Interpretation of Reproductive Records
Part II
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Reproductive Efficiency and Management

• Identify the critical weaknesses and prioritize them
• Use the knowledge to develop management practices and implement changes to achieve your goals
• Goals should be -------------------------------------------

Herd Summary Data

• Provide a useful “shorthand” summary of reproductive performance.
• Indicate if there are potential problems
• It can serve as a tool for trouble shooting
• All the records are rolling averages!
DHI RECORD

- Reproductive Cull Rate
- % Heat Detection
- Average Days to First Breeding
- First Service Conception Rate
- Overall Conception rate
- Breeding Per Conception
- Days Open
- Calving Interval

Pregnancy Rate ?

EXAMPLE

Average days to 1st breeding = 70 days
Average days open = 154 days
Services per conception = 3
154 – 70 = 84 days
80 days / 21 = comprises 4 cycles

If all heats had been detected we should have had total of 5 services

That tells us only half of the services are detected

Herd Summary Data (Drawbacks)

1) Lag Time: caused change does not appear in the average right away

Example: delays in breeding heifers will not affect the average age at first calving until heifers begin freshening 9 mo. Later

2) Momentum:
- Problems with avg. of records spanning a long period of time

Example: Rolling herd average calculates last 12 mo., but makes it a poor indicator of current milk production
3) Bias:
   - Average favors a particular outcome

   Example: services per conception take to account services for pregnant animals and not the services of open cows

4) Variation:
   - Is the calculated average based on normal distribution or skewed distribution?

   Example: Average days open, Do not breed (DNB)

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% Heat Detection =

\[
\frac{(\text{Services per conception} \times 21)}{(\text{Days Open} - \text{VWP}) + 11} \times 100
\]

- All heats resulted in a service
- All services occurred on a heat

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% Heat Detected Post-1st service

\[
\frac{(\text{Services per conception} \times 21)}{(\text{Days Open} - \text{day to first service})} \times 100 = \% \text{ Heat Detected Post-1st service}
\]
**Snap Shot**

Breed 15 cows

Preg check = 6 cows Pregnant

\[ \frac{6}{15} = 40\% \text{ Conception} \]

Services / Conception => \[ \frac{15}{6} = 2.5 \]

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**How to Calculate Conception Percentage**

Conception is directly related to the number of services per conception (also called services per pregnancy)

\[
\text{Conception } \% = \frac{\# \text{ cows pregnant}}{\# \text{ cows inseminated}}
\]

Estim. Concep. = \[ \frac{100}{\text{services per conception}} \]

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**How to Calculate Pregnancy Rate (Independent from Time Unit)**

Pregnancy Rate = Heat detection \( \% \) \times Conception \( \% \)

Pregnancy Rate
(Based on Time Unit)

More realistic and measurable

Pregnancy rate may be defined as the percentage of cows eligible to become pregnant within a given interval (21 days, the typical length of an estrous cycle, or 7 days, the length of a week), that actually do become pregnant.
Heat detection rate = 3221 \\
Prog Rate =940 

**BREDSUM FOR LACT>0**

**Days to First Service**
*(Days in milk at first service)*

- Excellent indicator of management of the herd through the dry period, calving, and early lactation.
- Directly related to pre-service heat detection efficiency
- Average days to first service should be within 11 days and not more than 21 days of the end of the voluntary waiting period.
Some additional Goals

- Present of cow pregnant at any given time
  - 53% to 55%*
- Present of cows open by 150 DIM
  - 15%

* Unless calving is seasonal, like in New Zealand

In evaluating the success (or failure) of a new reproductive management program recognize that:

I. Traditional parameters such as average days open and calving interval while they are useful, they are not very sensitive to management changes.

II. Pregnancy rate based on time interval (e.g. 21-day) is sensitive to change.

III. Pregnancy rate allows for the evaluation of recent events or management changes on reproductive efficiency.

IV. Achievable pregnancy rate should be about 25% and higher.