

ANALYSIS OF ALTERNATIVE BEEF BREEDING PRACTICES IN WYOMING

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- Introduction
- Background
- Assumptions
- The Bulls
- AI
- One Shot Prostaglandin
- Select Synch +CIDR
- Select Synch With Timed AI
- Results
- Conclusions

Introduction

- ⦿ AI vs. Bulls
- ⦿ What is Artificial Insemination?
- ⦿ New Genetics
- ⦿ Low Utilization
- ⦿ Is cost the reason for the Low Utilization
- ⦿ Who can benefit from this research
- ⦿ Variables Explored
 - Herd Sizes
 - Estrous Synchronization Methods

Background

- ◎ Bulls-Let nature handle it
 - Seed Stock Producers
 - Breeding Soundness exam
- ◎ AI-Human Assisted Fertilization
 - Relatively New Technology
 - Freezing semen
 - Estrus Synchronization
 - Semen Deposit into Uterus Directly

Background-Estrus Synchronization

- ⦿ What is it?
- ⦿ North American Beef Reproductive Task Force
 - [cowaisynchprotocols.pdf](#) [hfraisynchprotocols.pdf](#)
- ⦿ Estrus Cycle
 - Pre-Heat
 - Standing Heat-18hours
 - Egg Released 12 hours after Standing
- ⦿ Hormones
 - Estrogen
 - GnRH
 - FSH/LH
 - Progesterone
- ⦿ Check for Heat Day and Night

Assumptions

- ⦿ All AI herds will utilize clean up bulls
- ⦿ Death Rates and Conception Rates Combined
 - 2% death Loss on calves
 - 3% loss due to no conception
- ⦿ All herds are based on calves
 - To find number of cows Multiply Calf # by 1.05
- ⦿ All costs based on Cost of pregnancy
 - $((\text{cost-revenue}) * \# \text{ of cows}) / \# \text{ of calves produced}$
- ⦿ A Breeding Ratio of 20/1 Cows to bulls
- ⦿ Clean up bulls based on the same figures as the Natural Service Bulls
- ⦿ Two Budgets Will be performed on the AI methods
 - With out Income
 - With income due to additional weight gain on calves
- ⦿ No Replacements

The Bulls

◎ Initial Cost-\$2500

- Salvage Value \$.50 for 1800 Lb Bull
- Cost of ownership is the cost per year to own the bull

◎ Feeding Costs

- Fed Dec 1st through May 19th
- Hay @ 25lb/day
- High Energy Lick Tub and Free choice Mineral
- Corn for 30 days leading up to turn out date @ 1.5% of body weight
- After May 19th Will be charged \$20/month until September

The Bulls Continued

- ⦿ Vet Costs
 - BSE
 - Trichomoniasis test
- ⦿ Cost of Risk
 - Cover with insurance

The Bulls Still

Per Bull Budget

Expenses	Per Bull
Cost of ownership	\$400.00
Hay	\$112.00
Corn	\$40.50
Pasture	\$80.00
Lick Tubs	\$44.75
Insurance	\$62.50
Brands	\$8.75
Mineral	\$33.00
Tric-Testing	\$15.00
Semen Test	\$35.00
Annual Ownership	\$831.50

Cost of pregnancy for Natural Service

# Calves	100	500	1000
# Cows	105	525	1050
# Bulls	5	26	52
Annual Ownership	\$831.50	\$831.50	\$831.50
Total Cost Of Bulls	\$4,157.50	\$21,619.00	\$43,238.00
Cost of Pregnancy	\$41.58	\$43.24	\$43.24

AI

- Three Synchronization Methods
 - One Shot Prostaglandin
 - Select Synch +CIDR
 - Select Synch With Timed AI
- Variable costs
 - Semen (\$20.00)
 - CIDR (\$10.00)
 - GnRH (\$2.50/shot)
 - PGF (\$2.50/shot)
 - KaMar Patch (\$1.10)
 - Labor
 - Arm (\$8.00/head)
 - Working (\$14.00)
 - Straws (\$0.05)
 - Gloves (\$0.10)
 - Lube (\$0.16)
- Other Costs
 - AI Box (\$260.00)
 - AI Gun (\$60.00)
 - Clean up Bulls (From Bull Budget)

One Shot Prostaglandin

- Prostaglandins Reduce Progesterone Which Raise GnRH, FSH and LH
- Easiest
- Requires only one shot, on time through the chute
- Potential to miss cows
- Day 0-5 Heat Detect, Day five Give a shot of PGF, The next six days you heat detect and AI
- [hfraisynchprotocols.pdf](#)

One Shot Prostaglandin Budgets

*Table 3 Budget (One Shot Prostaglandin)					
	Variable costs/ cow	100 Calves	500 Calves	1000 Calves	
Semen	\$20.00	\$2,100.00	\$10,500.00	\$21,000.00	
CIDR		\$0.00	\$0.00	\$0.00	
GnRH		\$0.00	\$0.00	\$0.00	
PGF	\$2.50	\$262.50	\$1,312.50	\$2,625.00	
KaMar Patch	\$1.10	\$115.50	\$577.50	\$1,155.00	
Labor(ARM)	\$8.00	\$840.00	\$4,200.00	\$8,400.00	
Labor(working)	\$14.00	\$42.00	\$84.00	\$168.00	
AI Box(260.00)		\$260.00	\$260.00	\$260.00	
AI Gun (60.00)		\$60.00	\$60.00	\$60.00	
Straws	\$0.05	\$5.25	\$26.25	\$52.50	
Gloves	\$0.10	\$10.50	\$52.50	\$105.00	
Lube	\$0.16	\$16.80	\$84.00	\$168.00	
Clean Up Bull		\$831.50	\$1,663.00	\$3,326.00	
Total	\$45.91	\$4,544.05	\$18,819.75	\$37,319.50	
Cost Per Pregnancy		\$45.44	\$37.64	\$37.32	

