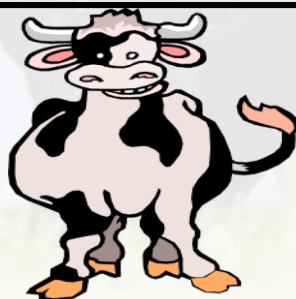




Dairy Days 2018

Transition Cow Success: *Managing Pain, Weight, & Milk*



<http://www.extension.iastate.edu/dairyteam/>

IOWA STATE UNIVERSITY
Extension and Outreach
Healthy People. Environments. Economies.

Dr. Leo Timms
Extension Dairy Specialist



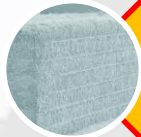
Objectives:



Early lactation energy balance



Controlling Inflammation Research



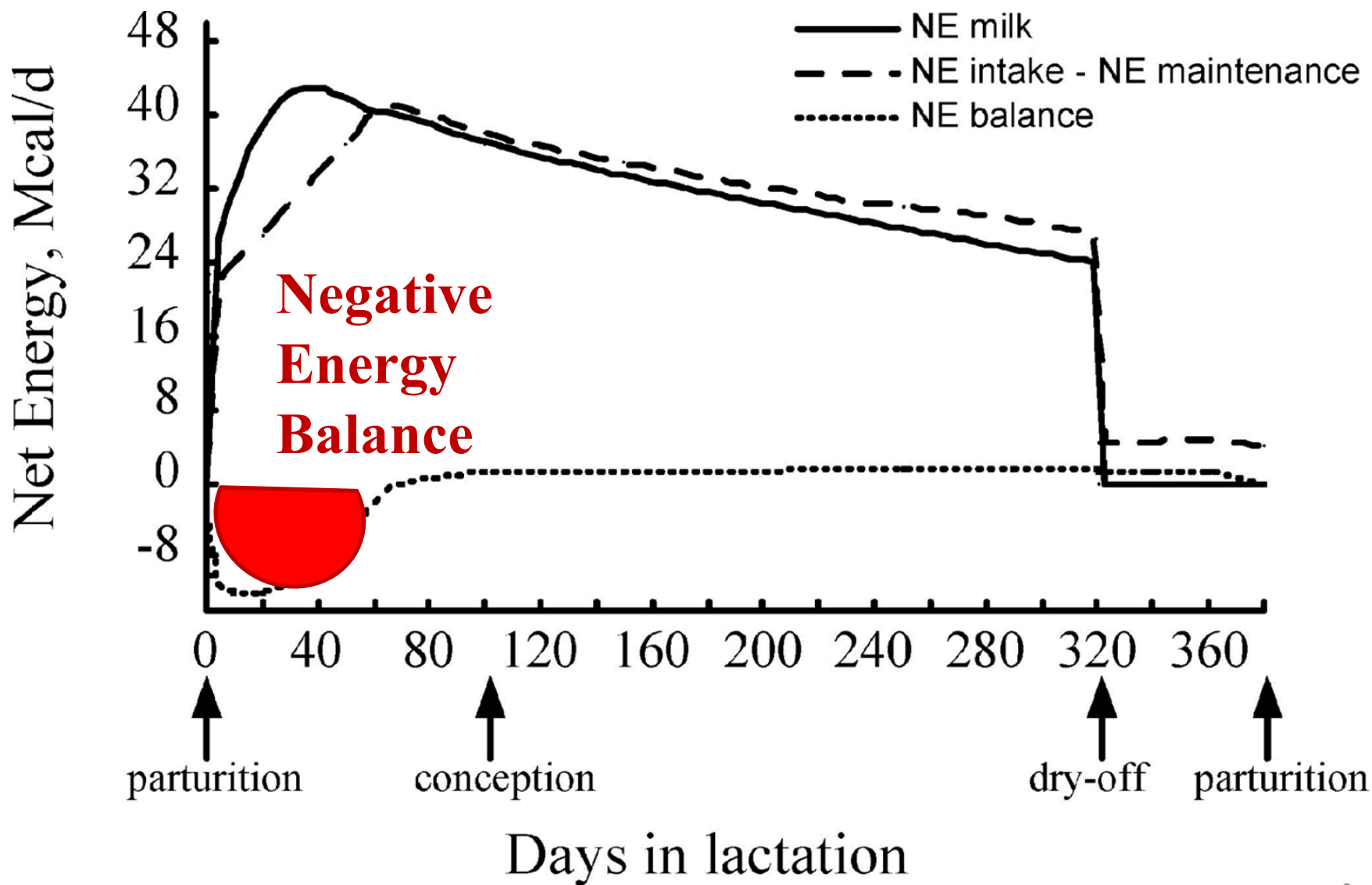
Restricted milking in fresh cows



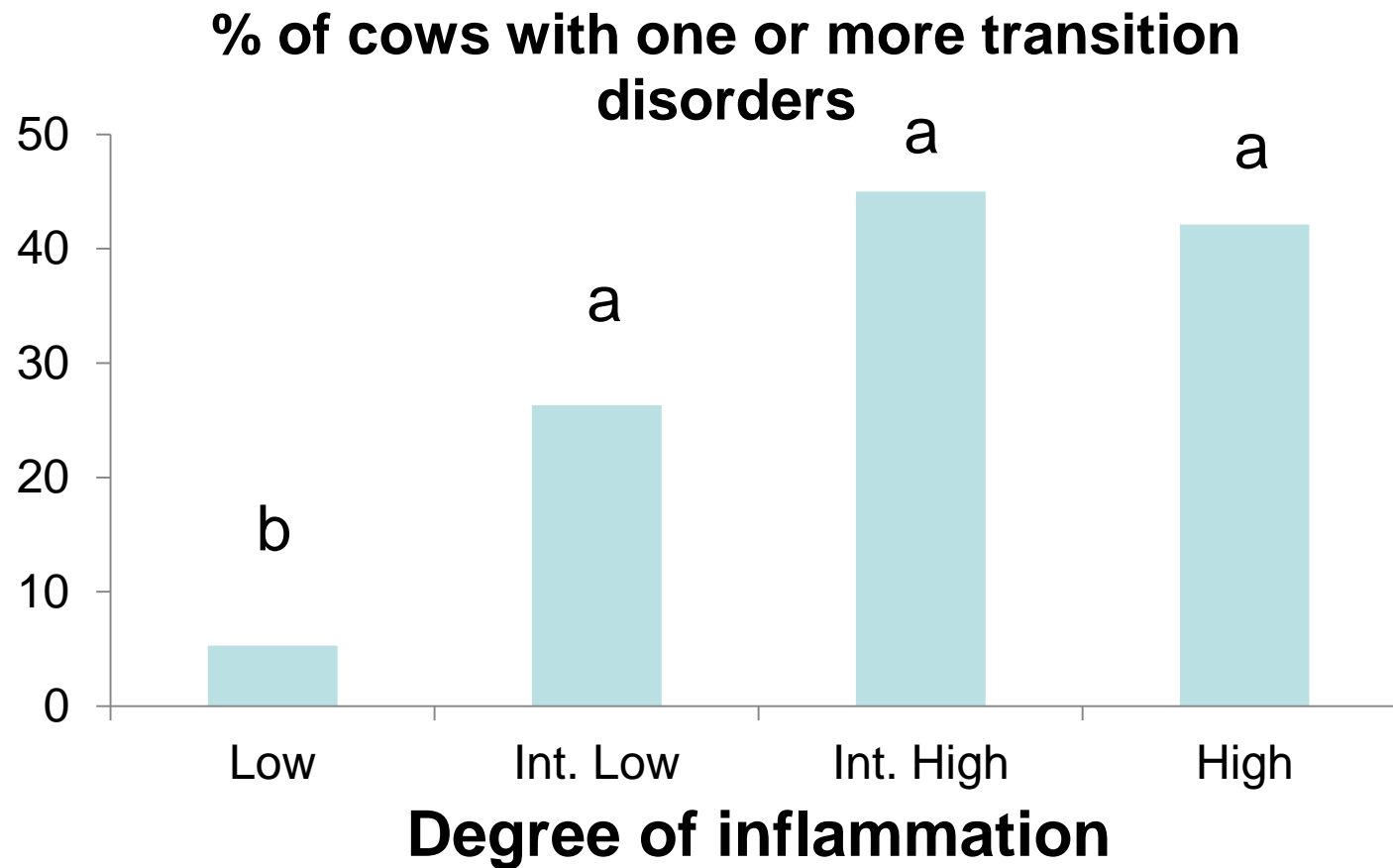
Multiple milking fresh cows



Prepare long before calving



Inflammation is associated with transition disorders



Inflammation: a double-edged sword

- Acute phase markers are linked to less milk, poor fertility, and greater risk of leaving the herd
- Acute phase markers are linked with enhanced neutrophil function



How is it that fresh cows have BOTH suppressed immunity and inflammation?

