



# SUCCESSFUL AI AND SYNCHRONIZATION SECRETS: IT'S IN THE DETAILS

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## Estrous Synchronization Protocols

MGA/PGF

Hybrid Synch

Two shot PGF

7-11 Synch

Select Synch

MGA Select

Hybrid Synch+CIDR

Ov-synch

Presynch

Resynch

One shot PGF

CO-synch

CIDR/PGF

CO-synch+CIDR

Heat Synch

## BEEF HEIFER PROTOCOLS - 2008

HEAT DETECTION

HEAT DETECT & TIME AI (TAI)

FIXED-TIME AI (TAI)\*

CO-Synch + CIDR\*

## BEEF COW PROTOCOLS - 2008

HEAT DETECTION

HEAT DETECT & TIME AI (TAI)

FIXED-TIME AI (TAI)\*

CO-Synch + CIDR\*

Beef Reproduction Tool Force

## Nutritional Effects on Reproduction

BCS 1

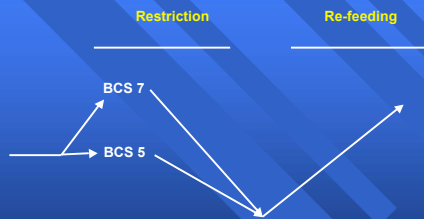
BCS 3

BCS 5

BCS 7

BCS 9

## Design



## BCS, Nutrition and Reproduction

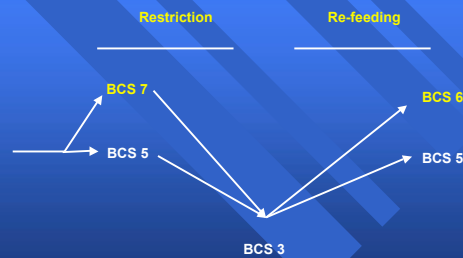
Item	Moderate	Fat
Initial BW, lb	936 <sup>a</sup>	1133 <sup>b</sup>
Initial BCS	5.0 <sup>a</sup>	7.1 <sup>b</sup>
Anestrus BW, lb	778	835
Anestrus BCS	3.1	3.3
Days to anestrus	66.5 <sup>a</sup>	155.9 <sup>b</sup>

<sup>a, b</sup> Means differ ( $P < 0.05$ ).

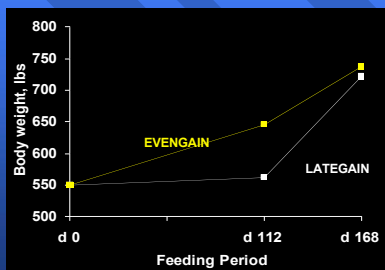
## BCS, Nutrition and Reproduction

Item	Moderate	Fat
BW at 1 <sup>st</sup> cycle, lb	1001 <sup>a</sup>	1128 <sup>b</sup>
BCS at 1 <sup>st</sup> cycle	5.2 <sup>a</sup>	6.0 <sup>b</sup>
Days to 1 <sup>st</sup> cycle	67.7	78.9

## Conclusions



## Effect of Timing of Gain on Reproductive Performance



(Lynch et al., 1997)

## Effect of Timing of Gain on Reproductive Performance

Item	EVENGAIN	LATEGAIN
Age at puberty, d	386	407
Weight at puberty, lbs	691	690



(Lynch et al., 1997)

### Effect of Timing of Gain on Reproductive Performance

Item	EVENGAIN	LATEGAIN
Pregnancy rates:		
First service, %	56.4	71.1
Overall, %	87.5	87.5
Age at Conception, d	438	437

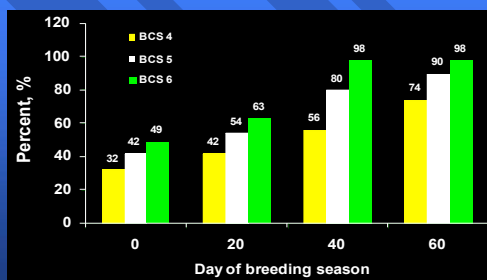
(Lynch et al., 1997)

### Influence of Body Condition on Return to Estrus

Body Condition Score	Postpartum Interval, days
3	88.5
4	69.7
5	59.4
6	51.7
7	30.6

(Houghton et al., 1990)

### Effect of BCS on Cyclicity



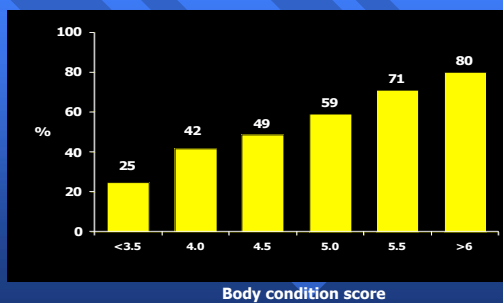
(Spitzer et al., 2000)

