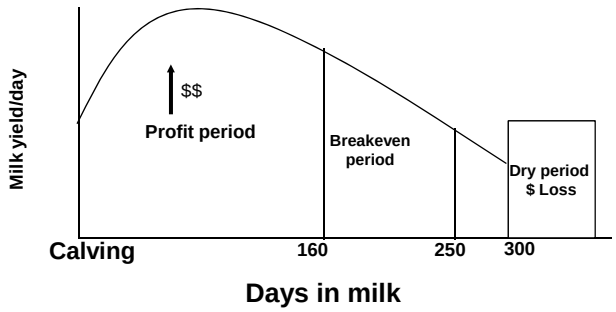
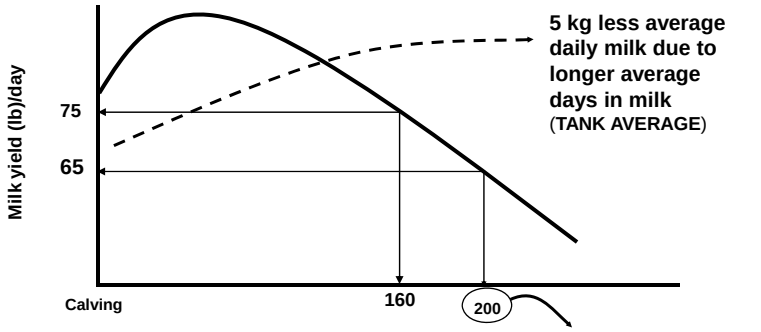
Reproductive Efficiency and Management in Cattle

Part #1

Amin Ahmadzadeh
Animal and Veterinary Science Department
University of Idaho

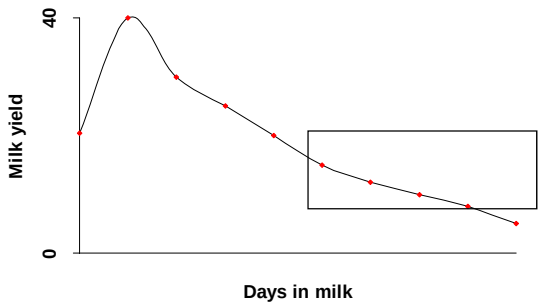
How Does Poor Reproductive Efficiency Affect Dairy Farm Operating Income?

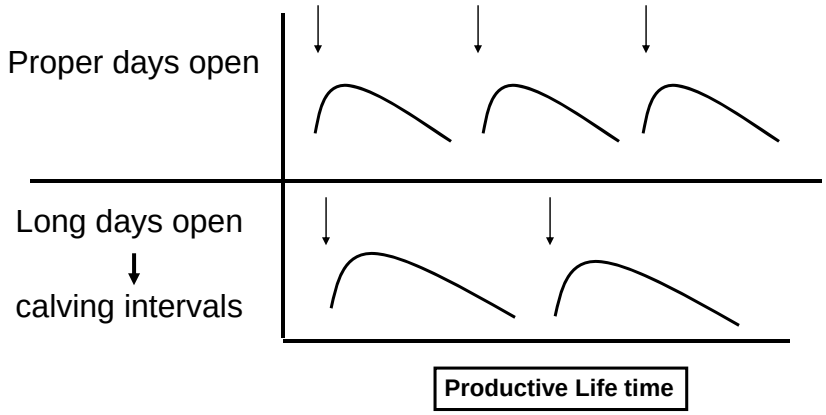




How Does Poor Reproductive Efficiency Affect Dairy Farm Operating Income?

- Long days open and and long calving intervals:
  - Less milk is shipped and thus, cash flow is reduced





Cost of Poor Reproductive Management

- Every undetected cost approximately $60
- Every day a cow remains open past 100 DIM (postpartum):

Cost = ~ $ ----------

Table 2. Change in daily milk yield, days in milk, 305-day ME milk, and reproductive performance for Holstein herds – stratified by calving interval[1]