One possibility:
Inflammation is a counter-measure against lactation-induced immunity problems



What can
we do?

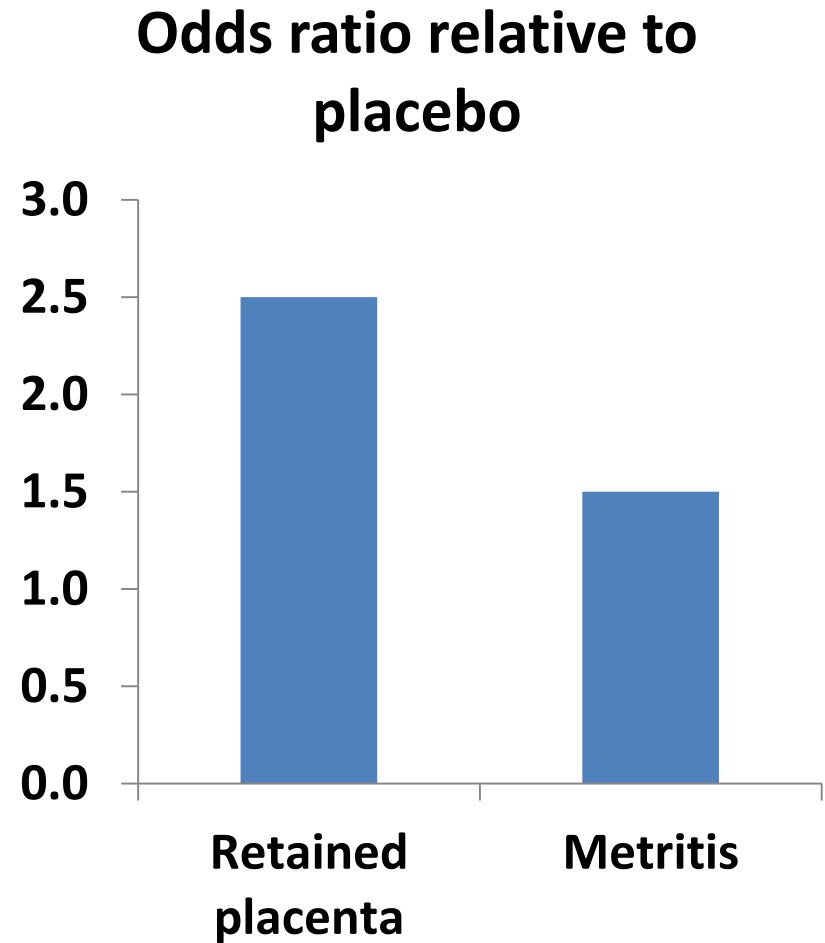
BMP
1st !!



Immediate postpartum NSAID

- Flunixin meglumine given 2 h and 24 h after calving
- Over 1,300 cows enrolled

Blocking inflammation on the day of calving can interfere with inflammatory signals needed to expel the placenta



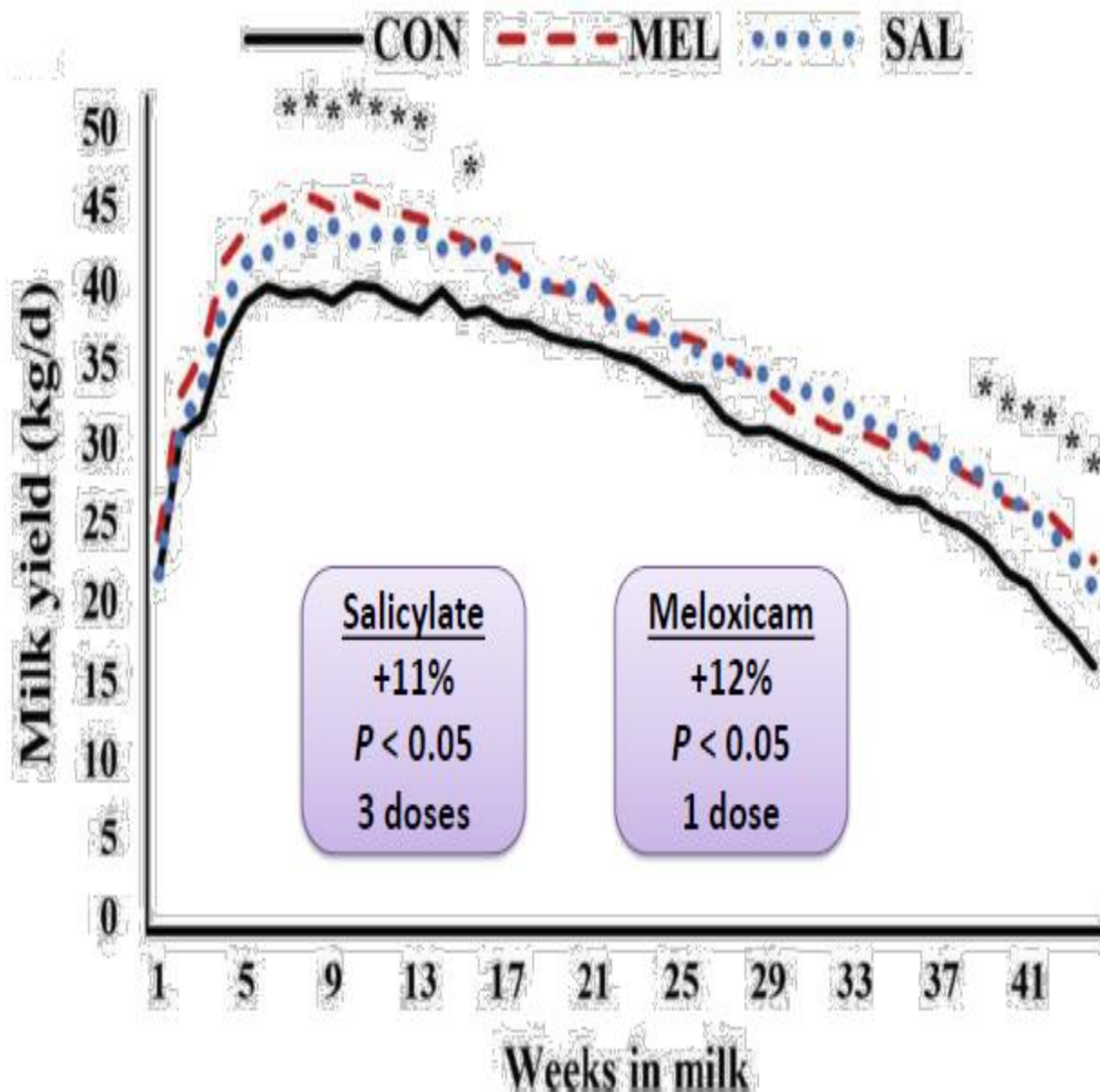
On-farm NSAID study



1. Na salicylate
 2. Meloxicam
- Administered orally starting 24 h postpartum
 - 51 multiparous cows per treatment

Anti-inflammatory
in early lactation
(not approved for
commercial use)

