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THE USE OF HORMONAL METHODS ON GILTS REPRODUCTIVE CYCLES

DIRIJAREA FUNCȚIEI DE REPRODUCERE LA SCROFIȚE PRIN METODE HORMONALE

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The main purpose of the current research was to conduct the reproductive cycle on gilts, using hormonal methods to induce estrus in non-cycling and late pubertal gilts and to group in a short period of time the breedings and, in the same time, to induct farrowings. The gilts that have made the object of this experiment were distribute in two equal lots and they were treated with PG 600 (400 I.U. PMSG and 200 I.U. hCG) to induce estrus in two consecutive weeks. The main reproductive objectives that we have observed were the percentage of gilts that came into heat, the time range when the gilts showed signs of estrus and the gestation rate after pregnancy check at 28 and 56 days from breeding. The percentage of the gilts that were in heat after PG 600 was 67 %. The majority (44.8 %) of gilts were in heat after 72-96 hours from PG 600. The gestation rate at 28 days after insemination was 64.6 % and at 56 days after insemination was 53.0%.

Key words: gilts, PG 600, estrus, gestation rate.

Introduction

The use of hormonal methods on gilts reproductive cycles is currently an easy procedure.

The majority of the medicines used in pig reproduction are involved in getting non-cycling gilts and sows into heat, to prevent anestrus in first litter sows, to prevent seasonal anestrus in multiparous sows, for treatment of anestrus (8-10 days after weaning), to increase the litter size, to synchronize the estrus and to induct the farrowing so that the timing of service can be optimized and farrowing supervised (1).

PG 600, a combination of FSH and LH is being used to stimulate the onset of estrus in non-cycling gilts and sows. Estrus usually starts 5 days later. If the gilts are already cycling, PG 600 will not break the cycle and induce heat. It is basically used to stimulate inactive ovaries into action (2).

PG 600 is a combination of two hormones involved in follicular growth and ovulation.

Pregnant Mare Serum Gonadotropin (PMSG, eCG) mimics the Follicle-Stimulating Hormone (FSH) that stimulates follicle growth and estrogen release from the ovaries.

Human Chorionic Gonadotropin (hCG) mimics the Luteinizing Hormone (LH) that is responsible for the release of eggs from the follicles (ovulation) and the development, maintenance and function of corpus luteum (3).

The two hormones combined in the dosage as is in PG 600, have been proven to promote the development of a fertile estrus cycle in the pig in the most optimal way.

PG 600 is used most frequently for stimulating inactive ovaries in post pubertal gilts approaching anestrus and in non-cycling sows.

PG 600 is very efficient for primiparous sows because the weaning follows in a short period of time by estrus and the litter size has increased meaningfully. It can be also used in multiparous sows that have not shown heat naturally (4).

The main purpose of the current research was to conduct the reproductive cycle on gilts, using hormonal methods to induce estrus in non-cycling and late pubertal gilts and to group in a short period of time the breedings and, in the same time, to induct farrowings.

Materials and methods

The research were carried out over 4500 gilts F1 (Large White x Landrace), about 300 days old, from a recently populated farm, during the months of July and August.

During the first 6 weeks, 3426 gilts were in heat naturally and they were artificial inseminated and 98 gilts were culled.

The other 976 gilts have been regrouped and in the next 3 weeks 204 gilts were in heat and 14 gilts were culled. From these 758 gilts, 358 have been culled because they were over one year old and they did not show heat.

All the other 400 gilts that were the object of the current research have been distributed in two equal lots. The gilts from the first lot have been treated with PG 600 during one week and the gilts from the second lot received PG 600 during the following week.

The gilts in heat were bred via artificial insemination at the time when they were detected and the ones that have not shown heat were culled.

The gilts were under observation for 120 hours (5 days) and the pregnancy check was done at 28 and 56 days using transrectal ultrasound.

The methods used for hormonal stimulation is PG 600, that is a combination of Pregnant Mare Serum Gonadotropin (PMSG) and Human Chorionic Gonadotropin (hCG).

PG 600 is presented as a freeze dried white crystalline plug for reconstitution with solvent provided. Each 5 ml single dose glass vial contains: Serum Gonadotrophin 400 i.u. Chorionic Gonadotrophin 200 i.u (1).