### Days to First Estrus after Calving as Affected by BCS Change

	BCS change from calving to 90 d						
BCS	-1	-0.5	0	0.5	1	1.5	2
3	189	173	160	150	143	139	139
4	161	145	131	121	115	111	111
5	133	116	103	93	86	83	82
5.5	118	102	89	79	72	69	66

(Lalman, 1997)

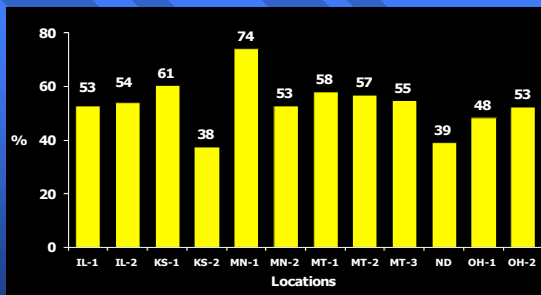
### Effect of Body Condition on Cyclicity



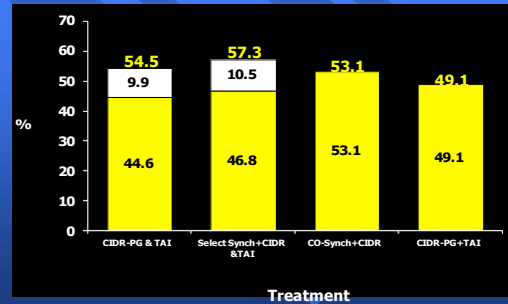
(Stevenson et al., 2004)

### Estrous Synchronization in Heifers

### Effect of Location on Pregnancy Rates



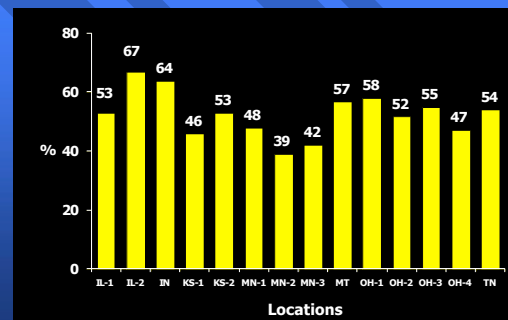
### Pregnancy Rates after Estrus Detection Alone vs TAI



P = 0.221

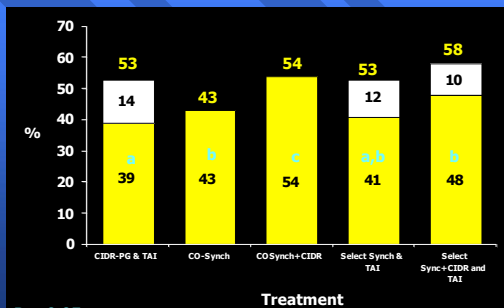
### Estrous Synchronization in Cows

### Effect of Location on Pregnancy Rates



(Larson et al., 2006)

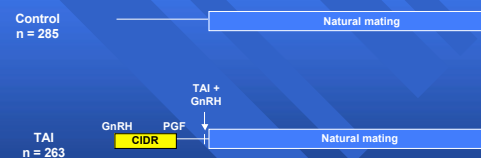
### Pregnancy Rates after Estrus Detection Alone vs TAI



P < 0.05

(Larson et al., 2006)

### Effects of a fixed-time AI on calving distribution



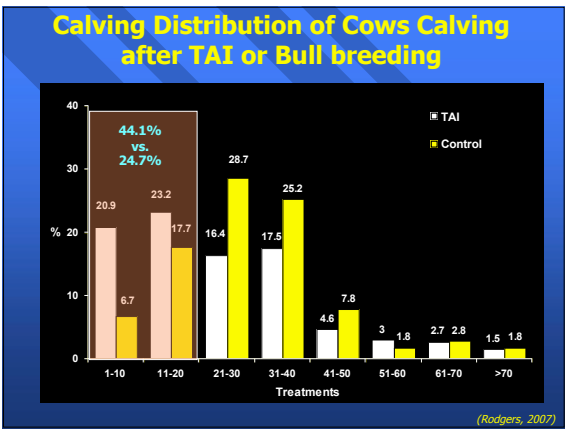
(Rodgers, 2007)

### Cumulative Calving during the Calving Season

The graph displays the cumulative percentage of calving over a 75-day period. The TAI group (black line with open circles) shows a faster rate of calving compared to the Control group (yellow line with open circles). Both groups reach approximately 100% cumulative calving by day 75.