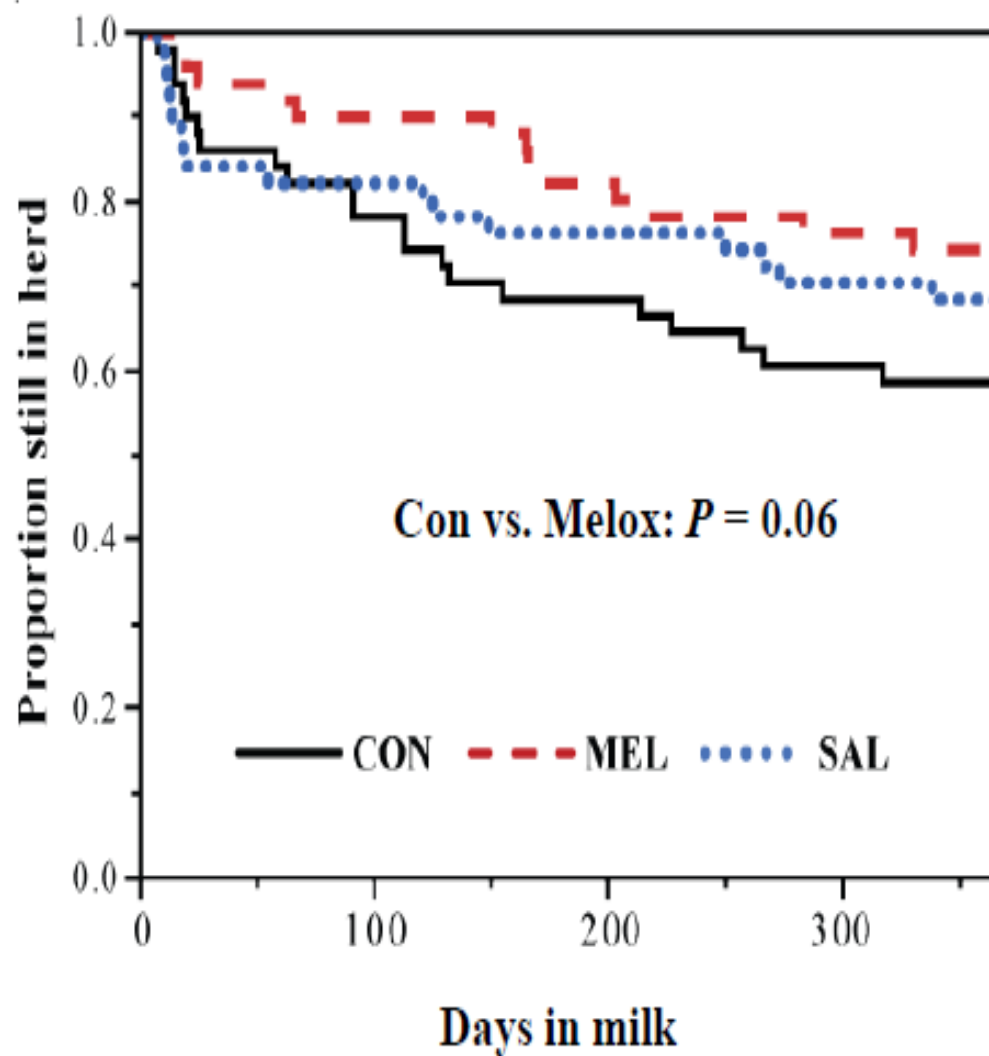
**ILLEGAL FOR
PRODUCTION
PURPOSES!!**



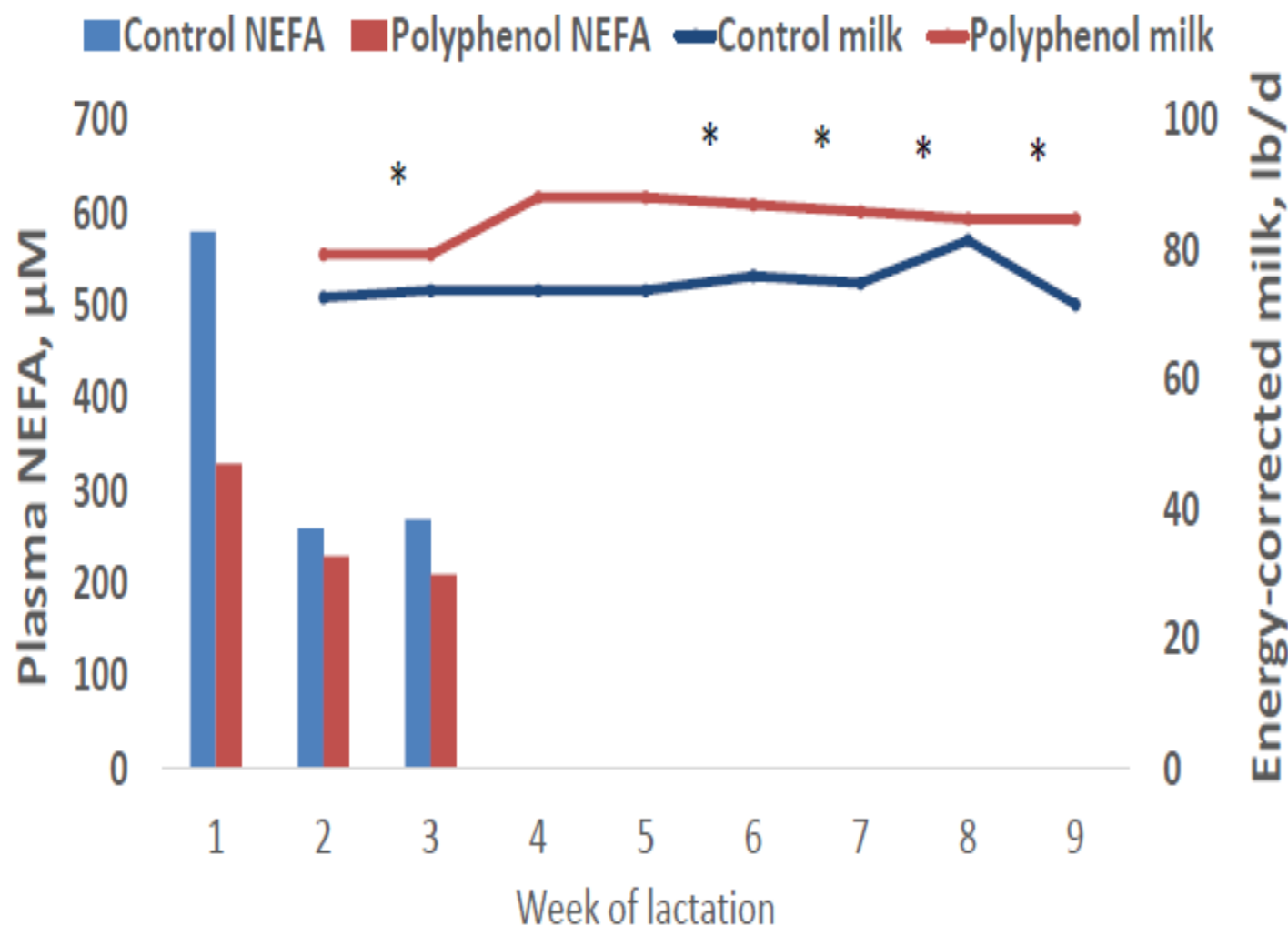


Too much milk?

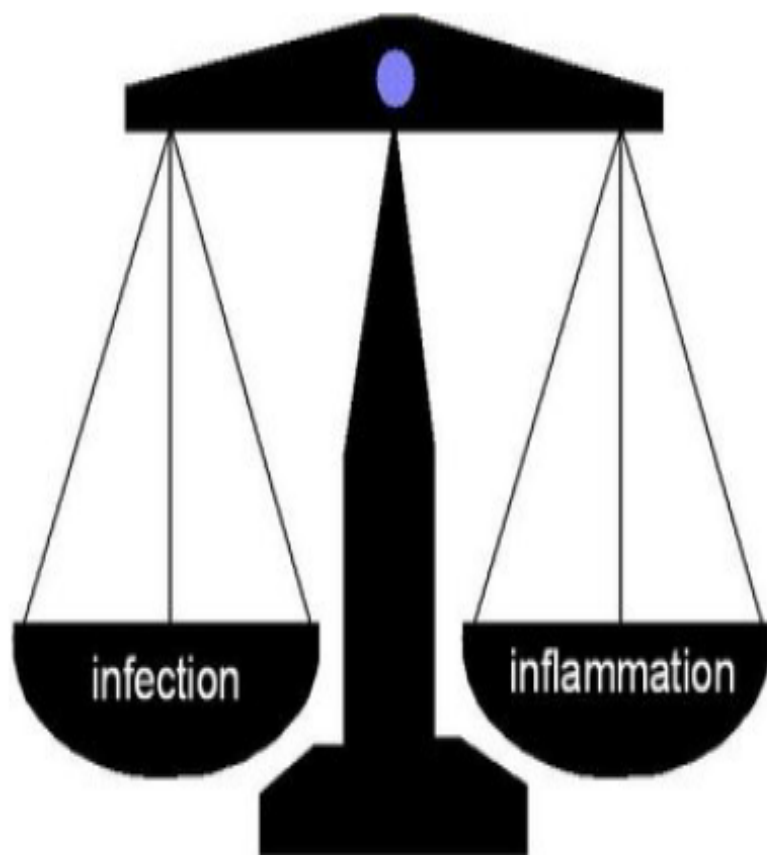
Time to Leave Herd



Polyphenol source improves transition



Having your cake...



