Reproductive Management in Dairy Cattle (Estrous Synchronization)

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Estrous Synchronization:

What are the advantages?

1. Allows an organized and efficient approach for AI
2. Synchronizes estrus and thus reduce time required for estrus detection
3. Improves record keeping and group cow management
Advantages of Estrous Synchronization (Cont.)

4. Labor saving tool for utilizing superior genetics, increase longevity and productivity of dairy cows

5. Better management tool for maintaining proper calving interval (12-13 month)

6. Facilitate adoption of artificial insemination

Economic Return and Profitability

Estrous synchronization: a reproductive mgt. tool

- Controls the timing of estrus or ovulation

mechanism:
- Altering the length of the estrous cycle and/or pattern of follicular growth
Key to Success of systematic program

• Incorporation efficient and accurate detection of estrus

• Timely AI relative to time ovulation

Prostaglandin: PGF2α

Regression of the CL and decrease in progesterone synthesis and secretion

• Lutalyse - Natural compound 25 mg dose I.M.

• Estrumate - Analogue 500 mg dose I.M.

• Prostomate - Analogue to Lutalyse
Mode of action for PGF₂α

- Regress active corpus luteum
- Regresses Day 5-17 corpus luteum

Response:
- estrus (heat): 2-5 days after injection
- heifers ~50 hours cows ~72 hours
  ~60-65% of herd should respond to injection

Gonadotropin Releasing Hormone (GnRH)

Ovulation and/or luteinization of the growing follicle

- Cystorelin - GnRH Analogue
- Factral - GnRH Analogue
- Fertagyl - GnRH Analogue
Control Intra-vaginal Drug Release (CIDR®)

- Known as EZ-Breed™
- Progesterone release device
- Controlling the estrus cycle by preventing cows coming to estrus.

OvSynch® or Timed Artificial Insemination

- GnRH 0
- PGF2α 7
- GnRH 9
- AI 8-18 hr later
Advantages:
- No need for heat detection
- Increased AI submission rate
  - OvSynch can be beneficial in Hot and humid condition where heat expression is usually low
- A tighter synchrony of ovulation

Disadvantages:
- Cost of Drugs
  - a reduced dose of GnRH can be as effective
- Labor cost for animal handling
- Less attention to herd and their estrous behavior**
- Low conception rate compared to other breeding program
Targeted Breeding™ Protocol

* In the absence of detected estrus, cows are inseminated at a fixed time after the third PGF injection

Advantages
- Less time spent on heat detection
- Less veterinary visit for pregnancy examination
- Providing some natural synchronization of follicular development
- A tighter estrus synchrony compared to single injection of PGF2α
Disadvantages:

- Cow handling and labor
- Heat from 2-5 days after the 2nd injection (wide spread)
- Low fertility rate for cows that are timed AI
- Need for heat detection

Modified Targeted Breeding™ Protocol

Day

0
14
21

Heat Check AI

Timed AI 72-80
**EZ-Breed (CIDR)**

<table>
<thead>
<tr>
<th>CIDR</th>
<th>PGF2α</th>
<th>Remove CIDR</th>
<th>3 days Estrus detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>7</td>
<td>Al at estrus</td>
</tr>
</tbody>
</table>

**Day**

- **Day 0**: CIDR inserted
- **Day 6**: PGF2α given
- **Day 7**: CIDR removed

**Advantage**: tight synchrony of estrus

**Disadvantage**: ????

Which method should I choose?
When Do We Start?

- Set up injection
- Initiation of the protocol
- 1st Breeding
- ~ 50 days in milk
- ~ 65 days, VWP
- ~ 75 days in milk

Completion of Breeding Protocol and AI

Check for return to heat

Day 18-23 Post-AI
## Reproductive Performance Goals Compared to Idaho

<table>
<thead>
<tr>
<th>Goals</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Reproductive Cull Rate</td>
<td>&lt; 8 %</td>
</tr>
<tr>
<td>% Heat Detection</td>
<td>&gt; 70</td>
</tr>
<tr>
<td>Average Days to First Breeding</td>
<td>70 - 75</td>
</tr>
<tr>
<td>First Service Conception Rate</td>
<td>60%</td>
</tr>
<tr>
<td>Overall Conception rate</td>
<td>50-55%</td>
</tr>
<tr>
<td>Breeding Per Conception</td>
<td>2.0</td>
</tr>
<tr>
<td>Days Open</td>
<td>&lt; 120</td>
</tr>
<tr>
<td>Calving Interval</td>
<td>13 months</td>
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### HAPPY A.I.