# Estrus Synchronization – Planning for Success

Dr. Daryl Strohbehn Extension Beef Specialist





#### The Secret to Success?

There are no secrets to success. It is the result of preparation, hard work and learning from failure.

--General Colin Powell

The road to success is always under construction.

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--Unknown

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As soon as you think you have reached success......



Keep in mind that neither success nor failure is ever final.

--Roger W Babson statistician, columnist



# Battlecry: "Fit the Grids"









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### **Increased Spread in Cattle Value**



# So, The Heat is On!

- Having the correct genetics is becoming highly important in meeting industry demands.
- And correct genetics is imperative to achieving premium dollars and enhancing returns on investment.

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#### You Can Use Severe Multi-Trait Selection Criteria with AI

For instance, the bull's got to be:

- In top 10% for YW EPD
- In top 10% for Marbling EPD
- In top 40% for Milk EPD
- In top 50% for Scrotal EPD
- In top 10% for Ribeye EPD





#### You Can Use Severe Multi-Trait Selection Criteria with AI

For instance,

• In top 1

• In top

In top

In top

<mark>• In ton 1</mark>

Angus 8 out of 2749 Old proven sires and 13 out of 2522 Young less proven sires

**Simmental** 4 out of all Sires with progeny

### So what do you have to get your hands around in synchronizing AI?

- CAREFUL Planning & execution of the plan
- Is your herd suited to a synch system?
- Record system
- Labor needs and trade-offs
- Number of times through the chute
- Budgeting for the system costs
- Handling facility capabilities
- Impact on calving distribution?
- Expectations of the synch system



# **Synchronization Expectations**

- Quick Web Search of Recent Results Using Today's Mainstay Synch Programs
  - 10 Trials with 2,970 females in 34 different experimental groups
  - Average Synch Preg. Rate = 50.5% (8 to 66%)
    - » 26% of groups >60% preg. rate
    - » 50% of groups 40-60% preg. Rate
    - » 24% of groups < 40% preg. Rate







## **Conception Rate Formula**

(Cow Fertility) x (Heat Detection) x (Semen Fertility) x (AI Technique)

> Mess up one of these and kiss successful AI goodbye!



## **Estrus Synch is an Investment**

Labor
Facilities
Management Skill
Dollars

In round numbers

 Synch programs can range in budgeted costs from \$20 - \$40 per female synchronized

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### **Breeding Female Evaluation for Synchronization Systems**



# Criteria for Evaluating Candidates for Synchronization

- Fertility rate
- Calving distribution
- Cow age
- Body condition score
- Calving success

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### Calving Distribution Impact of Days After Calving on % Cycling



#### Impact of Cow Age on % Cycling Before Synchronization

Johnson and Stevenson, KSU



# **Body Condition Score**



# **Body Condition Score**



### **Barometer of your nutrition program.**





### **Major influence on start of cyclicity.**







CS = 6



#### Effect of BCS at breeding on % Cycling



#### Effect of BCS at breeding on % Cycling





#### **Can We Jump Start Non-Cycling Females?**

Yes....

But don't think you can be the miracle worker!

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### Impact of a Progestin on Estrous Response and Synch Preg. Rates

Patterson, et.al.: 2004 NE Applied Repro Conference

Heat detect system	Estrous response	Synch preg. rate
2 shot PG	241/422 = 57%	147/422 = 35%
MGA-PG 17d.	305/408 = 75%	220/408 = 54%
MGA-2 shot PG	327/348 = 93%	243/348 = 70%
MGA-PG 19d.	161 85% 8%	130 <mark>62%</mark> 3%
MGA Select	275/313 = 88%	195/313 = 62%
7-11 Synch	142/155 = 93%	101/155 = 65%
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Johnson and Stevenson, 2004

#### Fig. 4: Proportion of Non-cycling First-Calf Heifers Induced to Ovulate by GnRH



Johnson and Stevenson, 2004



Johnson and Stevenson, 2004

#### Fig. 5: Proportion of Non-cycling Older Cows Induced to Ovulate by GnRH



Johnson and Stevenson, 2004



# Summary

# • For maximum success rates:

- Current herd fertility
   >90% 60-90 days
   breeding season
- Best female candidates calve in 1<sup>st</sup> 42 days of calving season, thus at least 40 days before start of breeding season.





# **Summary continued**

- For maximum success rates:
  - 1<sup>st</sup> calf heifers need additional recovery time following calving and strong body condition is imperative.
  - On the cow side, minimum Body
     Condition Score of 4.5





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### Remember: This is an investment for added genetic improvement; manage it wisely for maximum returns.

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# Labor Needs & Trade Offs

- Labor centers around feeding routines, cattle roundup, handling through chute, vet type practices, heat detection and AI routines.
- More than one producers have indicated they experienced a shortage of labor at key times in estrus synchronization.



