

Heifer Development

Ranchers' Thursday Lunchtime Series

Feb. 10, 2022

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Fertility



Early, Consistent Calving

- Breakeven or payback period \approx six consecutive weaned calves
- If she misses one calf, breakeven or payback period \approx nine weaned calves

Moorey and Biase, 2020

- When first-calf females breed early and calve early, longevity and lifetime productivity 

Lesmeister et al., 1973; Cushman et al., 2013; French et al., 2013

Improving Fertility in Your Environment

- Genetic tools available:
 - Heifer pregnancy, stayability, sustained cow fertility
- Buy (or keep) bulls out of cows that calve early consistently and do it every year for a long time
- Restrict breeding season and cull opens
- Keep only early-born heifers
- Keep only early-bred heifers
- Keep heifers out of older productive cows

Nutritional management to optimize success of an AI program: Prebreeding



Two Target-Weight Camps

65%



55%



Target Weight Camps

Manage to achieve 65% of expected mature weight by beginning of first breeding season

- + Effective across wide range in breed type and environment
- + Advantage: Heifer value high, pasture cost high, feed cost low
- + Less calving difficulty?
- High feed prices
- Less pressure on fertility vs environment
- Expensive: +\$58 (Lardner et al., 2014)

Manage to achieve 55% of expected mature weight by beginning of first breeding season

- + Reduced cost per animal
- + Increased pressure on fertility vs environment
- + Coupled with early pregnancy detection, opens can be profitable stocker enterprise
- Must retain more heifers
- Breeding system is likely limited to natural service
- Not likely to be as successful with synchronization and AI
- Abundant, high-quality forage required during breeding and breeding to calving to allow compensatory gain

Breeding Target Weight vs Pregnancy

Reference	No. Heifers	55%	65%
Patterson et al., 1992	137	84	89
Funston and Deutscher, 2004	240	92	88
Martin et al., 2008	261	87	90
Roberts et al., 2009	397	87	92
Eborn et al., 2013	360	77	83
Mulliniks et al., 2013	191	91	84
Lardner et al., 2014	176	86	88
Bailey et al., 2014	203	74	77
Average		84.8	86.4

Breeding Target Weight

Item	55%	62%
Breeding weight, lbs	771	870
ADG, lbs	1.1	1.54
Puberty, %	20	52
Pregnancy, %	86	88

Lardner et al., 2014

What should I feed?

- Know what your heifers weigh now
- Establish a target weight to achieve by day 1 of breeding season
- Calculate the needed rate of gain
- Work with Extension Educator or feed industry professional to design feeding program to achieve target weight goal
- Match supplementation program to the forage resource available to you



Cowculator

Cowculator is designed to evaluate and formulate diets for beef cattle. Classes of cattle include cows, bred heifers, growing and finishing cattle, and bulls. Cowculator does not perform least-cost formulation.

- White cells are intended for user inputs.
- Feed list values are intended as a starting point and can be completely customized.
- To get started, click on the "Cattle" button or tab to enter details about the type of cattle and management that applies to your situation.
- Feed intake, protein, energy and mineral requirements are dependent on an accurate estimate of mature weight and body condition score for cows and harvest weight for growing cattle (representing weight at about 0.6 inches of backfat)

Cattle **Balancer** **Feed List** **Summary**

Oklahoma State University
Department of Animal and Food Sciences
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OSU | **EXTENSION**

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Cowculator Home | Cattle | Feed List | Balancer | Summary | BCS | Finish Weight

Available at: beef.okstate.edu

Nutritional Management

65% Target

- Heifers need to gain 1.1 to 1.5 lbs per day or 270 to 360 lbs from weaning to breeding
- Body condition score \approx 6 at beginning of breeding season
- Over conditioning compromises reproductive success
- Flexibility in pattern of gain
- Ionophore for minimum of 100 days prior to breeding
- MLV vaccine = 45-d threshold
- Post breeding: subtle diet changes

News



Rev Up Your Replacements Webinar Recording Available

By Jera Pinkin | American Angus Association

5/13/2020

🔍 Type here to search



Heartland Cattle Company



Results

Heartland Cattle Company

Item	Heartland	Industry
Synch Rate	93%	84%
1st Service Conception	70%	60%
Preg Rate	90%	79%

