OPTIMAL MODEL INSEMANTION SOWS EXPLOITED IN SMALL AND MEDIUM FARMS

LOZICI ANA[1] , PETROMAN CORNELIA[1], PETROMAN I. [1], MARIN DIANA[1]
[1]Banat`s University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara, Faculty of Agricultural Management;
ana.lozici@yahoo.com

Abstract: *The optimal time for inseminating breed sows can be chosen if we know well how to detect mating sows, taking into account the fact that ovulation takes place 30-36 hours after the moment the syndrome of immobility appeared, and that the favourable interval for the ovule to get fecundated is between and 6 hours starting from the moment of follicular dehiscence. This is why it is imperious to practice a farm management focused on inseminating. Birth rate percentage in sows, no matter their age, is similar if the duration between the inseminations is of 5 hours or of 15 hours. A longer duration between inseminations (17 hours) leads to a decrease in birth rate up to 77.2% in primiparous and up to 75.2% in multiparous sows.*

Key words: *breed sows, oestrus, optimal time for insemination, interval between inseminations, and birth rate*

INTRODUCTION

The number of fat pigs obtained from a sow per year depends on the breed, on the genes of the two partners, on the combination between genes, and on the management of the farm where the animals are bred.

There are cases in which ail the desiderata are achieved, and yet the production is diminished if the time of the mounting of oestrus females is not properly chosen. This optimal time can be properly chosen only if females in oestrus are identified by observing the farm technology and if we take into account that ovulation takes place 30-36 hours after the appearance of the immobility syndrome and that the best interval for the fecundation of the egg is between 1-6 hours from the moment of the follicular dehiscence.

Together with these biological features one should have in mind that on farms with large numbers of animals the working programme is between 7 a.m. and 4 p.m. All females in oestrus during this interval can be easily identified and mounted and the optimal time can be properly chosen. After the working programme is over, one cannot identify the time the oestrus appears between 4 p.m. and 7 a.m., which makes it impossible to choose the optimal time for the mounting, with a negative impact on the number of piglets per sow per year and, implicitly, on the number of fattening pigs for slaughtering per year, with serious impacts on production.

MATERIAL AND METHOD

In order to identify the optimal time for mounting Hampshire sows and to find the best correlation between the moment the mounting is being done and the oestrus depending on the working time on the farm (7 a.m. - 4 p.m.) we carried out research on sows of different ages after the following scheme in order to get the most favourable birth rate percentage.

We grouped the sows in three groups, as follows;

the 1st lot composed of females in oestrus identified in the morning and mounted the same day, ensuring an interval of 0 to 5 hours between mountings;

the 2nd lot composed of females in oestrus identified in the afternoon and mounted the same day with 16 to 17 hours between the mountings;

the 3rd lot composed of females in oestrus identified in heat and mounted two different days with 15-hours between the mountings.

This paper was *published under the frame of* European Social Fund, *Human Resources Development Operational Programme 2007-2013, project no.* POSDRU/159/1.5/S/132765.

RESULTS AND DISCUSSION

Results obtained and expressed as birth rate percentage (mated sows vs. farrowed sows) are shown in Table 1.

Table 1.

Birth rate in sows of different ages mounted at different intervals of time after oestrus was identified

Animal category		1st lot			2n0 lot			3m lot		
		Mated females	Farrowed females	Birth rate (%)	Mated females	Farrowed females	Birth rate (%)	Mated females	Farrowed females	Birth rate (%}
Primiparous		25	20	80.0	32	26	81.2	54	39	72.2
Adults	2-3 births	50	44	88.0	72	63	87.5	162	127	78.4
	4-6 births	69	55	79.7	81	61	75.3	168	121	72.0
	total	119	99	83.2	153	124	81.0	330	248	75.2
Difference	absolute	94	79	-	121	98	-	276	209	-
	relative	-	-	3.2	-	-	0.2	-	-	3.0

Birth rate in sows no matter the number of births is similar if the period between the two mountings is between 5 and 15 hours, a longer period resulting in a diminution of the birth rate to 72.2% in primiparous or to 75.2% in multiparous. We can se that females at the end of the exploitation period the 5 to 6 births means a lower birth rate than in those during maximum exploitation (1-4 births) because of the numerous reproduction troubles and of the physiological worn out accumulated over intensive exploitation periods. In order to reach performing exploitation indices we think it is necessary to develop a schedule for the mounting of females mainly during the working programme (7 a.m. to 4 p.m.) with an interval of 5 to 15 hours between mountings.