# Labor Needs & Trade Offs

# Labor centers around feeding routines. Take home message

Many AI programs compete with other farming routines.....think through where is labor supply coming from and will it be available at peak work times.

they experienced a shortage of labor at key times in estrus synchronization.



Number of chute trips vary with Synch Programs

> From IBC Estrus Synch Planner 2004

> > **Iowa Beef Center**

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Number of **Chute Times Synchronization System** 1 = 1 Injection Prostaglandin (prior estrus detection) 2 2 = 1 Injection Prostaglandin (no prior estrus detection) 2 3 = 2 Injection Prostaglandin (no prior estrus detection) 3 2 6 = MGA + Prostaglandin System (19 day between) 7 = Select Synch 3 3 8 = MGA Select 9 = MGA Select with E-AI and Cleanup AI 3 10 = CO-Synch System with Fixed-Time AI 3 12 = 7 - 11 Synch 4 13 = OvSynch4 14 = Select Synch + CIDR 3 3 15 = CIDR -7th Day Prostaglandin 16 = Select Synch + CIDR with E-AI and Cleanup AI 3 17 = MGA Select with Fixed-Time AI 3 18 = 7-11 Synch with Fixed-Time AI 4 3 19 = Select Synch with E-AI and Cleanup AI 20 = 7-11 Synch with E-AI and Cleanup AI 4 22 = CO-Synch + CIDR with Fixed-Time AI - 66 3 23 = CO-Synch + CIDR with Fixed-Time AI -54 3 25 = CIDR -7th Day Prostaglandin E-AI and Cleanup AI 3 26= MGA + PG System (19 day) -E-AI and Cleanup AI 2.3 27=MGA + PG System (19 day) - Fixed-Time AI 2

# **Cattle Handling Facility**

- Very good to excellent handling facility is a necessity for a synchronized AI program.
- Think safety! Human and cattle.
- Think cattle flow and efficiency.
- Think location.



# **Cattle Handling Facility**

- Complications
  - Location of facility
    - » Many times it is near wintering/calving facilities and no where near breeding pastures.
    - » Think through cattle management flow prior to synch program.
    - » May mean short drylot periods or changing pasture rotations.



Question. "If I breed them all on the same day won't I compound my calving season problems next year?



# Question. The data does not support that. They don't all calve on the same day.

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#### Calving Distribution of Cows Conceiving to Fixed-Time AI Program, Bader at U. Missouri, JAS, 2005



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# Synchronized AI



PGF CIDR MGA GnRH



Large number of systems
All with different time sequences





- A huge number exist today.
- Each has a unique twist.
- Not all systems fit all operations.
- Scheduling errors are committed in timing of feed supplements and/or injections.
- Comparison of cost/benefit ratio.

# **Synch Systems**





# Common causes of failure or poor results with synchronization

- Wrong system for the situation
  - More anestrous females than expected
  - Cow system applied to heifers
- Treatment protocol not followed
  - Wrong hormone or wrong intervals
- Unrealistic expectations

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Synch04



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**Iowa Beef Center** 

A cooperative programming effort between the Iowa Beef Center and the North Central Region Bovine Reproductive Task Force



Authors and Programmers:

Dr. Daryl Strohbehn, Iowa State University Dr. Garland Dahlke, Iowa State University

Mark Dikeman, Formerly with Iowa Beef Center

A Microsoft Excel spreadsheet application

#### **Co-Authors:**

Dr. Rick Funston, University of Nebraska

Dr. Sandy Johnson, Kansas State University

Dr. Darrel Kesler, University of Illinois

Dr. Cliff Lamb, University of Minnesota

Dr. David Patterson, University of Missouri

Dr. George Perry, South Dakota State University











# Features

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- 22 Synch Systems
  - Heat detect & AI systems
  - Heat detect & cleanup AI systems
  - Fixed-Timed AI Systems



# Features

- Recommendation of various synch systems for cows & heifers
- List of daily activities
- Barn Calendar of Synch System





# **Features**

 Budgeted cost analysis of Synch Systems

Support materials





### What does it do?

- Assists with the challenge of planning and implementing some of the complicated synch systems.
- Eliminates timing errors
  - Injections

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- Start and end dates of MGA feeding
- CIDR insertions, etc.



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### Estrus Synchronization Dlanner Only 4 inputs are needed

#### Inputs

Date to start breeding: Time of day you want to breed: Detection-Insemination type: Estrus synchronization system:

0/24/2004				
10:30 AM				
1				
6				
2				

8/24/2004

#### (Example: 6/1/2004)

1 = Estrus AI, 2 = Estrus AI & Clean-up AI, 3 = Fixed-Time AI

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 Injection Prostaglandin (no prior estru
- 3 = 2 Injection Prostaglandin (no prior estru
- 6 = MGA + Prostaglandin System (19 day
- 12 = 7-11 Synch
- 15 = CIDR -7th Day Prostaglandin

#### Heat detect & Breed

#### **Heifer Systems**

1 = 1 Injection Prostaglandin (prior estrus detection)

Synch Calendar.

for the program to do the

- 6 = MGA + Prostaglandin System (19 day between)
- 15 = CIDR -7th Day Prostaglandin

#### Less Preferred Systems

- 2 Injection Prostanlandin (no prior estrus detection)

Notice there are recommended and less preferred Synch systems for Cows and Heifers.

