

**Reproductive Management:
How can I increase the
reproductive efficiency of my
cows?**

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efficiency of my cows?**

$$\text{Pregnancy rate} = \frac{\text{Heat detection rate}}{\text{AI risk}} \times \frac{\text{Conception rate}}{\text{Conception risk}}$$

**Pregnancy rate can decrease
due to problems with heat
detection efficiency,
conception, or both**

What Should we do ?
(Management Policy)



I) Heat Detection

II) Conception Rate

**III) Herd Health and Proper nutrition
management**

**IV) Recognize importance of early breeding
(reasonable VWP) and systematic
breeding program**

I) Recognizing Factors that Affect the Expression of Heat

- Cow's reproductive health
 - Uterine health, ovarian cysts, etc.
- Footing surface
 - Concrete vs. soil surface and pasture
- Number of animals in estrus at any given time
 - Cows during the luteal phase of the estrous cycle do not exhibit estrus

I. Heat Detection :Use heat detection aids

- ✓ Utilize visual observation, Tail chucking, HeatWatch, pedometers, or other aids
- ✓ Spend some time
 - Every 21 days a cow may stand to be mounted by a herdmate for only **15 to 23 seconds!**
- ✓ systematic breeding program
 - Ovsynch, Modified Targeted Breeding, or CIDR-prostaglandin synchronization programs
- ✓



Heat detection strategies

- Establish standard operating procedures
- Use records
- Allow for group interaction in an area with good footing
- Minimize sore feet
- Use aids and hormones wisely
- More observation periods are better
- Consider blood sampling to monitor heat detection accuracy

(Nebel, 2003)

Pregnancy rate = Heat detection rate X Conception rate

II. Factors Affecting Conception Rate

- A.I. expertise
 - ✓ Semen handling and quality
 - ✓ Semen handling, Site of semen deposition, time of insemination
- Heat detection accuracy
- Cow's fertility (Health, % anovular cows)
- Nutrition, Heat Stress

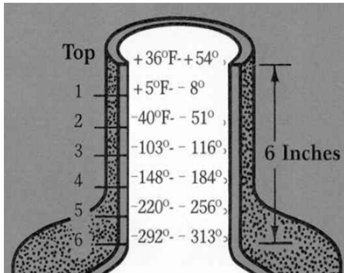
Every successful AI program begins with proper semen handling

- Time
- Temperature
- Hygiene
- Skill



(Courtesy of Rowley Breeding Service, All West/Select Sires)

Beware of temperature variation!



Sperm injury occurs at temperatures as low as -110 degrees F and injury to sperm cannot be corrected by returning semen to liquid nitrogen.

(Saacke, 1974)


Temperature and Hygiene



Change water in thaw baths daily.

(Courtesy of ABS Global)

What's wrong with this picture?



Winning reproductive strategies

How does deposition of semen into the cervix affect fertility?

- 10% decrease in fertility when compared to deposition in the uterine body.
- Cervical deposition of semen occurs in 20% of attempted uterine body depositions.

(MacPherson, 1968; Williams et al., 1988; Peters et al., 1984)

**Final thoughts:
Putting it all together**

- A successful AI program must include efficient and accurate heat detection and timely AI relative to ovulation.
- Appropriate semen storage, semen handling, and site of semen deposition are also critical factors.

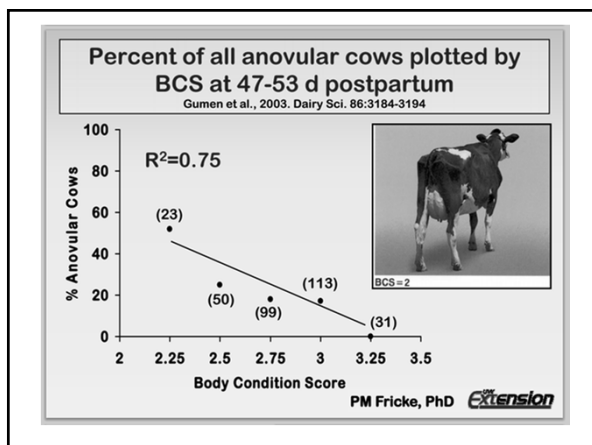
Effect of BCS on Fertility to Timed AI

Moreira et al., 2000; Theriogenology 53:1305

Conception rate (%) after first service timed AI

BCS Group	Conception rate (%)	
	27 d (n=207)	45 d (n=207)
Low (<2.5)	18.1 ^a	11.1 ^a
Control (≥2.5)	33.8 ^b	25.6 ^b

^{a,b}Within a column, proportions with different superscripts differ (P<0.02)



Body Condition Score Rules of Thumb

- Never let a cow go below a BCS of 2.0
 - For thin cows, reproduction and milk production may suffer from a lack of energy reserves
- Total loss should never exceed 1 BCS point
 - A decrease in BCS of more than 1 point resulted in a marked decrease in 1st service conception rate
- Never let a cow go above a BCS of 4.25
 - Obese cows are at a higher risk for metabolic problems, lameness, and will likely remain open for an extended period

PM Fricke, PhD *Extension*

IV. Increasing Heat Detection Efficiency

1. Detecting early heats (before 50 days postpartum)
2. Recognizing factors that affect the expression of heat
3. Use heat detection aids
4. Record all observed heats and use the records and monitor heat detection efficiency (use the records)

IV) Detecting early heats (before 50 days postpartum)

- Can tell us about cow reproductive health
 - cyclic or anestrus
- Can tell us about the status of fresh cow
 - Housing
 - Fresh cow problems (dystocia, retained placenta, metabolic disorders)
- Help managing and organizing breeding programs

General Comments

Diagnose pregnancy prior to 40 days after AI

Completion of Breeding Protocol and AI

Check for return to heat

Day 18-23 Post-AI