Results and Discussion

The main purpose of the current research was to conduct the reproductive cycle on gilts, using hormonal methods to induce estrus in non-cycling and late pubertal gilts and to group in a short period of time the breedings and, in the same time, to induct farrowings.

In table 1 we have presented the results obtained during the induction and synchronize of estrus in gilts, using PG 600.

Table 1

The results obtained during the induction and synchronize of estrus with PG 600

Specification	Gilts (n)	Gilts detected in heat		The time between treatment with PG 600 - Estrus							
				48 hours		72 hours		96 hours		120 hours	
		n	%	n	%	n	%	n	%	n	%
LOT 1	200	141	70.5	7	5.0	52	36.9	64	45.4	18	12.8
LOT 2	200	127	63.5	5	3.9	49	38.6	56	44.1	17	13.4
TOTAL	400	268	67.0	12	4.5	101	37.7	120	44.8	35	13.1

After use of hormonal treatments, from lot 1, 141 gilts (70.5 %) were in heat and from lot 2, 127 gilts (63.5 %) were in heat.

From this 268 gilts, 12 gilts (4.5 %) showed signs of estrus during the first 48 hours, 101 gilts (37.7 %) between 48-72 hours, 120 gilts (44.8 %) between 72-96 hours and 35 (13.1 %) between 96-120 hours.

Using hormonal treatment, the gilts found in heat were bred via artificial insemination and were observed for another 3 weeks if they came back in heat. Also, at 28 and 56 days after breeding we have performed the pregnancy check to determine the gestation rates obtained (table 2).

At 28 days after breeding we have diagnosed pregnant 92 gilts (65.2 %) from lot 1 and 81 gilts (63.8 %) from lot 2.

At 56 days after breeding we have diagnosed pregnant 78 gilts (55.3 %) from lot 1 and 64 gilts (50.4 %) from lot 2.

Table 2

Gestation rates obtained at the gilts synchronized with PG 600

Specification	Gilts bred (n)	Pregnancy check at 28 days		Pregnancy check at 56 days	
		n	%	n	%
Lot 1	141	92	65.2	78	55.3
Lot 2	127	81	63.8	64	50.4
TOTAL	268	173	64.6	142	53.0

Conclusion

After hormonal treatments for estrus induction and synchronizing with PG 600, 63.5-70.5 % from the gilts were in heat.

From 268 gilts, 4.5 % have shown signs of estrus during the first 48 hours, 37.7 % between 48-72 hours, 44.8 % between 72-96 hours and 13.1 % between 96-120 hours.

After the pregnancy check performed at 28 days, the average gestation rates of the synchronized gilts were 64.6 %.

After the pregnancy check performed at 56 days, the average gestation rates of the synchronized gilts were 53.0 %.

Bibliography

1. <http://www.thepigsite.com/focus/intervet/3134/porcilis-pg600-from-intervet>
2. <http://www.octagon-services.co.uk/articles/reproduction.pdf>
3. <http://www.uky.edu/Ag/AnimalSciences/pubs/asc152.pdf>
4. <http://mark.asci.ncsu.edu/HealthyHogs/book1994/morrow2.htm>

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Obiectivul lucrării a fost acela de a dirija funcția de reproducere la scrofițe, prin metode hormonale, cu scopul inducerii estrului la scrofițele aciclice și la cele cu pubertate întârziată și grupării într-un interval cât mai scurt a însămânțării și implicit a fătării. Scrofițele care au făcut obiectul experimentului au fost distribuite în două loturi de mărime egală, fiind supuse tratamentului cu PG 600 (400 UI PMSG și 200 UI hCG) în vederea inducerii estrului în două săptămâni consecutive. S-a urmărit procentul de scrofițe care au manifestat calduri, intervalul de timp în care s-a constatat apariția estrului, precum și rata gestației obținută în urma controlului de gestație efectuat la 28, respectiv 56 de zile. Procentul de scrofițe care au manifestat estru după administrarea PG 600 a fost de 67%. Majoritatea femelelor (44,8%) au manifestat calduri în intervalul 72-96 de ore de la administrarea PG 600. Rata gestației după controlul de la 28 de zile a fost, în medie, de 64,6%, iar după controlul de la 56 de zile, 53,0%.

Cuvinte cheie: scrofițe, PG 600, estru, rata de gestație,