CONCLUSIONS

Achieving good reproductive performances supposes mounting the mating females at intervals of 5 to 15 hours between the mountings observingjhe programme and the management of the farm in the field of identifying and mounting mating females, when there are the best values of the birth rate in females with 1 to 4 births. Any delay of the interval between two mountings (17 hours) results in a diminution of the birth rate no matter the age of the animals (1 to 4 births). Poor results can also be obtained in the case of females with 5 to 6 births in which there are lower values of this index (72.2 to 75.2%) because of some reproduction troubles and of the physiological worn out accumulated over the long exploitation period.

REFERENCES

1. **BREBDAN LYNCH, P., BOYLE, LAURA, LEONARD, FINOLA, TERGNY, ANNABEL & BROPHY, P.** (2000). Studies on Housing of Pregnant Sows in Groups and Individually. Dublin: Teagasc
2. **DECKERT, ANNE E., DEWEZ, CATHERINE E., JOE FORD, J. & STRAW, BARBARA E.** (1997). The influence of the weaning-to-breeding interval on ovulation rate in parity-two sows. Swine Health and Production 5 (3): 89-93
3. **MARIN DIANA, PACALA N., PETROMAN I., PETROMAN CORNELIA, FRAIU GIANINA, UNTARU RAMONA, CIOLAC RAMONA,** Nursing management and its impact on weaned piglet weight, Porcine Research, Volume 2(1), June, 30, 2012, Published by Bioflux, ISSN-L 2248-311X, pg. 23-26
4. **MARIN DIANA, N. PĂCALĂ, I. PETROMAN, CORNELIA PETROMAN, RAMONA UNTARU, O. ŞANDRU, E. ZAPPE**, The role of endogenous factors upon swine productivity, Lucrări Ştiinţifice Management Agricol, Facultatea de Management Agricol, USAMVB Timişoara, 2011 , Vol XIII (2), seria I, pg 223-228;
5. **PETROMAN CORNELIA, STOICA ANGELA, PETROMAN I,** (1998) Mortalitatea embrionară la scroafe, Editura Mirton, Timişoara, pg. 120-121
6. **PETROMAN CORNELIA, PETROMAN I., PACALA N., UNTARU RAMONA, MARIN DIANA, FRAIU GIANINA, AVRAMESCU DANIELA,** Management of sow replacement rate, Porcine Research, Volume 2(1), June, 30, 2012, Published by Bioflux, pg. 16-18
7. **PETROMAN CORNELIA, PETROMAN I. , MARIN DIANA, BELA ANGELA, UNTARU RAMONA,** Fecundity and the percentage of non returns on sows operated in summer camps, Lucrări ştiinţifice Management Agricol, Seria 1, vol. XIV (2) „Dezvoltarea rurală durabilă", Facultatea de Management Agricol, Timişoara, 20 mai 2012, pg. 467-472
8. **PETROMAN I., UNTARU RAMONA CALIOPI, PETROMAN CORNELIA, ORBOI DORA, BĂNEŞ A., MARIN DIANA, BĂLAN IOANA, NEGRUŢ V,** (2011), The influence of differentiated feeding during the early gestation status on sows prolificacy and stillborns, Journal of Food Agriculture and Environment, Vol. 9, Issue 2, Pages 223-224, Part 1, Published April, ISSN: 1459-0255. ISSN (electronic): 1459-0263
9. **PETROMAN I., AVRAMESCU DANIELA, PETROMAN CORNELIA, MARIN DIANA, CIOLAC RAMONA, TURC BOGDAN, LOZICI ANA,** Habitat as environment in swine, Lucrări ştiinţifice Management Agricol, Seria 1, vol. XV (4) „Dezvoltarea rurală durabilă", Facultatea de Management Agricol, Timişoara, 20 mai 2013
10. **PETROMAN, I., CULEA C,** Sisteme de creştere şi exploatare a animalelor, Editura Mirton, Timişoara, 1998
11. **PETROMAN I.**,(1997) Reproducţia suinelor, Editura Mirton , Timişoara
12. **PETROMAN, I., STOICA, MARIA-ANGELA & PETROMAN, CORNELIA.** (1998). Perioada puerperală la scroafă. Timişoara: Editura Mirton
13. **STANČIĆ, B., RADOVIĆ, I., BOŽIĆ, A. & GAGRČIN. M. (**2009). Sow Fertility after Conventional AI with Insemination Doses of Various Volumes and Spermatozoa Number. The Serbian Journal of Agricultural Sciences 58 (1-2): 62-66
14. **WILLIS, H. J., ZAK, L. J. & FOXCROFT, G. R.** (2003). Duration of Lactation, Endocrine and Metabolic State, and Fertility of Primiparous Sows. Journal of Animal Science 81: 2088-2102