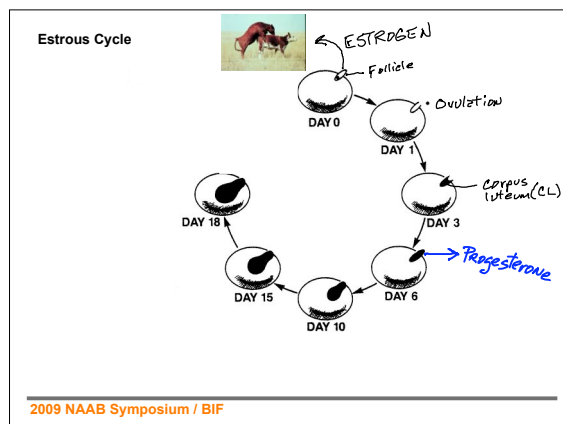
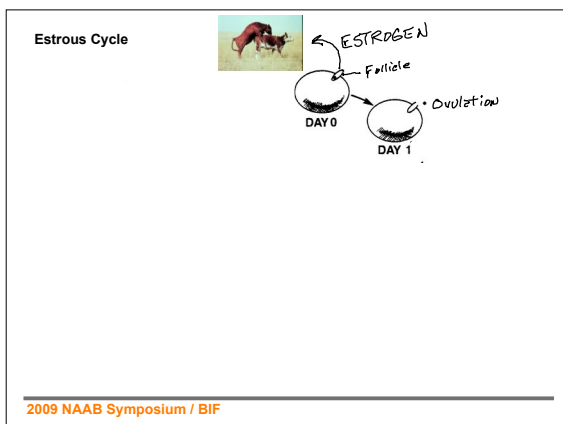
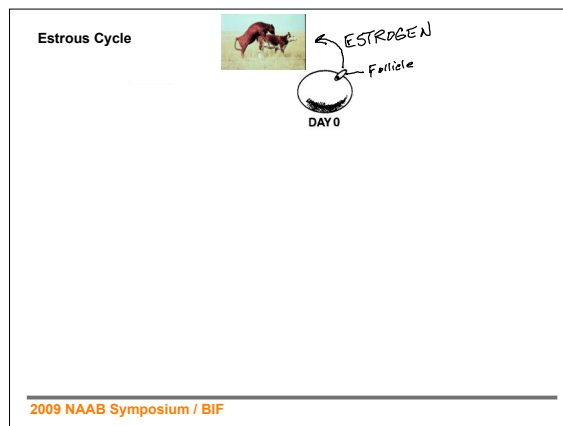
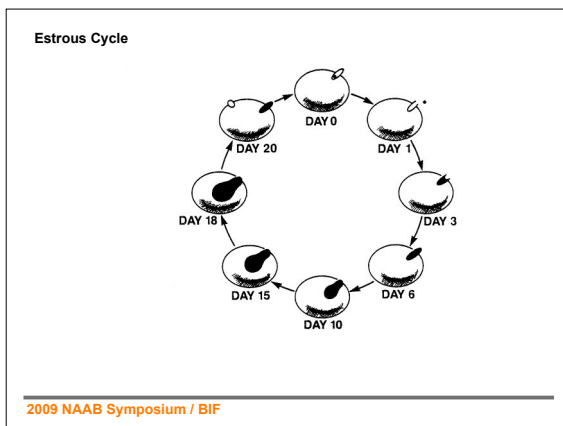
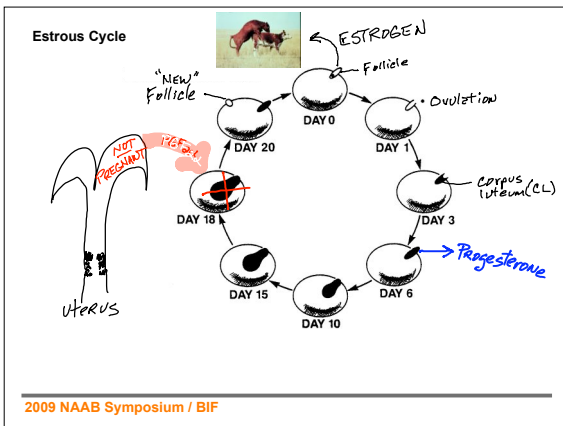
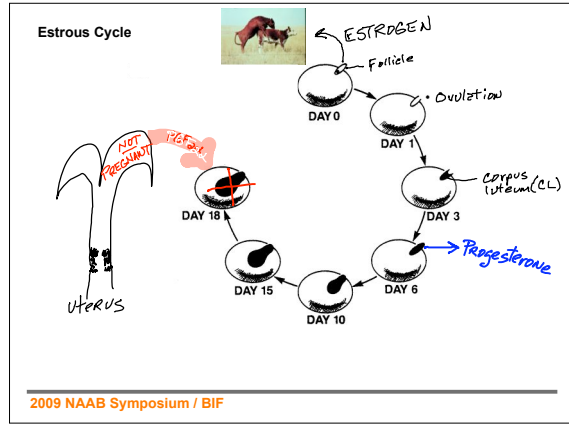
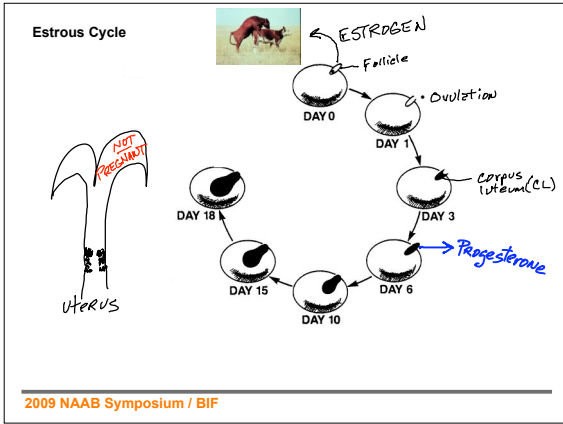