						10/00/005	
				Producer Name:	Best Cowman	10/22/2004 9	9:27
Estrus Sync	hronization	Planner		Address:	123 Farm Lane		
Londo Oyne		i laintei		Town:	Anywhere, USA		— <u>————————————————————————————————————</u>
6 = MGA + Prosta	aglandin System (	19 day between)		Phone Number.	999/123-4307		
Date to star	t breeding:	6/1/2005	_	Prepared by:	Iowa Beef Center		Those 4 INDUITS result
Start of Calv	ing Season:	3/9/2006		Phone Number:	515/294-BEEF		
							in the development of
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturd	In the development of
4/24/2005	4/25/2005	4/26/2005	4/27/2005	4/28/2005	4/29/2005	4/30/20	
					* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/day	this Barn Calendar
						-	
5/1/2005	5/2/2005	5/3/2005	5/4/2005	5/5/2005	5/6/2005	5/7/2005	
* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/day	* MGA @ 0.5 mg/hd/de:	
ing no day	ing/nd/day	ing, no day	ing/nd/day	ing no day	ing no duy	nig/nd/d/	
					/		
5/8/2005	5/9/2005	5/10/2005	5/11/2005	5/12/2005	5/13/2005	5/14/2005	5
* MGA @ 0.5	* MGA @ 0.5	* MGA @ 0.5	* MGA @ 0.5	* MGA @ 0.5		* Many females i	in a second s
mg/hd/day	mg/hd/day	mg/hd/day	mg/hd/day	mg/hd/day		heat next 4 days. NOT BREED!	
5/15/2005	5/16/2005	5/17/2005	5/18/2005	5/10/2005	5/20/2005	5/21/2004	
5/15/2005	5/10/2005	5/1//2005	5/16/2005	5/19/2005	5/20/2005	5/21/2003	
	E 100/000 E	5 10 A 10 0 0 5				E IO O IO CO	
5/22/2005	5/23/2005	5/24/2005	5/25/2005	5/26/2005	5/27/2005	5/28/2005	
5/29/2005	5/30/2005	5/31/2005	6/1/2005	6/2/2005	6/3/2005	6/4/2005	
			* Detect Estrus & Breed				
			* Inject PG - all		* Peak Estrus		
			remales				
6/5/2005	6/6/2005	6/7/2005	6/8/2005	6/9/2005	6/10/2005	6/11/2005	5
* Detect Estrus &	* Detect Estrus & Bread	* Turn in Bull Power					
Bieeu	DICCU						www.iowabeetcenter.org



**Program Inputs for Cost Comparisons of Synchronization Systems.** Either use the defaults or supply your own costs.

#### Inputs

Head in group:	100	Lbs	Fed/Day	Heat detection cost (\$/hr):	\$10.00	
PG (\$/dose):	\$2.50	Roughage:	20	\$0.025	Man-hours per day:	2
GnRH (\$/dose):	\$3.00	Grain:	4	\$0.040	Yardage \$/hd/day:	\$0.20
CIDR (\$/insert):	\$9.00	MGA supplement:	1	\$0.200	Al technician (\$/hd):	\$9.00
Semen (\$/unit):	\$14.00	Other supplement:	0.25	\$0.150	Trip charge (\$/trip):	\$15.00



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Synch - 04





# Synch04 Availability

From the Iowa Beef Center and participating states.

Cost: \$25 per CD, plus \$10 shipping and handling

**Order Address:** 

**Iowa Beef Center** 

**337 Kildee Hall, ISU** 

Ames, IA 50011



# **Summary**

- The percentage of beef cattle AI'd is predicted to substantially increase with the advent of sexed semen.
- Current surveys indicate that fewer than 5% of the beef cows in the United States are AI bred and only half of the cattlemen that practice AI use any form of estrus synchronization.
- Historically the inability to predict estrus time for individual females in a group often made it impractical to use AI because of labor required for heat detection.
- The development of Fixed-Time synchronization methods of Aling beef cows and heifers will increase the adoption of Al.



# **Summary**

- This presentation is not intended to be either positive or negative on synchronized AI
- But rather its purpose is to assist producers in thinking through the options associated with estrus synchronization and what it takes to be successful.
- Least cost genetic improvement is what we all want.
- Whether synchronization fits a herd is dependent on many factors
  - Labor
  - Herd as a candidate for synchronized AI
  - Chute time & facilities adequacy
  - Cost of bulls vs AI