Days of calving season	TAI (%)	Control (%)
0	0	0
10	25	5
20	55	25
30	70	55
40	85	80
50	92	90
60	95	95
70	98	98
75	100	100

(Rodgers, 2007)



# Summary of estrous synchronization systems for cows

- Fixed-time AI systems are effective
- Progesterone induces estrous cyclicity in noncycling cows
- The calving season is altered
- Factors that can alter fertility are:
  - Body condition score
  - Cycling vs. noncycling
  - Days postpartum
  - Calf removal

- # Planning in Advance

## Inputs

**Date to start breeding:** 6/24/2004 (Example: 6/1/2004)


**Time of day you want to breed:** 10:30 AM

**Detection-Insemination type:** 1  
 1 = Estrus AI, 2 = Estrus AI & Clean-up AI, 3 = Fixed-Time AI

**Estrus synchronization system:** 5  
 Select number from list of recommended systems below.

2
---

Estimated number of times through the working facility, including AI.



### Heat detect & Breed

#### Cow Systems

7 = Select Synch  
 8 = MGA Select  
 14 = Select Synch + CIDR

#### Less Preferred Systems

1 = 1 Injection Prostaglandin (prior estrus detection)  
 2 = 1 Injection Prostaglandin (no prior estrus detection)  
 3 = 2 Injection Prostaglandin (no prior estrus detection)  
 6 = MGA + Prostaglandin System (10 day between)  
 12 = 7-11 Synch  
 15 = CIDR -7th Day Prostaglandin

### Heat detect & Breed

#### Heifer Systems

11 = 1 Injection Prostaglandin (prior estrus detection)  
 6 = MGA + Prostaglandin System (10 day between)  
 15 = CIDR -7th Day Prostaglandin

#### Less Preferred Systems

3 = 2 Injection Prostaglandin (no prior estrus detection)  
 14 = Select Synch + CIDR

**Inputs**

Date to start breeding:  (Example: 6/1/2004)

Time of day you want to breed:

Detection-Insemination type:  1 = Estrus AI, 2 = Estrus AI & Clean-up AI, 3 = Fixed-Time AI

Estrus synchronization system:  Select number from list of recommended systems below.

Estimated number of times through the working facility, including AI.

**Heat detect & Breed**

**Cow Systems**

7 = Select Synch  
 8 = MGA Select  
 14 = Select Synch + CIDR

**Less Preferred Systems**

1 = 1 Injection Prostaglandin (prior estrus detection)  
 2 = 1 MGA + Prostaglandin System (no prior estrus detection)  
 3 = 2 Injection Prostaglandin (no prior estrus detection)  
 6 = MGA + Prostaglandin System (19 day between)  
 12 = 7-11 Synch  
 15 = CIDR - 7th Day Prostaglandin

**Heat detect & Breed**

**Heifer Systems**

1 = 1 Injection Prostaglandin (prior estrus detection)  
 6 = MGA + Prostaglandin System (19 day between)  
 15 = CIDR - 7th Day Prostaglandin

**Less Preferred Systems**


3 = 2 Injection Prostaglandin (no prior estrus detection)  
 14 = Select Synch + CIDR

[illegible]

## Nutrition

A photograph showing a herd of cattle, primarily brown and black, grazing in a field covered with snow and patches of green grass. The background features a range of snow-capped mountains under a clear sky. The image is framed by a blue border with diagonal white stripes.

## Accurate Records



A photograph showing two men in a stable or barn setting. The man on the left, wearing a blue and white striped shirt and jeans, is holding a clipboard and looking down at it. The man on the right, wearing a blue and white plaid shirt and jeans, is also looking at the clipboard. In the background, there are several people, including one wearing a white shirt and a baseball cap, and another wearing a dark cap. The background also shows wooden stalls or partitions.

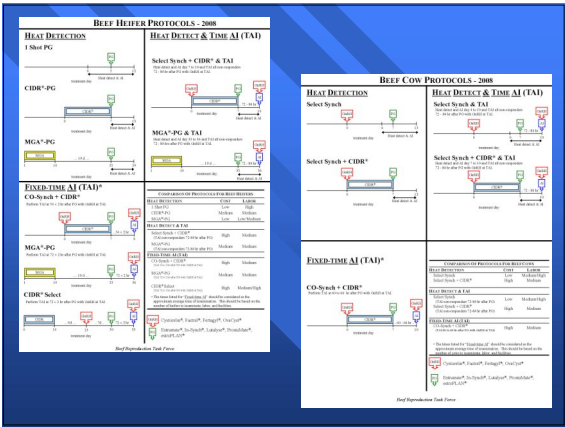


## Facilities

A photograph of a rodeo arena. A white bull is running in a corral, surrounded by spectators and a wooden fence. The scene is outdoors with trees in the background. The image is framed by a blue border with diagonal stripes.

## Facilities

The 'Facilities' section contains four photographs. The top-left photo shows a large, open grassy field with several people and a horse. The top-right photo is a close-up of a horse's head in a metal restraint. The bottom-left photo shows a blue portable toilet and a black SUV parked in a grassy field. The bottom-right photo is a close-up of a horse's head in a metal restraint, similar to the top-right photo.



# Thank You!



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