Understanding the Bovine Estrous Cycle & Fundamentals of AI

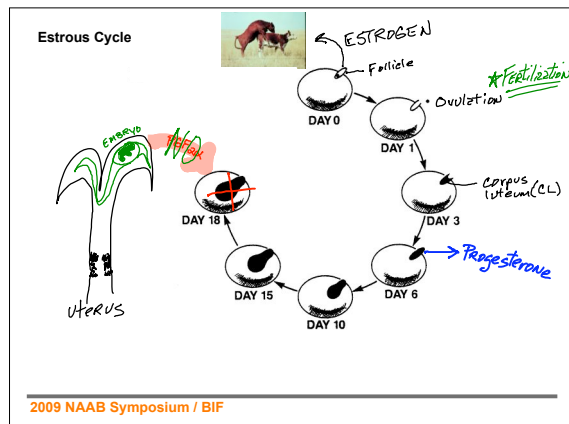
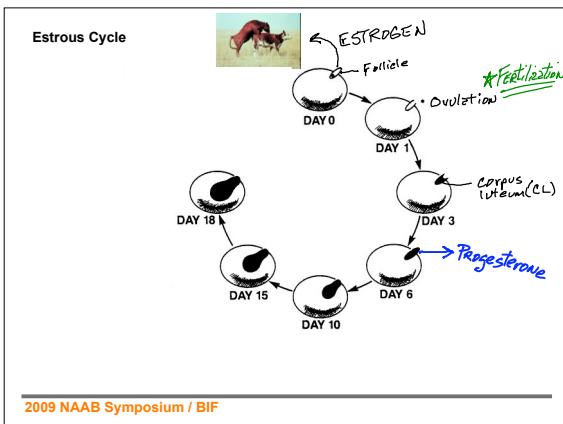
W. E. Beal
Department of Animal Science
Virginia Tech

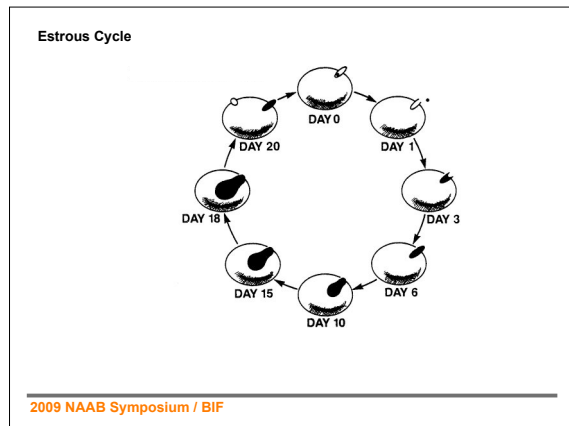
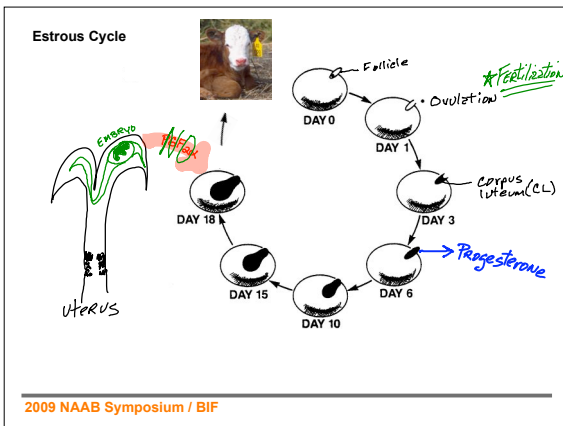
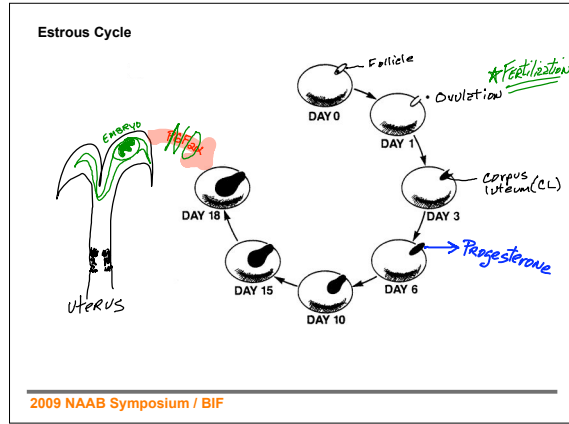
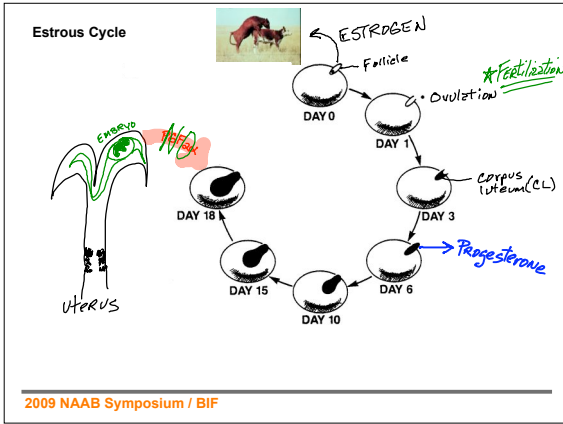
2009 NAAB Symposium / BIF