	Calving Interval (months)					
Item	<13	13 to 13.9	14 to 14.9	15 to 15.9	16 to 16.9	>16.9
Number of herds	129	1,416	1,856	919	290	161
Average herd size	83	159	160	157	125	165
Daily milk yield (lbs.)	66.5	67.1	64.2	60.3	57.3	53.5
Days in milk	156	178	197	216	236	262
Voluntary waiting period (days)	56	57	56	57	56	55
Days to 1st service	74	82	93	105	120	140
Conception rate 1st service	47	41	40	40	42	47
% heat observed	53	50	44	38	33	26
Projected 305-day ME milk (lbs.)	22,751	23,652	23,264	22,404	21,592	20,791

1/ DairyMetrics reports, processed by Dairy Records Management Systems, Raleigh, N.C., were generated on Sept. 11, 2002, using current DHI information for Virginia Holstein herds that have a twice-daily milking schedule and 25% or less of the services were to non-AI sires.

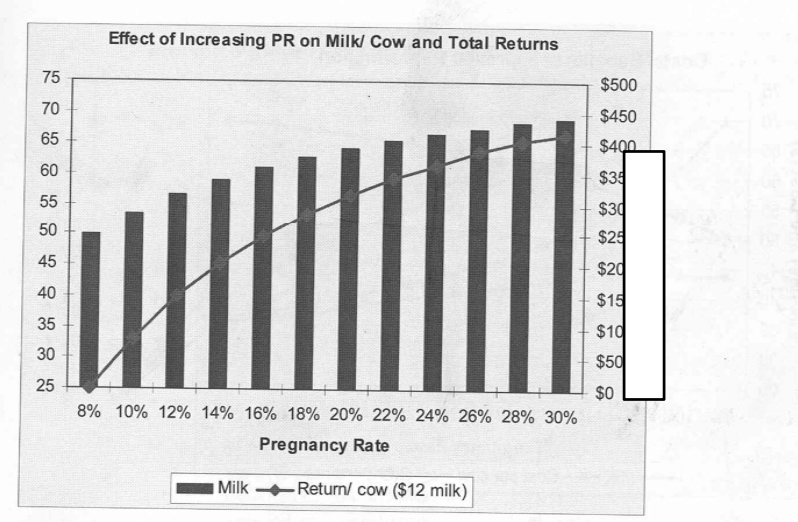


Figure 2. Predicted effect of increasing pregnancy rate on milk/ cow/ day and net marginal returns.

Every 1% increase in PR = $.....

Dr. Overton, Univ. of Georgia

Reproductive Efficiency and Management in Cattle

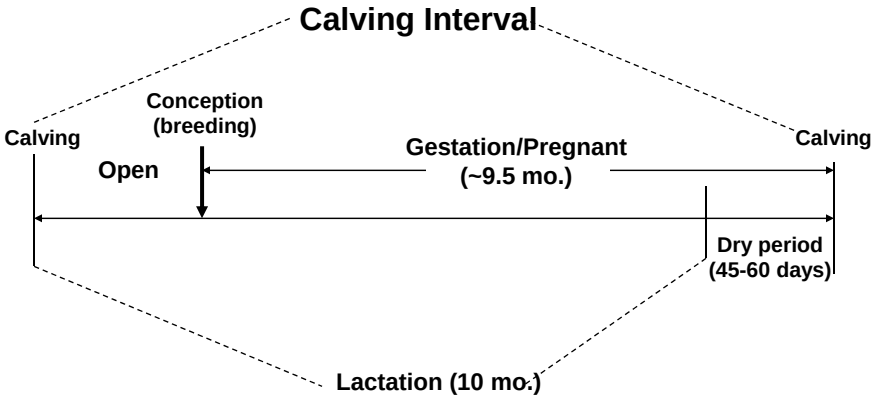
- **Understand anatomy and physiology of reproduction**
- **Know the hormones of reproduction, and understand their sources , targets, and their functions**
- **Know the reproductive cycle (estrous cycle, gestation, anestrous period, etc.) of the cow**
- **Comprehend ----------**

