

Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 10 *Swine Day (1968-2014)*

Article 62

1968

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Recommended Citation

Kiracofe, G; Koch, B A.; and Hines, Robert H. (1968) "Estrus synchronization in swine: trials with Aimax (I.C.I. 33,838)," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 10. <https://doi.org/10.4148/2378-5977.3482>

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Estrus Synchronization in Swine:
Trials With Aimax (I.C.I. 33,838)

Guy Kiracofe, Robert Hines, and Berl Koch

Several methods of synchronizing estrus have been tried in swine. One of the oldest and most commonly used natural methods is weaning pigs from a group of sows simultaneously. When this is done, the majority of sows will show estrus 3 to 7 days later if the sows have been nursed for at least 3 weeks. This method is effective and highly fertile; however, in some cases it is not practical to breed at this time and a natural method of synchronization in gilts is not available.

Progesterone and several "progesterone like" compounds that are effective in synchronizing estrus in ruminants have been tested in swine. They will effectively synchronize estrus but a large percentage of females will also have detrimental side effects such as cystic ovarian follicles which will drastically lower fertility. Synchronization of estrus with these compounds has been virtually abandoned.

In 1961 Imperial Chemical Industries of England produced a compound (I.C.I. 33,828) which appeared to be effective in inhibiting ovulation and estrus in simple stomach animals. By inhibiting ovulation and estrus, synchronization of estrus can be accomplished. This compound is distributed in the United States by Ayerst Laboratories under the trade name "Aimax". Aimax has been approved only as an experimental drug in the United States and cannot be sold until it has approval of the Food and Drug Administration. It can, however, be used for experimentation if the experiment is done under proper supervision and certain requirements are met.

Aimax has been tested in many controlled experiments as well as numerous field trials for its desirability as an estrus synchronizer in swine.

The following tests were conducted at Kansas State University.

Experimental Procedure:

Trial 1. Twelve Duroc gilts were fed 125 mg. Aimax per head daily in four pounds of feed for 20 days. Feeding of Aimax was started irrespective to the stage of the estrous cycle. The average age of gilts was 238 days at the beginning of experimental feeding. Gilts were observed for estrus twice daily following removal of Aimax from the feed and gilts in estrus were bred naturally. The same meal ration minus the Aimax was fed from removal of Aimax until

the gilts were slaughtered 25 to 30 days following mating. The number of embryos and corpora lutea were counted after slaughter. The number of corpora lutea present on the ovaries was used as an indication of the number of ova ovulated.

Trial 2. This trial was conducted similar to trial 1 except 12 crossbred gilts were fed 100 mg. Aimax per head daily. All gilts were bred naturally twice (12 hour interval) when found in estrus. Gilts were slaughtered 38 days following Aimax withdrawal.

Results and Discussion:

These data (Tables 1 and 2) indicate that Aimax is capable of suppressing estrus when fed at the rate of 100-125 mg. per head daily since no gilts were observed in heat while on treatment. This is consistent with many other reports. Eighty-three percent of the gilts (20 of 24) returned to estrus 7 to 11 days after removal of Aimax from the feed. This interval is slightly longer than in the majority of work reported. Eighty-eight percent of over 500 gilts were found in estrus on days 5, 6, and 7 after drug withdrawal in studies conducted by the U.S.D.A. It has been suggested that the amount of drug fed as well as the energy level of the ration it is mixed with might affect the interval from drug withdrawal to estrus.

In the present study, as well as others, there was no significant difference between non-treated and Aimax treated gilts in ovulation rate, conception rate, or embryo survival. Aimax does depress appetite and increase thirst; therefore, it is essential to supply plenty of water for gilts getting Aimax.

Summary:

Aimax was effective in synchronizing estrus in Duroc and crossbred gilts. Eighty-three percent (20 of 24) gilts returned to estrus 7 to 11 days following drug withdrawal. Conception rate of the gilts showing estrus during this period was 95 percent (19 of 20). One gilt did not show estrus after treatment and was not pregnant at slaughter while the remaining three exhibited estrus on days 5, 15, and 17 and were pregnant at slaughter 21 to 33 days after mating. Conception rate, number of ovulations and number of live embryos present at slaughter was not different than expected values in untreated gilts.

The authors wish to express appreciation to Ayerst Co., NY, NY, for supplying the Aimax (I.C.I. 33,828) used in this study.

TABLE 1. (Trial 1)
EFFECT OF AIMAX (125 mg. per head daily) ON
SYNCHRONIZATION OF ESTRUS AND FERTILITY IN DUROC GILTS

<u>Gilt No.</u>	<u>Beginning Wt.</u>	<u>Final Wt.</u>	<u>No. CL</u>	<u>No. Normal Embryos</u>	<u>Days to Estrus After ICI</u>	<u>No. Times Bred</u>
1	298	332	11	10	9	1
2	266	303	12	12	11	1
3	309	339	12	11	10	1
4	279	320	12	12	7	2
5	297	339	10	9	8	2
6	265	304	15	14	11	1
7	304	333	14	11	11	2
8	255	291	10	10	11	2
9	260	302	15	11	11	2
10	264	296	14	10	7	2
11	256	297	15	11	11	2
12	330	362	15	13	10	1
Total	3383	3818	155	134	--	--
Average	281.9	318.2	12.92	11.17	9.75	--

TABLE 2. (Trial 2)
EFFECT OF AIMAX (100 MG. PER HEAD DAILY) ON SYNCHRONIZATION
OF ESTRUS AND FERTILITY IN CROSSBRED GILTS

<u>Gilt No.</u>	<u>Beginning Wt.</u>	<u>Final Wt.</u>	<u>No. CL</u>	<u>No. Normal Embryos</u>	<u>Days to Estrus After ICI</u>	<u>No. Times Bred</u>
1	280	328	9	6	5	2
2	271	304	18	0	9	2
3	260	299	10	10	8	2
4	265	304	11	9	9	2
5	275	300	9	6	9	2
6	281	328	11	9	9	2
7	277	328	13	10	17	2
8	280	321	10	9	10	2
9	295	343	13	11	15	2
10	290	326	16	15	10	2
11	310	351	16	0	No Estrus	0
12	300	342	13	13	11	2
* Total	2803	3219	115	98		
* Average	280	322	11.5	9.8		

* Totals and averages are based on the 10 pregnant gilts at slaughter.