125,000 heifers developed

Synchronized with 45-day breeding season

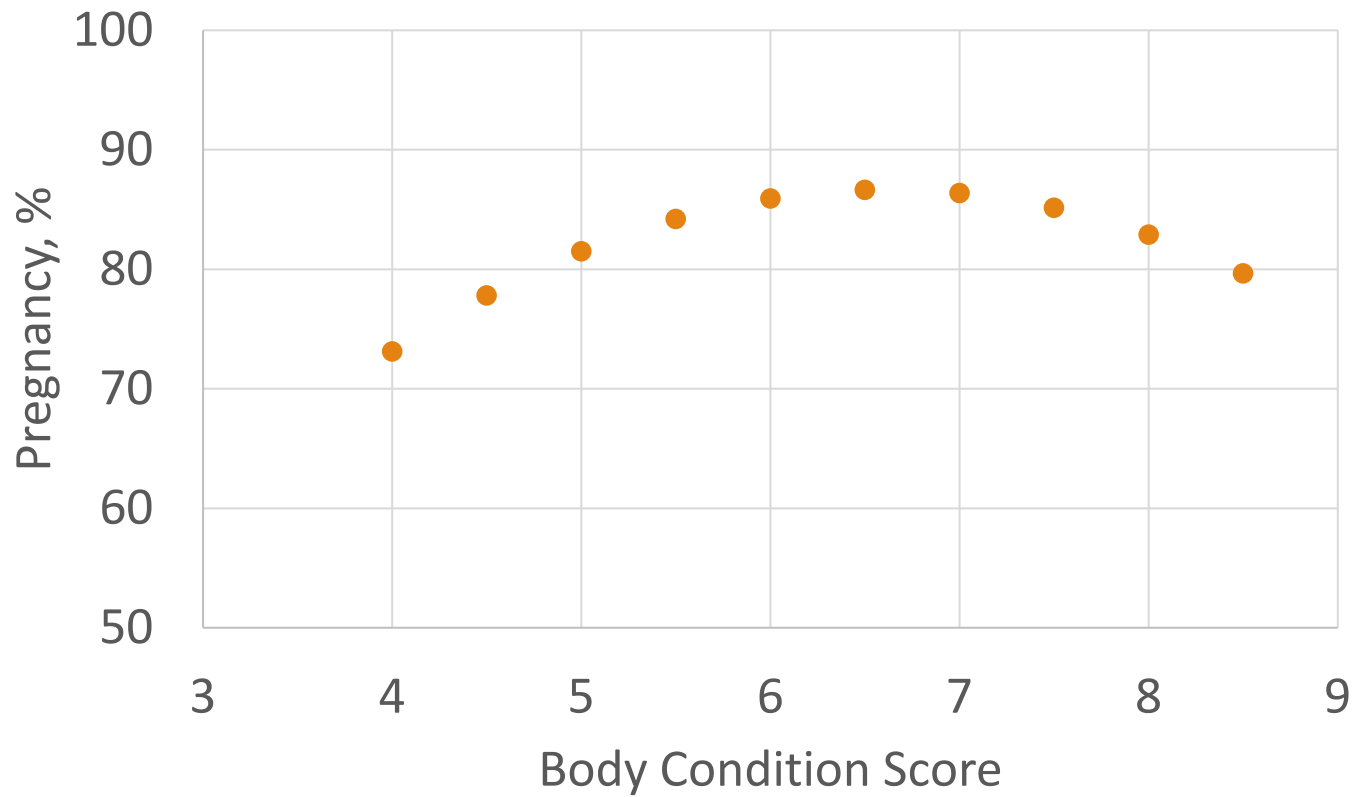
Source: American Angus Association and Dr. Patsy Houghton