Reproductive Efficiency and Management

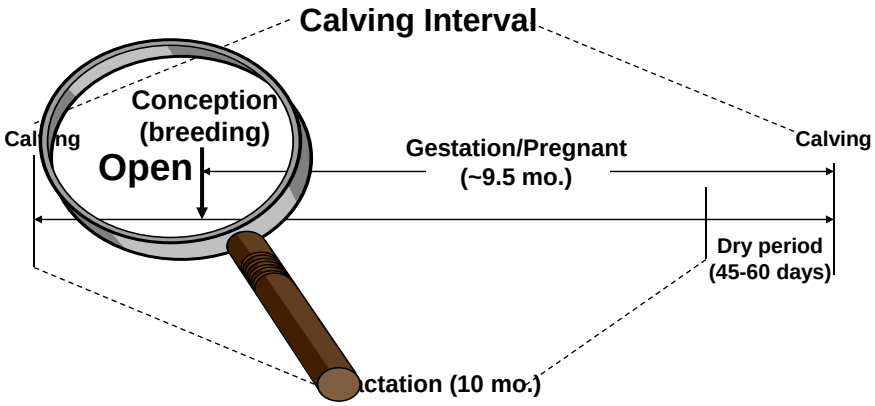
- **Recognize----------**

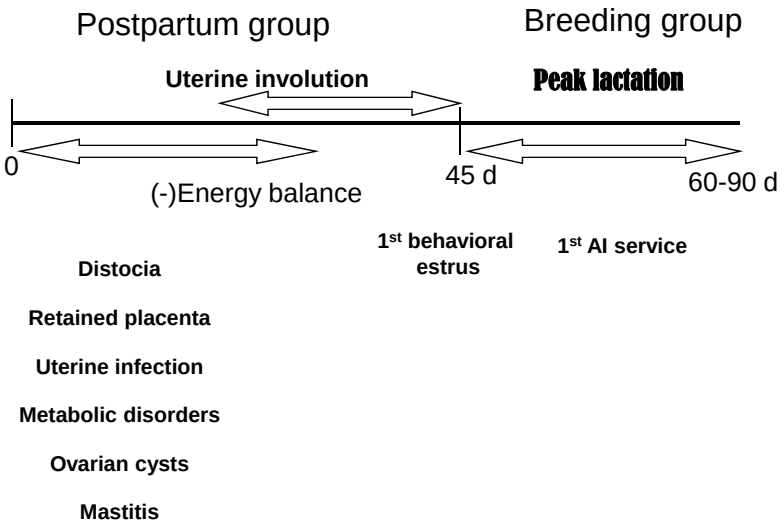
- **Keep complete and accurate reproduction records**
- **Identify the critical weaknesses and prioritize them**
- **Use the knowledge to develop management practices and implement changes to achieve your goals**
- **Goals should be----------**

Calving interval components

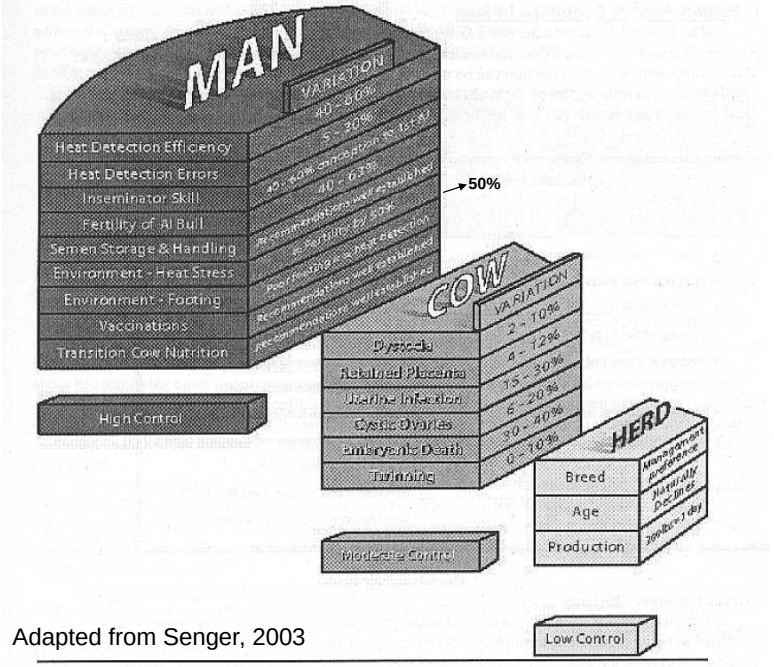


Calving interval components





Fertility factors organized according to who/what controls them



Adapted from Senger, 2003

Grouping cows for Efficient Management

- ***GROUP I :*** **Early postpartum cows (0-45 days postpartum)**
  - **0-10 days postpartum**
- ***GROUP II :*** **Postpartum breeding (45-120 days postpartum)**
  - **Reproductive management**
    - **Intense----------**
    - **Implementing systematic breeding program**
    - **Identify----------**
    - **Pregnancy checks**
  - **Nutritional management (Peak lactation)**
- ***GROUP III*****: Pregnant lactating cow (> 120 days postpartum)**
- ***GROUP IV*** **:Dry cows**

