

# Right Horn-Left Horn Pregnancy Diagnosis as a Means of Evaluating A.I. Technique

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"Open, WHY? You said two months ago that she was okay to breed." How many times have you been asked this question while you are 'in up to your shoulder' in a cow and have just announced to the farmer standing nearby that cow #1645 is open? At this point we have to ask ourselves if we are looking at a cow problem, a physical problem, an infectious disease, nutritional disease, heat detection management, etc.

In a study conducted in Washington state involving 2,800 first-service inseminations of four large Holstein dairies, it was reported that the two largest reasons for nonconception to first-service were 1) variability between inseminators and 2) variability between bulls (1981 Theriogenology Meeting: Senger, Hillers and Darlington).

Within a particular dairy, variation between and among bulls can be evaluated using conception data provided by A.I. studs with the herds' DHIA records. So, we are left with a need to evaluate the inseminator/technician on an on-going-basis. Every inseminator on the farm should be evaluated whether it be a herdsman, owner, or professional inseminator.

Semen handling needs to be observed and evaluated to be sure it is done by the recommended methods.

Insemination technique needs to be evaluated. This has been done for many years by using dye in straws and having the technician inseminate a track on the table to check where the dye was deposited or by inseminating live cows at a cooperating slaughter house.

Misplacement of semen is accomplished in one of three ways: 1) going into the horn too far with the insemination device and depositing the semen, 2) locating the gun in the correct spot but blocking off one horn so that semen cannot enter into it, or 3) pulling back on the inseminating device during deposition, such that a majority of the semen is in the posterior cervix and/or vagina.

TABLE 1. Site of Deposition of Technicians with Lower Than Average Breeding Efficiency.

Site of Dye	Percent
Body of Uterus	29.7
Right Horn	42.4
Left Horn	4.4
Anterior Cervix	13.3
Posterior Cervix	7.0
Anterior Vagina	3.2

Graham, E.F., Proc. 1st NAAB Tech. Conf., 1966

Presented at the AABP District 11 Meeting, Sept. 1983.

New techniques for evaluating inseminator ability and location of semen deposition have been introduced. Dr. Phil Senger at Pennsylvania State University has developed a technique to evaluate semen deposition by radiographic technique (Ref. Journal of Animal Science: Vol. 57, Suppl. 1, pg. 365), and Clifton E. Marshall, reproduction specialist, Select Sires, Inc., Plain City, Ohio, presented an idea for evaluation of breeding technique by determination of the horn of pregnancy at the Dairy Cattle Reproduction Workshop in Louisville, Kentucky, April 13-15, 1982.

Normal ratio of ovulation is 40% (45%) from the left and 60% (55%) from the right horn. Since the migration of the embryo is rare in the cow, the pregnancy ratio in the two uterine horns should be the same (40 L - 60 R). Right horn deposition is common among inseminators with their left arm in the cow (the reverse is also true).

Table II gives the expected rate of pregnancy with 70% optimum and the amount of deviation from maximum people with either the left or right arm in the cow should expect to achieve with varying percentages of correct semen deposition.

TABLE 2. Comparison Between Correct Deposition Percentage and Expected Deviation From Optimal Pregnancy Percentages.\*

	ARM IN COW			
	LEFT		RIGHT	
Correct Deposition Percentage %	Preg. %	Percentage Point Deviation From Optimum (%)	Preg. %	Percentage Point Deviation From Optimum (%)
100	70.0	0	70.0	0
90	67.7	-2.8	65.0	-4.2
80	64.4	-5.6	61.6	-8.4
70	61.6	-8.4	57.4	-12.6
60	58.8	-11.2	53.2	-16.8
50	56.0	-14.0	49.0	-21.0
40	53.2	-16.8	44.8	-25.2
30	50.4	-19.6	40.6	-29.4
20	47.6	-22.4	36.4	-33.6
10	44.8	-25.2	32.2	-37.8
0	42.0	-28.0	28.0	-42.0

\* Slightly different rates would be calculated if an optimum rate other than 70% is considered. Clifton E. Marshall, 1982.

A veterinarian, when palpating pregnancies in a herd, should be able to determine the side of pregnancy. Using the left vs right ratio on over 100 observations, a fair assessment can be made of (1) where the semen is being deposited, (2) the percentages of correct depositions (3) the expected deviation from normal and the expected pregnancy percentage (if 70% would have been normal with a 40% L-60% R ratio).

TABLE 3. Comparison Between Pregnancy Site Ratio and Correct Semen Deposition Percentage.

Ratio of Percentages of Sides of Pregnancy	Correct Deposition Percentage (%)	Expected Pregnancy Percentage (%)	Expected Deviation (%) from Optimal (70 Percent)
0 L—100 R	0	42	—28
10 L— 90 R	25	49	—21
20 L— 80 R	50	56	—14
30 L— 70 R	75	63	— 7
40 L— 60 R	100	70	— 0
50 L— 50 R	83	63	— 7
60 L— 40 R	67	56	—14
70 L— 30 R	50	29	—21
80 L— 20 R	33	42	—28
90 L— 10 R	17	35	—35
100 L— 0 R	0	28	—42

Clifton E. Marshall, 1982.

If much of a deviation (greater than 10% with 100 observations) from what is optimal (40 L - 60 R) exists, the inseminator has the opportunity to evaluate his insemination technique and correct some bad habits.

The use of this technique is valid if three things are assumed: 1) The veterinarian can distinguish between pregnancy in the left and right uterine horns. 2) The inseminator is consistent in the site of misplacement. 3) Sufficient semen for fertilization cannot flow from one uterine horn to the other.

Table IV is the data of a 2,000 cow dairy herd for a period of time. There were three herdsmen and cleanup bulls. Pregnancy diagnosing was done once a month with the determination of horn pregnancy. Conception rates for each herdsman and the right horn-left horn ratios were calculated. There are no virgin heifers in this data.

Bill and Dave consistently had between 55-65% conception, whereas, Shane's conceptions varied from 40-60%. The data shows that Shane was having a problem with target. Bill and Dave were also breeding both horns on every first service.

TABLE 4.

	Pregnancies	Right	Percent	Left	Percent
(Bull)	493	272	53%	221	47%
(Dave)	259	145	56%	114	44%
(Shane)	439	280	64%	159	36%
(Bulls)	321	172	54%	149	46%
TOTALS	1,512	869	57%	643	43%

### Conclusions and Observations

- A. The A.I. technician is one of the most critical elements in our breeding program.
- B. Determining the horn of pregnancy is an aid in determining errors in inseminating 'off target' or blocking one horn by the way the uterus is held during semen deposition.
- C. Most individuals that have right horn-left horn pregnancy ratios equal to that of natural service are breeding in both horns. No injuries have been palpated in over 30,000 cows examined. Some individuals have increased from 40 to 60 percent conception by breeding both horns.
- D. Large numbers are needed to make an evaluation, but even with small numbers, if large percents are in one horn or the other and the conception is poor...think TARGET.