INFLUENCE OF BCS ON FIRST SERVICE CONCEPTION RATE



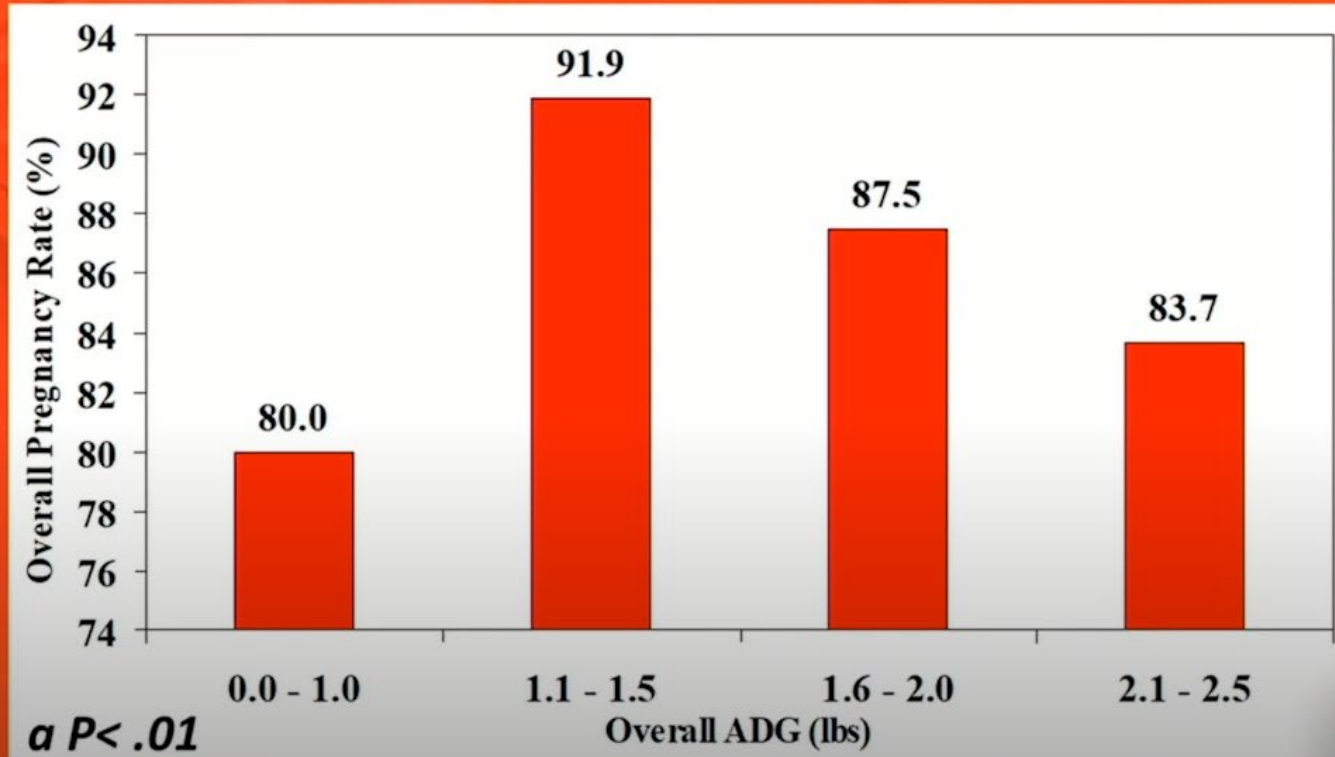
Source: American Angus Association and Dr. Patsy Houghton, Heartland Cattle Company

Body Condition Score vs Heifer Pregnancy



Source: Ferrell, 1982

INFLUENCE OF OVERALL ADG ON PREGNANCY RATE^a



ANGUS UNIVERSITY

Source: American Angus Association and Dr. Patsy Houghton, Heartland Cattle Company

Heifer Development Guidelines: Heartland Cattle Company

HIGH ROUGHAGE/LIMIT-FED
SORGHUM SILAGE, WDG, CORN STOVER
*ALFALFA, ROLLED CORN**
LIQUID VIT-TM SUPPLEMENT

- **GROW** (~45-90 DAYS)
✓CP 13.2; NEm 66; NEg 42
- **FLUSH** (60 DAYS; START W/ MGA)
✓CP 13.8; NEm 74; NEg 48
- **BRED** (~75-90 DAYS)
✓CP 13.6; NEm 57; NEg 35

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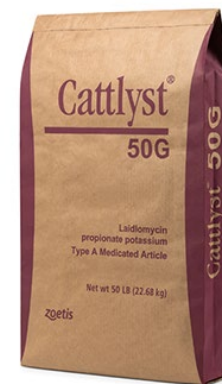
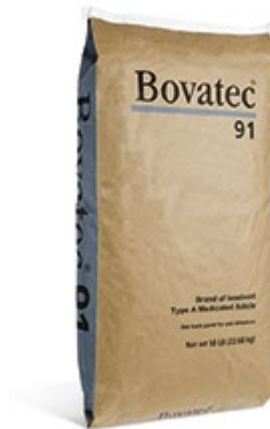
Source: American Angus Association and Dr. Patsy Houghton, Heartland Cattle Company