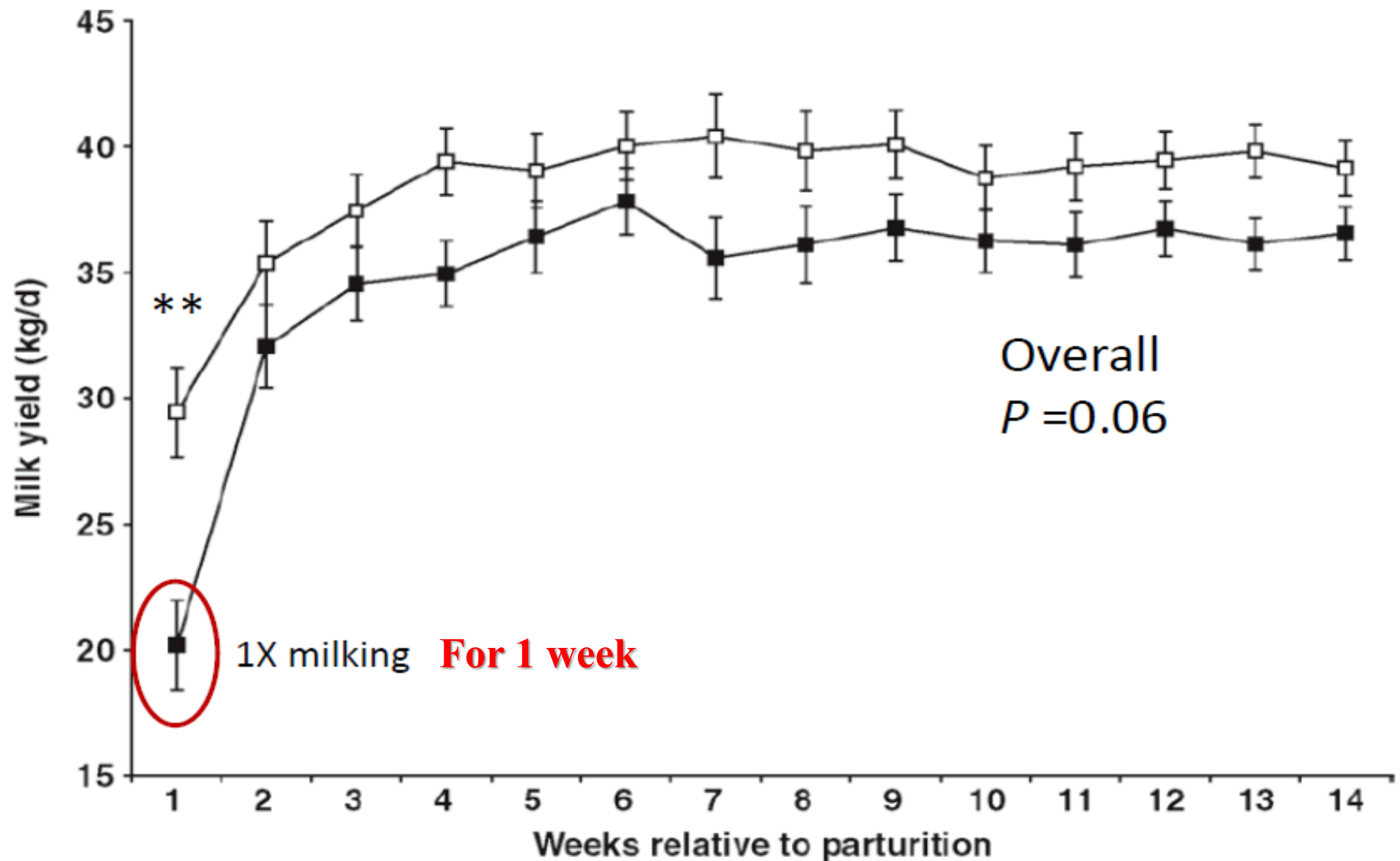
- Can we help transition cows achieve the optimal balance?
- Or do we risk shooting ourselves in the foot by tipping the scale out of balance?

Promoting energy balance in early lactation

- Strategy #1: Decrease energy demand
 - Sacrifice milk yield for the first 1 – 2 weeks
- Strategy #2: Promote energy intake
 - Dietary fat
 - Forage: concentrate ratio



1X milking decreases milk yield



Responses to lower week 1 milk

- No difference in intake
(possible faster increase in 1x)
- Less body weight loss (56% of 2X group)
- Lower plasma NEFA, BHBA
- Higher serum calcium, phosphorus
- Sustained 8% drop in lactose yield
- **No change in fat, protein yields weeks 2 - 14**

Latest iteration: incomplete milking

- A randomized controlled trial with 800 cows across 13 farms recently completed in Canada
- Incomplete milking for the first week: only collected 22 lb/day **Milking? Also 2X milking!**
- Early results show a decrease in ketones in the first 2 weeks
- Will report effects on reproduction, health, and production outcomes...stay tuned!



MILKING FRESH COWS MORE OFTEN



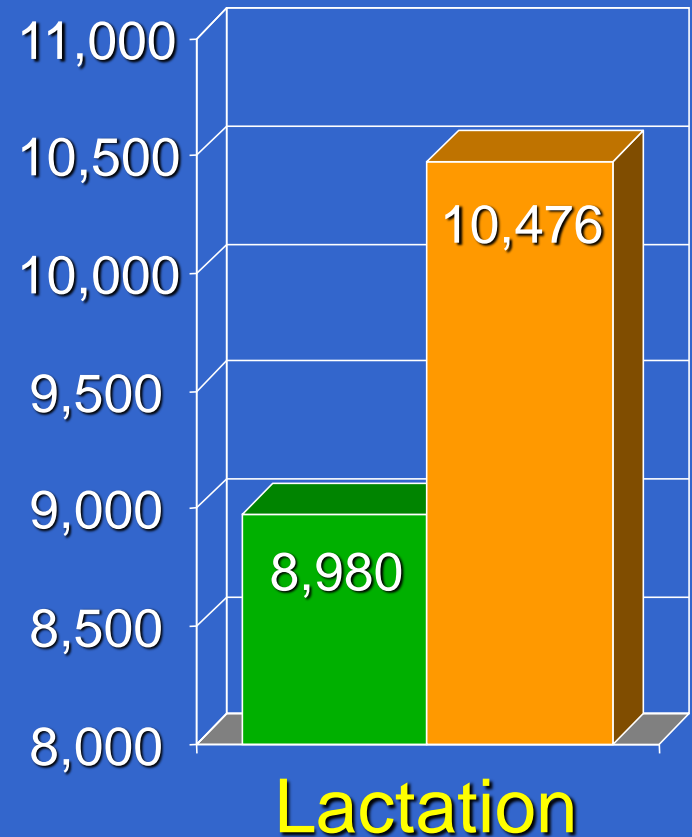
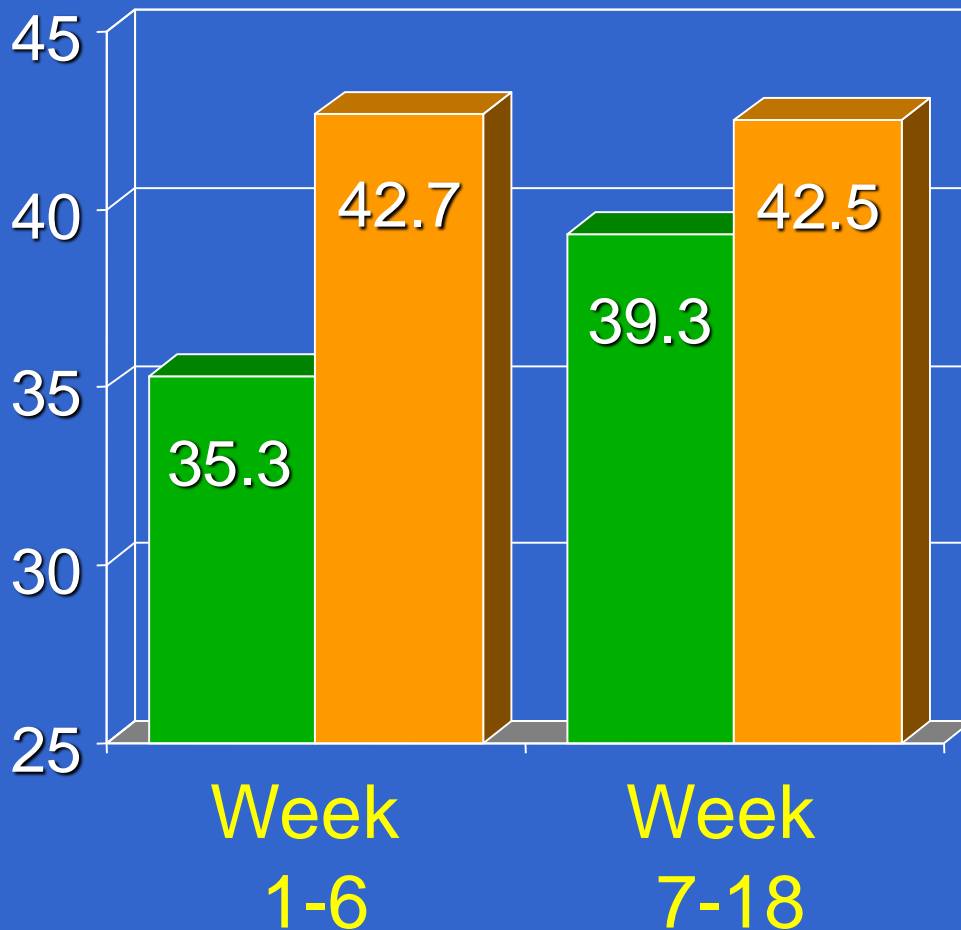
Leo Timms
Iowa State U.



