002, Development of organic pig production systems, Perspectives in Pig Science. Loughborough: University of Nottingham;

[4]. KATSUMATA M., KAJI Y., SAITOH, M., 1996, Growth and carcass fatness responses of finishing pigs to dietary fat supplementation at a high ambient temperature. Animal Science 62: 591-598;

[5]. MARIN DIANA, N PĂCALĂ, I PETROMAN, PETROMAN CORNELIA, UNTARU RAMONA, DRAGOŞ LAURA, O ŞANDRU, 2011, Study regarding the favourable factors that influence swine production, Lucrări ştiinţifice, seria I, vol XIII (2), Management Agricol;

[6]. MARIN DIANA, CORNELIA PETROMAN, IOAN PETROMAN, IOANA BALAN, COSMINA TOADER, RAMONA CIOLAC, LOREDANA HEBER, IOAN

FURDUI, 2010, Distribution of pig livestock by development region in Romania, Scientific Papers Animal Science and Biotechnologies, vol 43, nr. 2;
[7]. MARIN DIANA, PĂCALĂ N., PETROMAN I., PETROMAN CORNELIA, UNTARU RAMONA, CIOLAC RAMONA, 2012, Influence of age and weight at slaughter over meat quality in conditions of optimum ambient temperature, Lucrări ştiinţifice Management Agricol, Seria 1, vol. XIV (4) „Dezvoltarea rurală durabilă", Facultatea de Management Agricol, Timişoara, pg. 453-458;
[8]. PETROMAN CORNELIA, PETROMAN I., MARIN DIANA, CIOLAC RAMONA, VĂDUVA LOREDANA, 2013, Frequency of consumption of meat and meat products in Timis county, Lucrări Ştiinţifice Zootehnie şi Biotehnologii (Scientific Papers: Animal Science and Biotechnologies), 46 (1);
[9]. PETROMAN CORNELIA, 2013, Frequency of consumption of meat and meat products in Timis county, Scientific Papers Animal Science and Biotechnologies, volumul 46 (2);
[10]. PETROMAN I., CULEA C., 1998, Sisteme de creştere şi exploatare a animalelor, Editura Mirton;
[11]. PETROMAN I., (2007), Managementul sistemelor de creştere şi exploatare a animalelor, Editura Eurostampa;
[12]. PETROMAN I., CULEA C., NICOLAE M., PETROMAN CORNELIA, 2002, Creşterea porcinelor, Editura Mirton, Timişoara;
[13]. ROMANIAN PORK PATRONATE - Informative Bulletin, no. 15-32;
[14]. VĂDUVA LOREDANA, 2013, The influence of endogenous and exogenous factors on meat quality of pigs, Scientific Papers Animal Science and Biotechnologies, vol 46, no.1;
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