What if the cow becomes pregnant ??





Fundamentals of AI – timing of insemination

Why question the “AM – PM Rule” ??

Nebel et al. 1994 - Timing of Artificial Insemination of Dairy Cows: Fixed Time Once Daily Versus Morning and Afternoon

AI Program	Cows	90 -day Non-return rate
Once-daily AI	3659	58.4%
AM – PM rule	3581	57.8%

Larsen et al. 2006 - Synchronization of estrus in suckled beef cows for detected estrus and artificial insemination and timed artificial insemination using GnRH, PGF2 α and progesterone

Synch Program:	CIDR - control	CoSynch w/CIDR
AI Program:	Heat & TAI	TAI only
AI Preg Rate:	52.5% ^a	53.8% ^a

Fundamentals of AI – timing of insemination

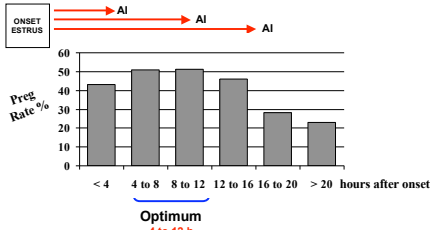
“CRITICAL PERIOD” – onset of estrus to ovulation

Dairy/ Beef	Duration of estrus (hr)	Total mounts during estrus	Interval from start of estrus to ovulation (hr)	Reference
Dairy				Walker et al. 1996
Dairy				Dransfield et al., 1998
Dairy				Roelofs et al., 2005
Beef				Stevenson et al., 1996
Beef				Rorie et al., 2002
Beef				White et al., 2002
Beef				Utt et al., 2003

^aNA – data not available for this endpoint

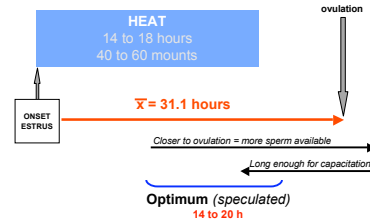
Fundamentals of AI – timing of insemination

Dransfield et al. 1998 - Timing of insemination for dairy cows identified in estrus by a radiotelemetric estrus detection system

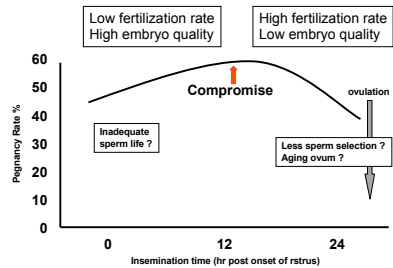


Fundamentals of AI – timing of insemination

White et al. 1998 - Seasonal effects on estrous behavior and time of ovulation in non-lactating beef cows



Fundamentals of AI – timing of insemination



Saacke 2008

Fundamentals of AI – timing of insemination

The “window of opportunity” for timing of AI may be longer than commonly believed.



Nonetheless, well-controlled studies using electronic devices to detect the exact time of the onset of estrus indicate the time-tested AM-PM rule, which assigns cattle to be bred 12 hr after detection of estrus, still represents the optimum timing for AI.