Timing of Gain

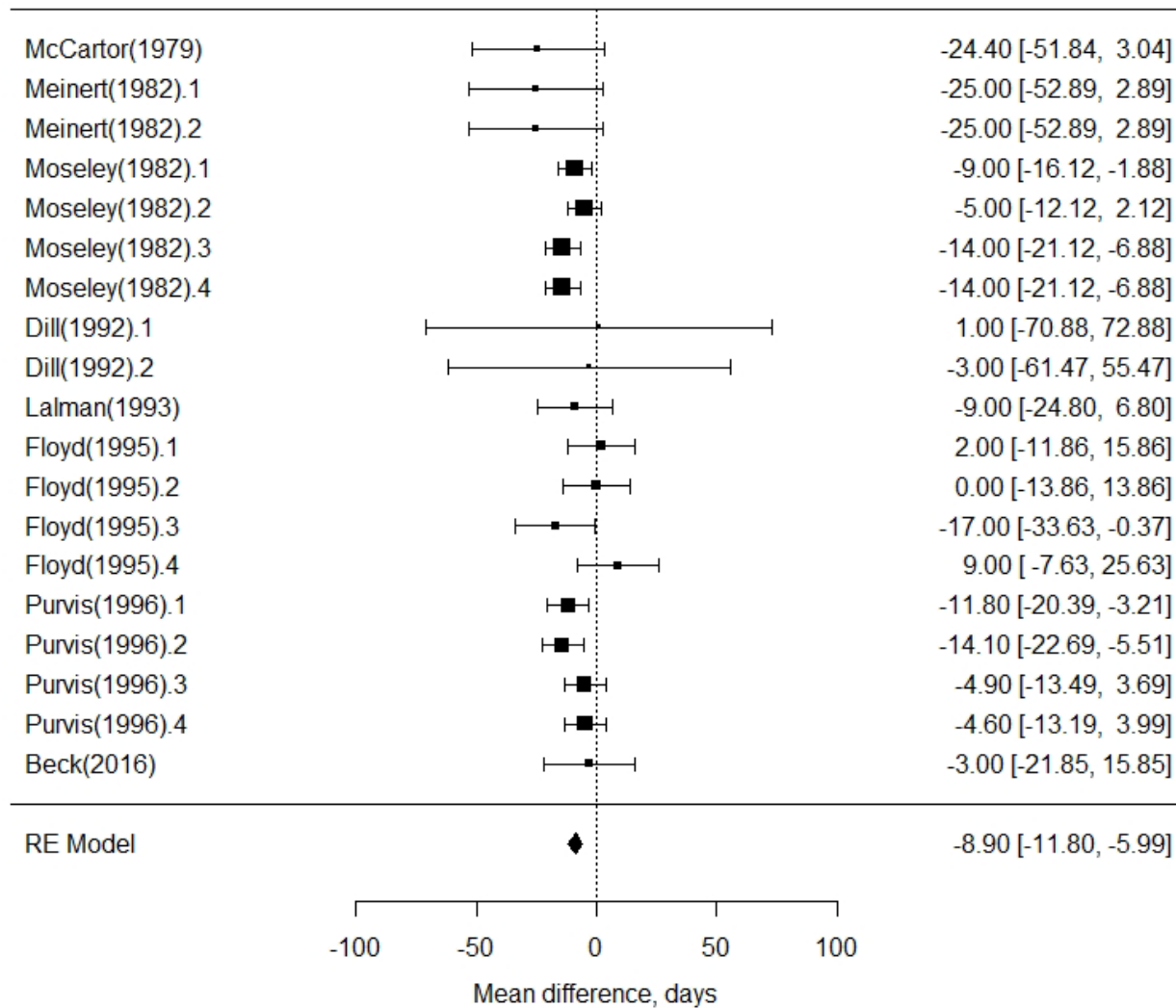
Study	No. Heifers	Even	Slow-Fast	Fast-Slow	Fast-Slow-Fast
Clanton 1983	180	82	75	73	
Lynch 1997	160	87	87		
Poland 1998	96	75			90
Grings 1999	210	82			87