Milk Production in Kg

3X Milkings

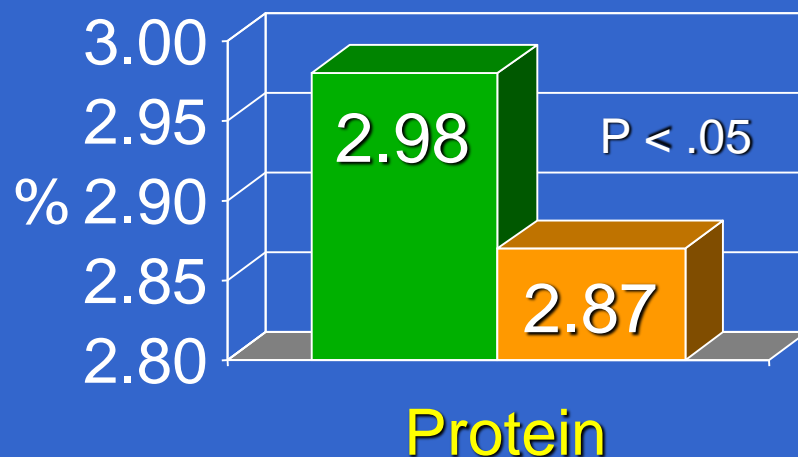
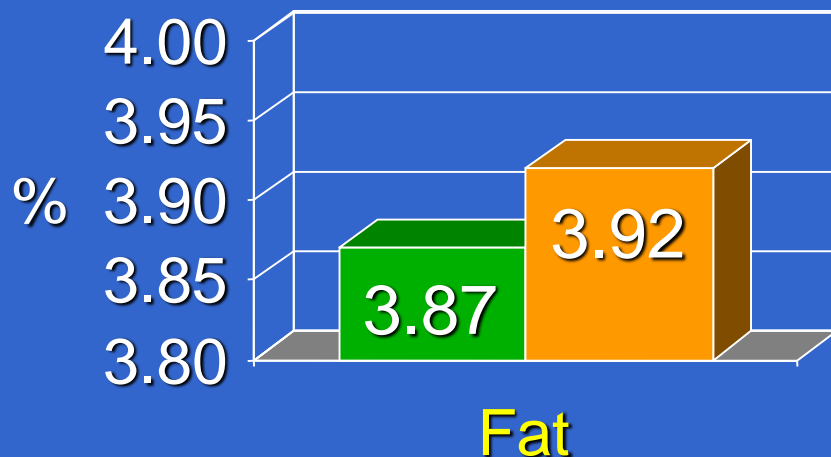
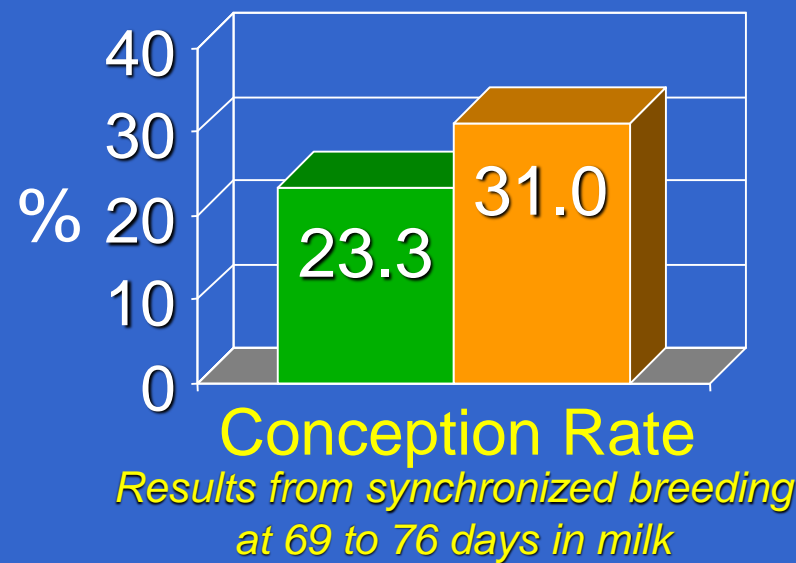
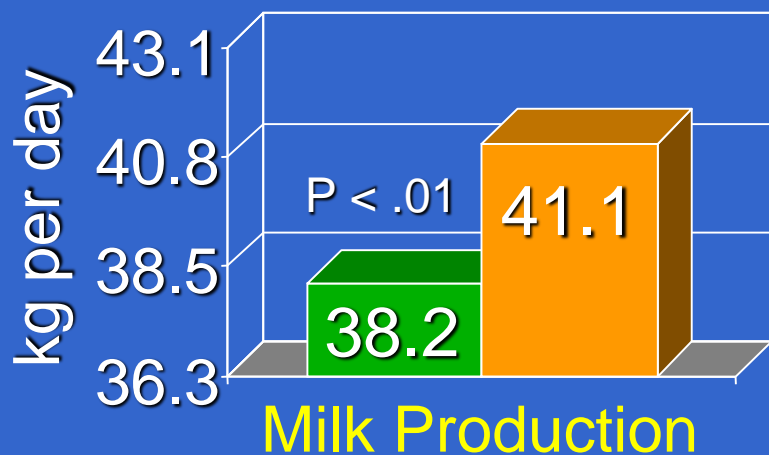
6X Milkings