[AI budget with income.xlsx](#)

Select Synch +CIDR

- Second Most labor Intense Method
- Highest in drug costs
- Incorporates the use of a CIDR
- More Technical
- Has potential to raise conception rates
- Day 0 you administer a shot of GnRH and put the CIDR in
- Day 7 you remove the implant and give a shot of prostaglandin
- Day 7-13 you will heat detect and AI
- [cowaisynchprotocols.pdf](#)



Select Synch +CIDR

*Table A2 Budget Select Synch +CIDR					
	Per Cow		100 Calves	500 Calves	1000 Calves
Semen	\$20.00		\$2,100.00	\$10,500.00	\$21,000.00
CIDR	\$10.00		\$1,050.00	\$5,250.00	\$10,500.00
GnRH	\$2.50		\$262.50	\$1,312.50	\$2,625.00
PGF	\$2.50		\$262.50	\$1,312.50	\$2,625.00
KaMar Patch	\$1.10		\$115.50	\$577.50	\$1,155.00
Labor(ARM)	\$8.00		\$840.00	\$4,200.00	\$8,400.00
Labor(working)	\$14.00		\$84.00	\$168.00	\$336.00
AI Box(260.00)	\$0.00		\$260.00	\$260.00	\$260.00
AI Gun(60.00)	\$0.00		\$60.00	\$60.00	\$60.00
Straws	\$0.05		\$5.25	\$26.25	\$52.50
Gloves	\$0.10		\$10.50	\$52.50	\$105.00
Lube	\$0.16		\$16.80	\$84.00	\$168.00
Clean Up Bull			\$831.50	\$1,663.00	\$3,326.00
Income					
Added Weight	\$45.00		\$2,250.00	\$11,250.00	\$22,500.00
Total	\$58.41		\$3,648.55	\$14,216.25	\$28,112.50
Cost Per Pregency			\$36.49	\$28.43	\$28.11

[one shot budget.xlsx](#)

Select Synch With Timed AI

- Most Labor Intensive
- Medium costs
- Two Shots of GnRH are required
- Allows for a mass breed of your cows
- Start with a shot of GnRH, Day 4 you start to heat detect
- Day Seven run the cows that haven't shown heat through and give a shot of PGF
- Somewhere between 72 and 84 hours after PGF shot Bring back through and AI while giving another shot of GnRH
- [cowaisynchprotocols.pdf](#)

Select Synch with Timed AI Budgets

*Table 5 Budget Select Synch With Timed AI				
	Variable cost/Cow	100 Calves	500 Calves	1000 Calves
Semen	\$20.00	\$2,100.00	\$10,500.00	\$21,000.00
CIDR	\$0.00	\$0.00	\$0.00	\$0.00
GnRH	\$5.00	\$525.00	\$2,625.00	\$5,250.00
PGF	\$2.50	\$262.50	\$1,312.50	\$2,625.00
KaMar Patch	\$1.10	\$115.50	\$577.50	\$1,155.00
Labor(ARM)	\$8.00	\$840.00	\$4,200.00	\$8,400.00
Labor(working)	\$14.00	\$112.00	\$168.00	\$336.00
AI Box(260.00)	\$0.00	\$260.00	\$336.00	\$672.00
AI Gun(60.00)	\$0.00	\$60.00	\$60.00	\$60.00
Straws	\$0.05	\$5.25	\$26.25	\$52.50
Gloves	\$0.10	\$10.50	\$52.50	\$105.00
Lube	\$0.16	\$16.80	\$84.00	\$168.00
Clean Up Bull		\$831.50	\$1,663.00	\$3,326.00
Total	\$50.91	\$5,139.05	\$21,604.75	\$43,149.50
Cost Per Pregnancy		\$51.39	\$43.21	\$43.15

[AI budget with income.xlsx](#)

Results

*Table 6 Final out comes	100 Calves	500 Calves	1000 calves
Bulls	\$41.58	\$43.24	\$43.24
AI w/o Income			
One Shot	\$45.44	\$37.64	\$37.32
Select Synch +CIDR	\$58.99	\$50.93	\$50.61
Select Synch (TIA)	\$51.39	\$43.21	\$43.51
AI With income			
One Shot	\$22.94	\$15.14	\$14.82
Select Synch +CIDR	\$36.49	\$28.43	\$28.11
Select Synch (TIA)	\$28.89	\$20.70	\$20.65

Results

- ⦿ Based on cost, AI with additional income should be incorporated in all operations
- ⦿ Time has a big effect on the results
- ⦿ Every method should be considered
- ⦿ The marketing of the calves has weight on which breeding practice you should choose
- ⦿ Economies of Scale

Recommendations

⦿ Criticisms

- Bulls
 - Feeding techniques
 - Initial costs
 - Insurance
- AI
 - Different Synchronization Methods
 - Income?

⦿ Additional Research

- Facilities
- Different Marketing Methods
- Other Synchronization methods
- Price on Genetic Potential
- With different initial costs of bulls

⦿ Every producer should incorporate at least some of their herd into AI

- Diversification
- New Genetics that you couldn't afford before

Questions??