Management Considerations Independent of Target Weight

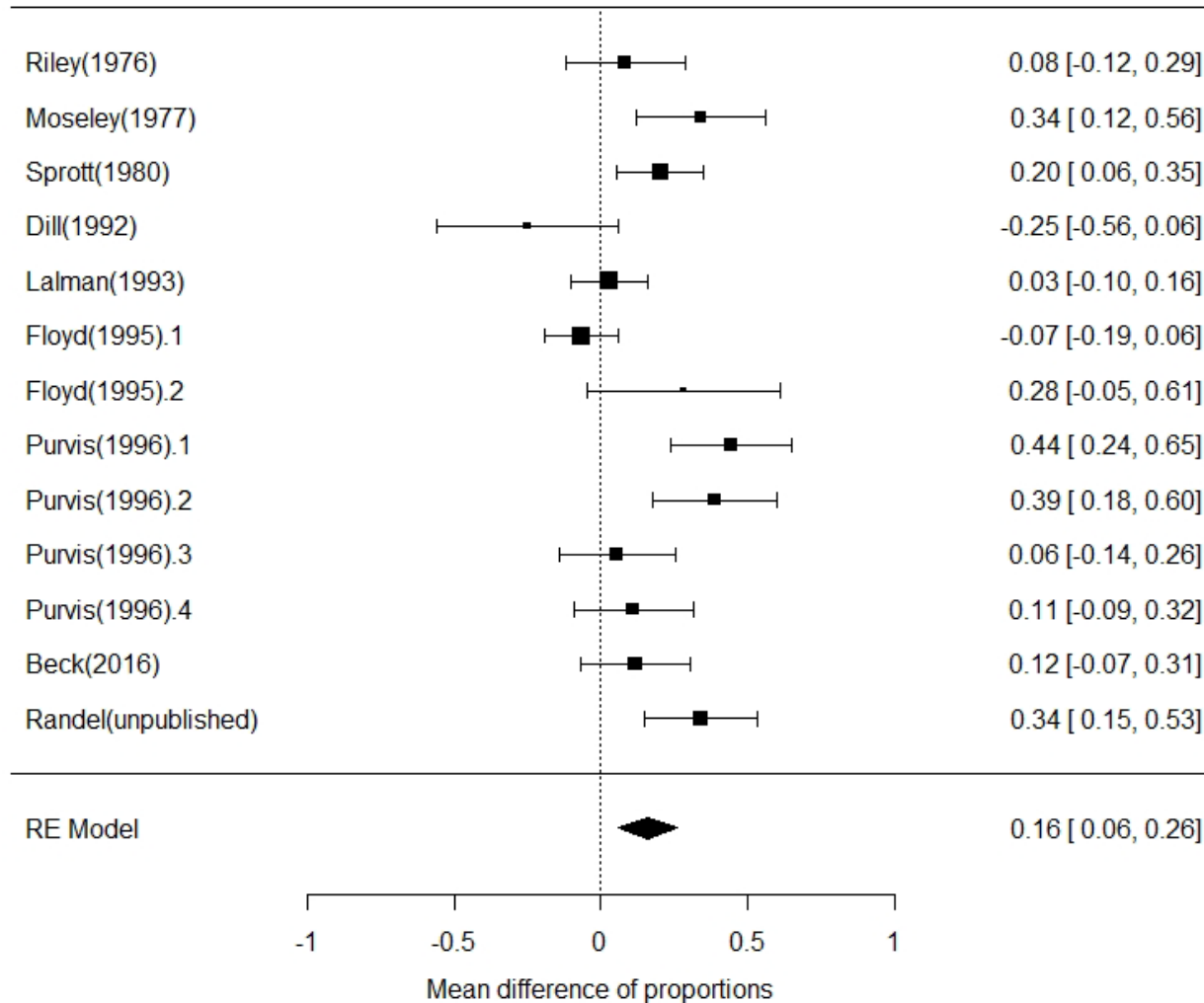
Ionophore Feed Additives



Rumensin: Age at Puberty

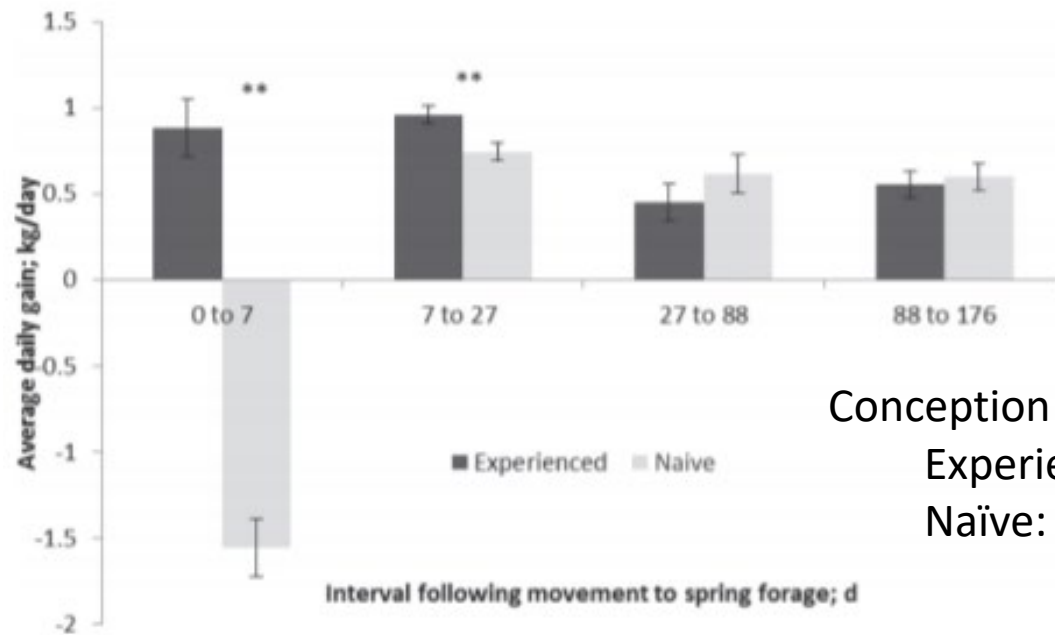


Rumensin: % Cycling Prior to Breeding



At Breeding and Post Breeding Considerations

Pasture vs Drylot then Pasture 27 d Prior to Breeding



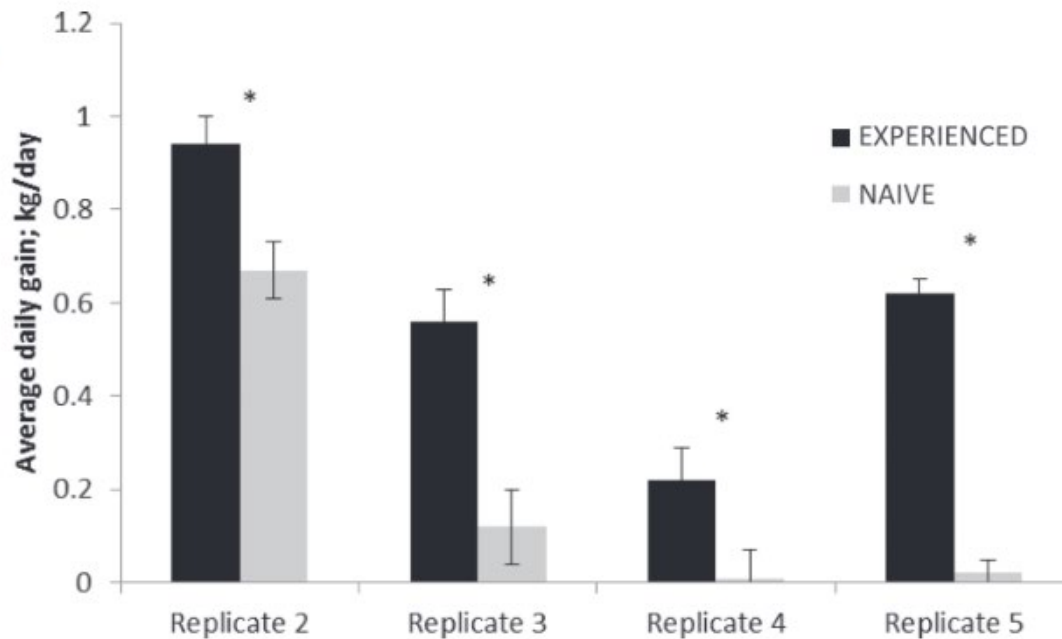
Conception to synchronized NS:

Experienced 58%

Naive: 50%

Source: Perry et al., 2013

Pasture vs Drylot then Pasture Immediately Following AI



Conception to AI:
Experienced 59.4%
Naïve: 49.1%

Source: Perry et al., 2013

Post Breeding Management Options

- **Minimize change in diet or rate of change in diet**
- Adapt to grazing 45 days prior to AI
- Supplement after turnout on pasture with similar formulation as fed in drylot
- Retain in drylot until 30-60 days post AI

Wheat Pasture for Heifers

Item	Dry Lot	Wheat	P-Value
AI weight, lb	899	868	0.01
Luteal activity, %	55	75	0.08
Conceived to AI, %	43	53	0.38
Final pregnancy, %	88	95	0.34

Source: Bryant et al., 2011