Multiple Milkings

3X Milkings

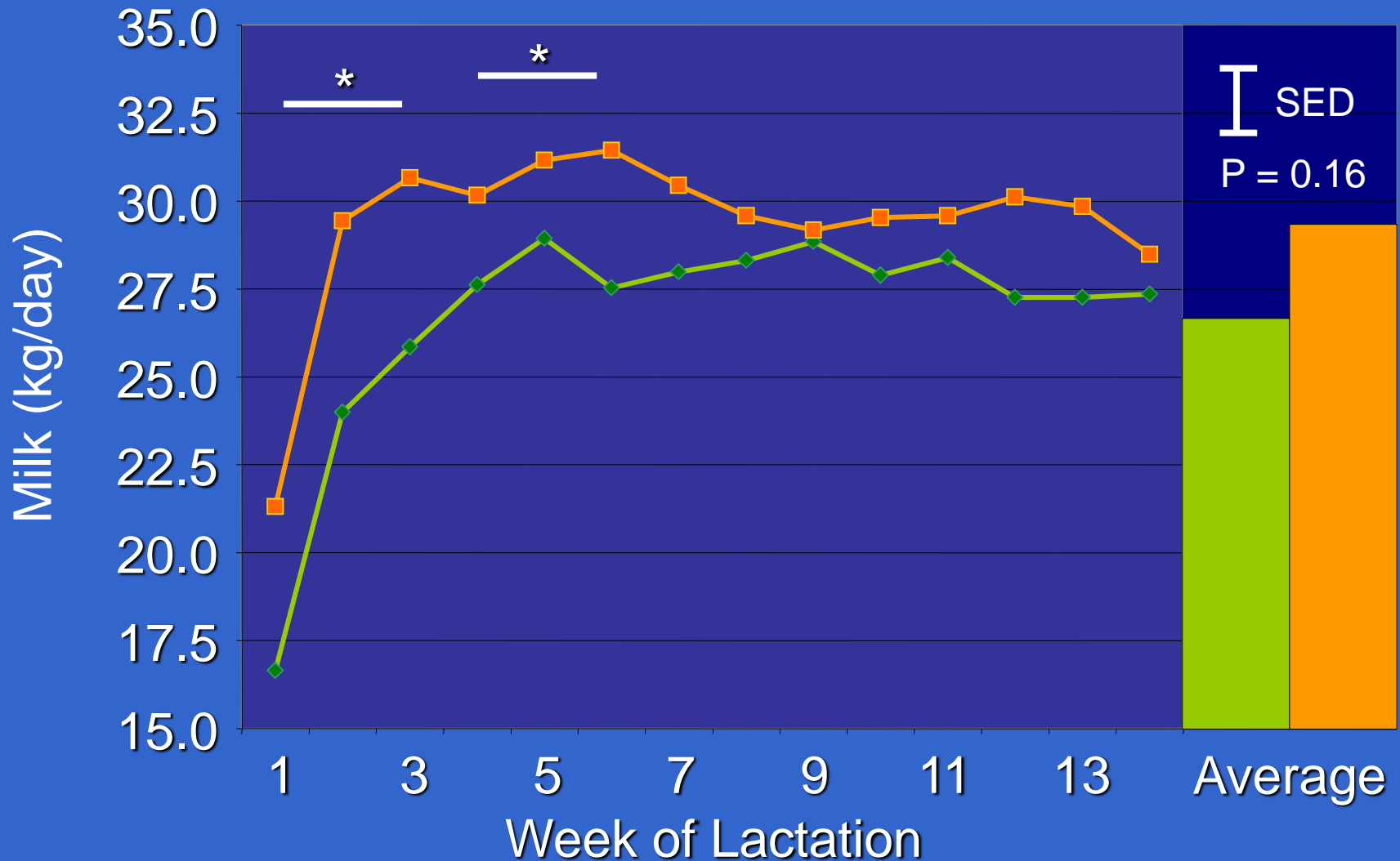
6X Milkings



Henshaw et al.

4X Increases Milk Yield

2x (n=8)
4x (n=8)

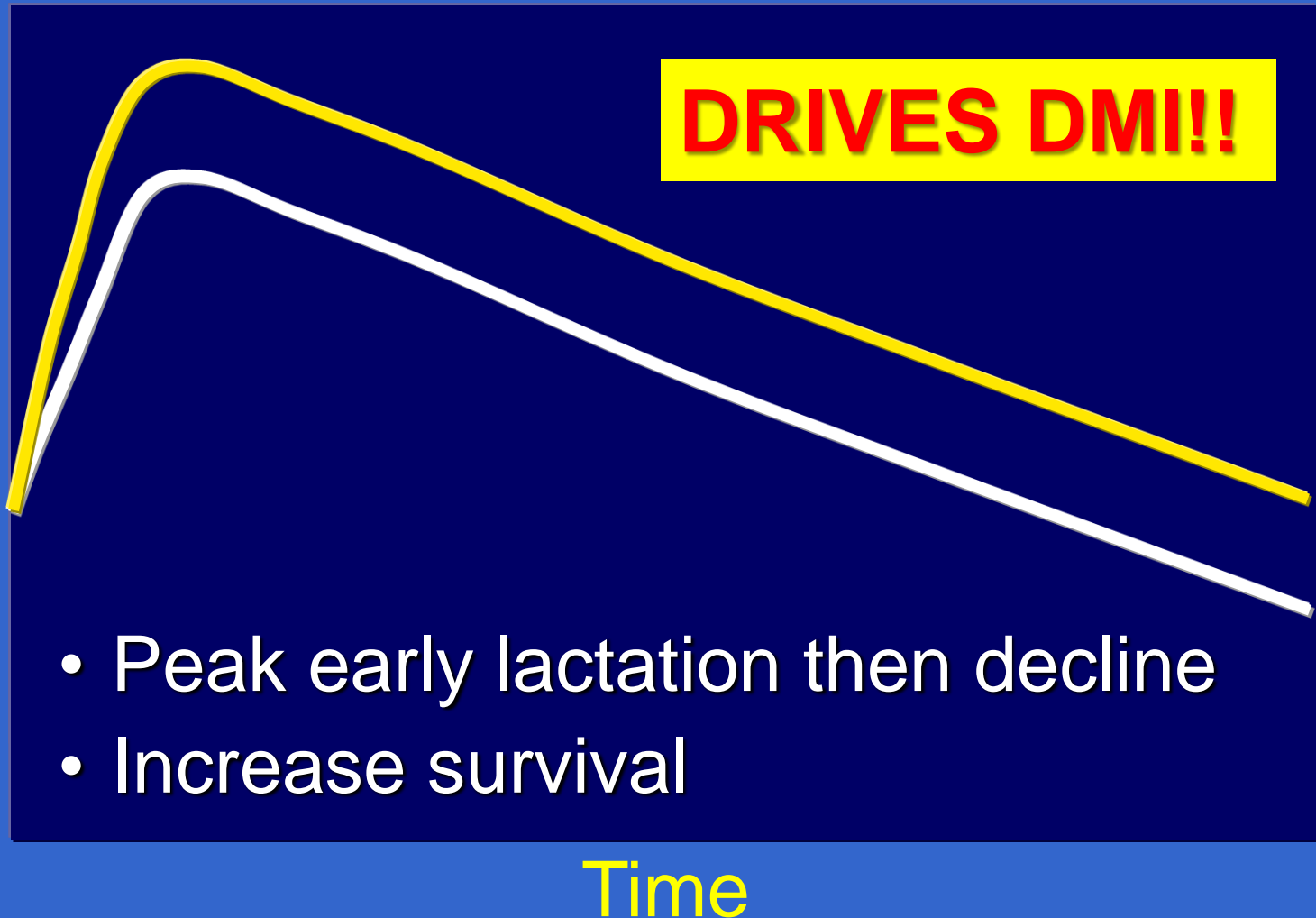


Why Does Milk Production Increase with Multiple Milking?



