

IDENTIFICATION OF THE OPTIMUM TIME FOR SERVICE - A REVIEW

OF RESULTS WITH THE WALSMETA
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The most important factor affecting the efficiency and profitability of pig production is the accurate timing of insemination in the breeding herd. Low conception rates and litter sizes result from pigs inseminated during the 'incorrect' period of oestrus in relation to ovulation. The average time at which ovulation takes place is between 38 and 42 hours after the onset of oestrus (Du Mesnil du Buisson, Mauleon, Locatelli and Mariana, 1970) with highest fertility achieved for matings carried out approximately 12 hours prior to ovulation (Dziuk, 1970). The back pressure test in the presence of a boar is generally used to indicate oestrus but does not indicate the time of onset or the stage of oestrus.

Work by several authors (e.g Cerne, 1968; Babicheva and Mozgov, 1973) suggested that there was a relationship between the electrical conductivity of the vaginal mucosa and the stage of oestrus. Subsequently, an instrument - the Walsmeta - was developed and a standardised scale determined in relation to the oestrus cycle and ovulation. The accuracy of this scale was confirmed by Pinkert (1977) who observed sow oestrus cycles from day 6-26 (day 21, day of ovulation). The day 21 mean Walsmeta reading was significantly ($P < 0.05$) higher than all other daily mean readings. Day 22 was significantly ($P < 0.05$) higher than day 6-20 and 24-26. Day 20 was not significantly different from day 23 but significantly higher than day 6-19 and 24-26.

There are two published accounts comparing females inseminated following Walsmeta readings with a control group where the Walsmeta was not used. Johnson, Aalbers and Arts (1979) using 164 gilts reported a trial where both fresh and frozen semen were used. Gilts were either inseminated at 32-34 hours after first detection of oestrus (checked twice daily) or at the first Walsmeta reading between 54 and 64 - Pinkert (1977) reported that the highest conception rate was found in females with readings within the range 51 to 68 - obtained beginning 24 hours after oestrus onset. There were no apparent significant differences between the two treatment groups for either fresh or frozen semen.

English, Smith and Maclean (1977) reported the work of Bridgeford where sows were either single served, the timing being dictated by Walsmeta reading, or double served on consecutive days where no Walsmeta was used. All matings were by natural service. The comparative results are shown below:

	Double Service	Single service plus Walsmeta
No. sows	183	174
Conception Rate %	88.5	93.1
Litter Size	10.9	11.6

Two fields trials have confirmed these results. The first took place in a commercial unit over a sixteen week period using double service with boars in both treatment groups, with sows allocated according to parity. Results for the two groups were:

	Double Service	Double Service plus Walsmeta
No. Sows	151	43
Farrowing rate %	78.8 b	97.7 c
Litter size - born	12.0	12.5
Litter size - born alive	10.8	11.1

The second trial took place in a 300 sow herd using natural service weaning at 3 weeks where Walsmeta readings were routinely taken every morning on all sows except a small control group. A further comparison was also made between sows served once or twice. Results for the three groups of sows were:

	Walsmeta + Single	Walsmeta + Double	No Walsmeta + Double
No. Sows	223	381	160
Farrowing rate %	90.1 a	91.9 b	83.1 c
Litter size - born	11.2	11.0	10.8

a vs c $P < 0.05$ a vs b NS
b vs c $P < 0.01$

Not only do most of the presented results suggest that the Walsmeta will increase breeding herd performance, but the instrument has the capacity to aid in establishing the standard oestrus patterns within individual herds. The actual operation is simple and, on the basis of most results, highly cost effective.

Selected references: Babicheva, L.Y and Mozgov, G.M: Anim. Br. Abstr. 1973, 41: 196; Cerne, F: Cong. Int. Reprod. Anim. Insem. Art. 1968, 1:745; Du Mesnil du Buisson, F., Mauleon, P., Locatelli, A and Mariana, J.C: Colloq. Ste. Nle. etude Steril. Fertil. 1970. p.225. Paris; Dziuk, P.J: J Reprod. Fert. 1970, 22: 277; English, P.R., Smith, W.J and Maclean, A: The Sow - Improving her efficiency. 1977, Farming Press, Ipswich, U.K; Johnson, L.A., Aalbers, J.G and Arts, J.A.M: J Anim. Sci, 1977, Supplement, p.307; Pinkert, C.A. M.Sc. Thesis, 1977, Southern Illinois University.