Reproductive Parameters

Pregnancy Rate

Days Open

Average Days to First Breeding

% Heat Detection

Reproductive Parameters

First Service Conception Rate

Overall Conception rate

Breeding Per Conception

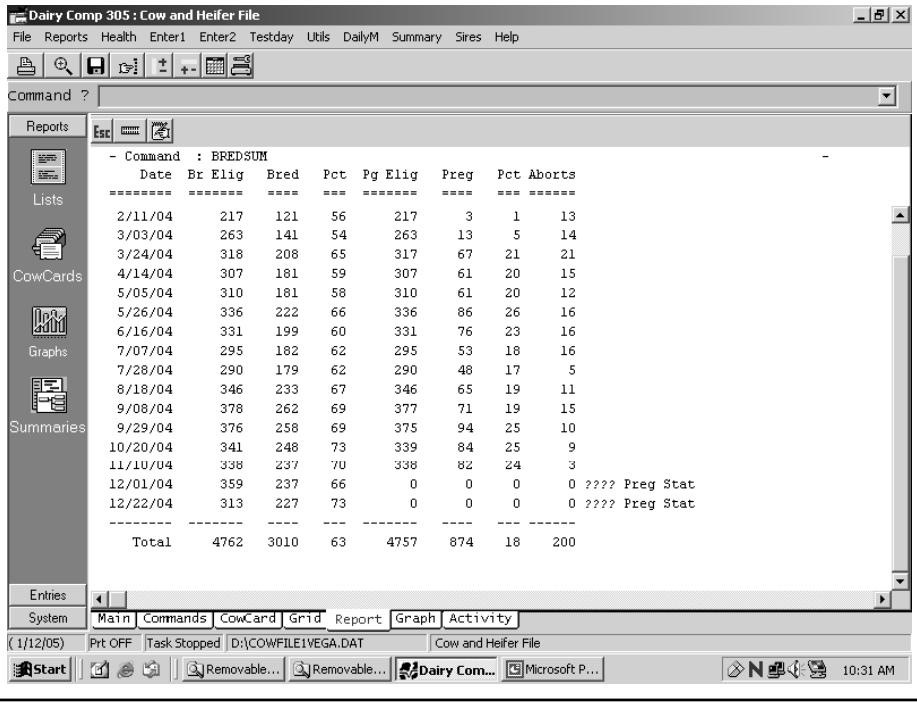
Calving Interval

Reproductive Cull Rate

Reproductive Performance Goals

	Ideal Goals	Realistic goals
Reproductive Cull Rate	**< 8 %**	------
% Heat Detection	**> 70**	>----
Average Days to First Breeding	**70 – 75 d**	---- days
First Service Conception Rate	**60%**	------%
Overall Conception rate	**50-55%**	-------%
Breeding Per Conception	**< 2**	-------
Days Open	**110**	------ days
Calving Interval	**13 months**	13.5 Months
Pregnancy rate	**> 25%**	24 %

Pregnancy rate = Heat detection X----------



Maintaining Pregnancy rate (Practical approach)

1000 cows

We need 1000 pregnancy

Calving Interval Goal = 13 month

1000 / 13 or calving interval = ~ --------- preg./mo

1000 / 56 weeks = ~ 18 pregnant / week

Take Home Message

- **Reproductive problems are seldom due to a single cause**
- **Pay extra attention to the cows----------**

- **Overall health is important, sick cows don't do well reproductively**

Take Home Message

- The effects of disorders on reproductive performance, culling, and profit are more severe in older cows.
- Cows with mastitis and those that have calving difficulties and treated for retained placenta are at risk to have other problems (ovarian cysts, uterine infections, etc.) and require more attention.
- Good sanitation and vaccination program can prevent many reproductive disorders