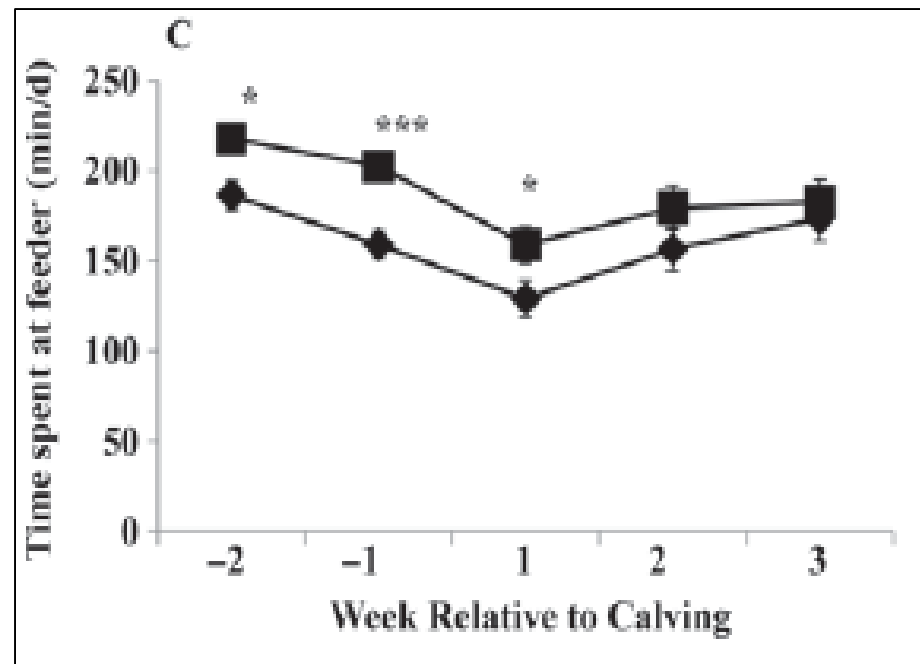
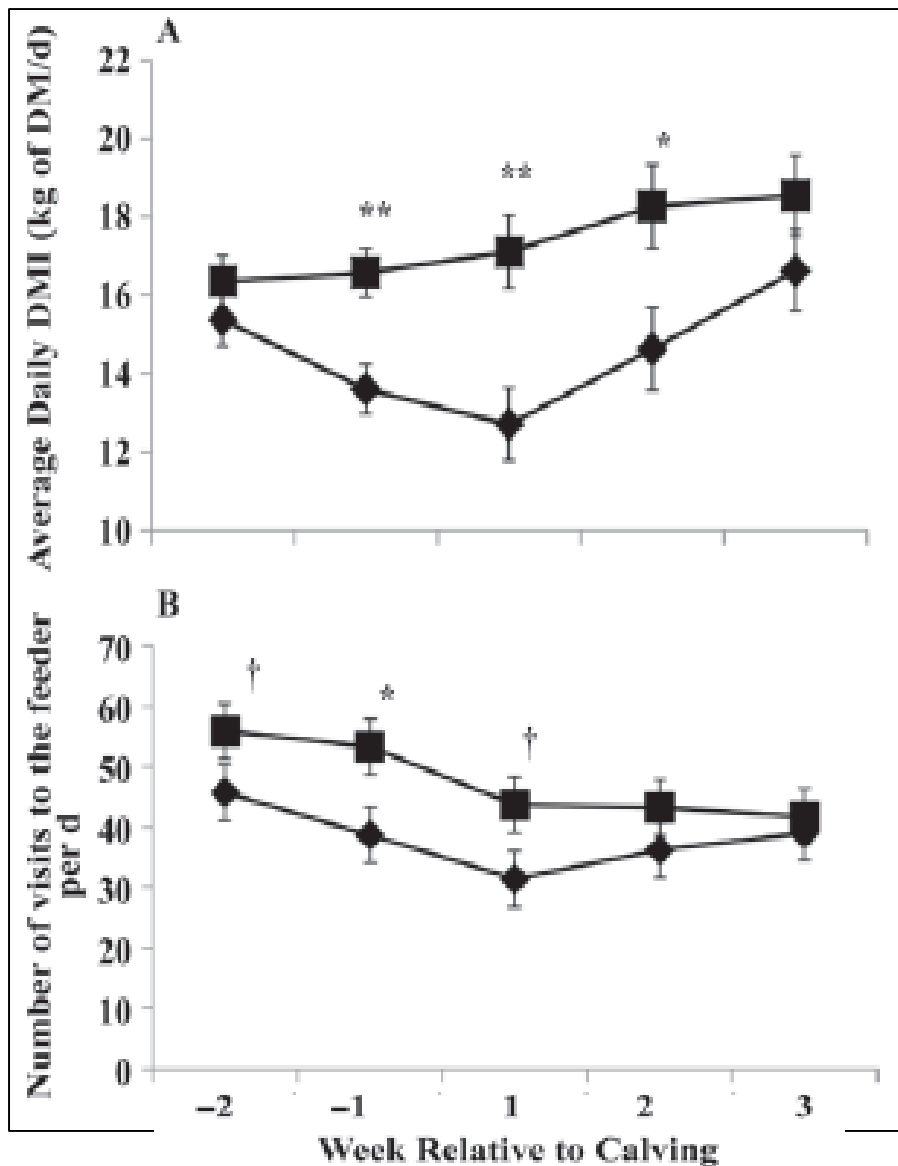
Early lactation effects persist

Differentiated
Mammary Cells



Where Can It Go Wrong?

- **Transition Cow Program**
 - Nutrition
 - Health
- **Milking Procedures and System**
 - Proper milking procedures
 - Take-off settings
 - Teat end health
- **Time in Parlor**
 - Keep time away from bunk to a minimum
 - Do not exceed 4 hours a day



Cows with subclinical ketosis

- - 1 kg DMI wk -2 to -1: 2.2X SCK
- Every 10 min decrease time @ feedbunk: 1.9X SCK!!

Goldhawk et al., JDS 2009

Stocking density 1 week precalving!!!!

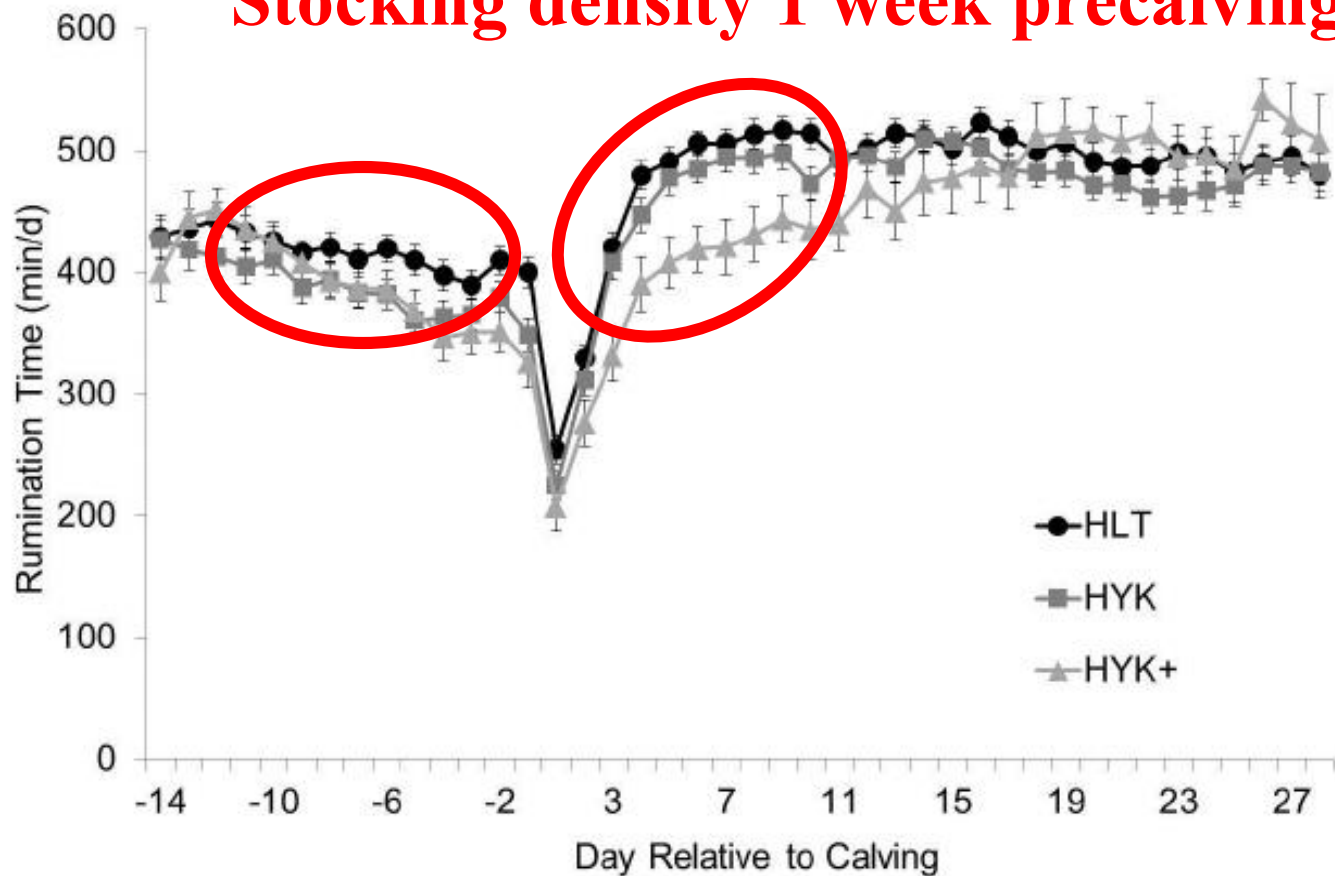
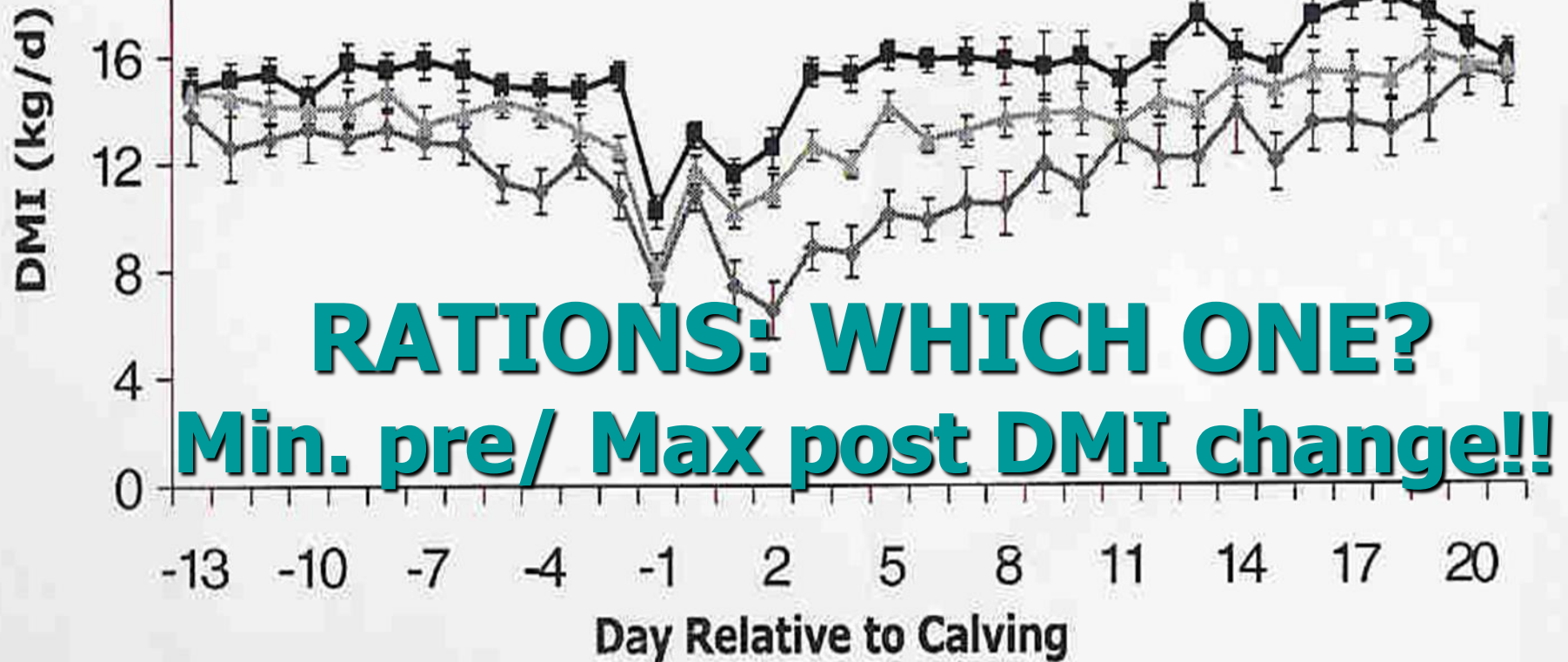


Figure 1. Daily rumination time over the transition period for multiparous cows that were: healthy with no other recorded illnesses (HLT; $n = 87$), subclinically ketotic with no other health problems (HYK; $n = 76$) and subclinically ketotic with other health problems (HYK+; $n = 39$) (adapted from Kaufman et al., 2016).

Kaufman et al., JDS 2016

Increased feedbunk space!! Stall and housing comfort!



DMI differed between healthy cows and those with puerperal metritis ($P < 0.001$) and clinical metritis ($P = 0.003$) both pre and post partum.

← DRY OFF →

BODY CONDITION

***Not thin
or fat!***

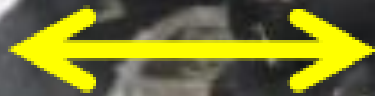
3 – 3.5

- **Thin: poor wt. gain efficiency**
- **Fat: feed intake issues!!!**

WATER 2-4"/COW!!

Proper rations:

- ***EFFECTIVE FIBER!!!***
- ***Energy / Protein***
- ***Minerals / Vitamins***
- ***FEED ALWAYS AVAILABLE!***



***BUNK SPACE
30" / COW***

Feed additives:

- ***DCAD diets!***
- ***Yeast***
- ***Rumensin***
- ***More small meals / day!***
- ***Better rumen health!***

More small meals/day

- ***1X/ day v 2X feeding***
- ***Time feeding related to milking***
 - ❖ ***Milking vs 4 hrs post***

Measuring feed intake!

***85% stocking density or
Adequate feed (30") and rest space***

← DRY PERIOD ——— TRANSITION →

*** VENTILATION * HEAT ABATEMENT**

ALLEYS

- **Space / size**
- **Cleanliness**
- **Footings!!!**

**1 stall / animal
or 100 – 125 ft²!**

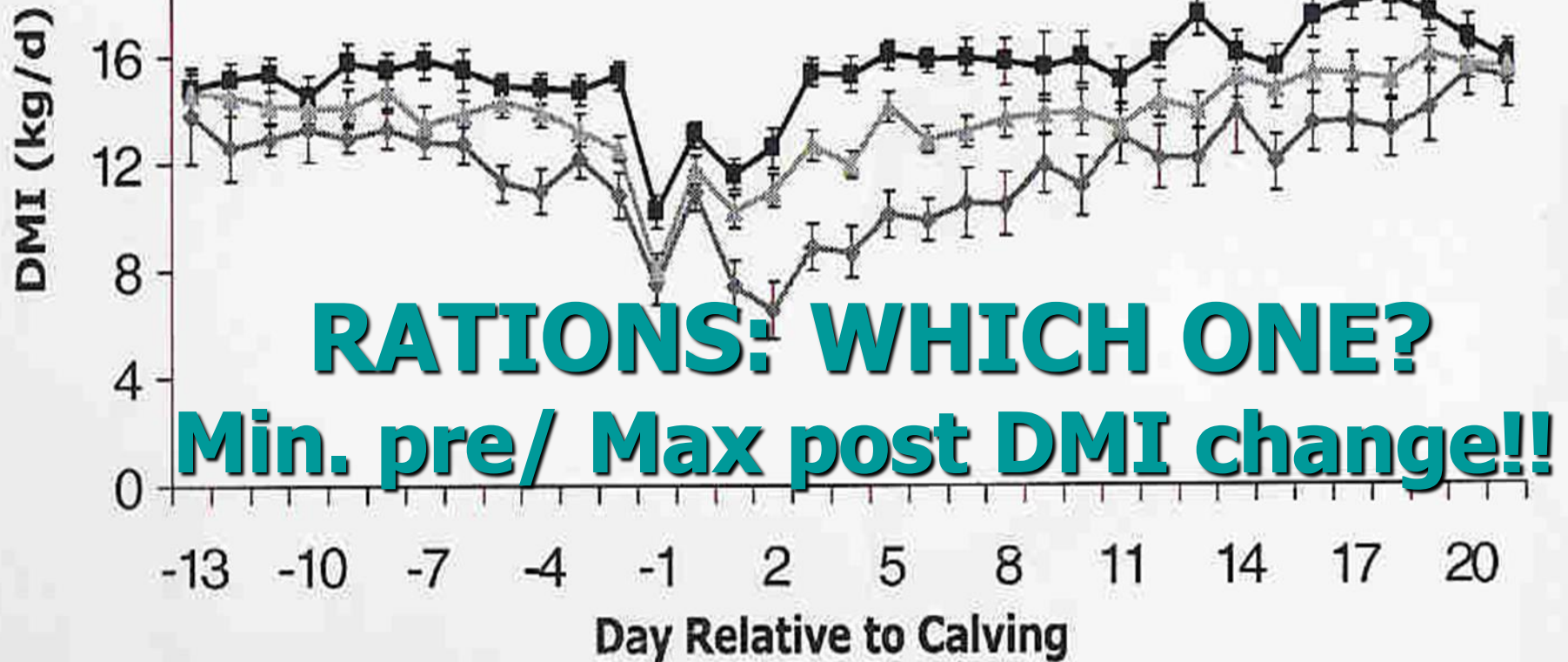
***Clean & Dry
Comfortable
Roomy - space***

← DRY PERIOD — TRANSITION →

Grouping & Feeding Strategies

- **HOW MANY MOVES DURING THIS TIME?**
- **WHAT OTHER CHANGES? DIET? ENVIR?**
- **ALL CHANGES ARE DISRUPTIVE!**
- **2-3 DAY ADJUSTMENT: BEHAVIOR!!!**
 - **HEIFERS >>>> COWS!!!**
- **SPLIT 1ST CALF HEIFERS FROM COWS??**
- **RATION CHANGES: 10-14 D ADJUSTMENT!**
- **CLOSE UP PEN ration change? 10-14d!! ??**

Increased feedbunk space!! Stall and housing comfort!



DMI differed between healthy cows and those with puerperal metritis ($P < 0.001$) and clinical metritis ($P = 0.003$) both pre and post partum.

Thanks for your attention



<http://www.extension.iastate.edu/dairyteam/>

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