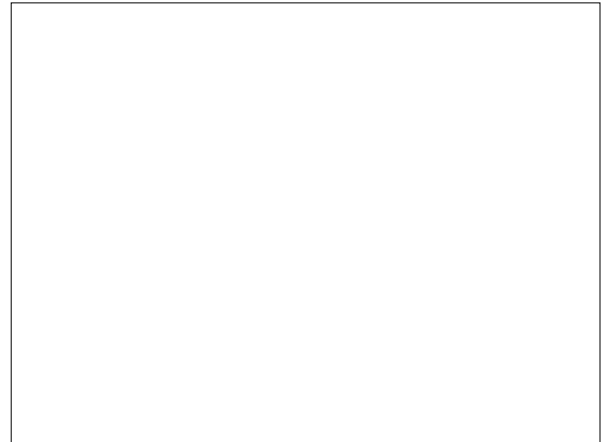


# IMPACTS OF CALF NUTRITIONAL MANAGEMENT ON QUALITY GRADE

2009 Range Beef Cow Symposium  
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## Is Marbling Important



## Packer and Retailer Top Ten Beef Quality Defects

- (1) Lack of uniformity/consistency in marbling and tenderness.
- (2) Cuts are too large for foodservice & restaurant trade.
- (3) Excess fat.
- (4) Abscesses/lesions in cuts, trimmings & variety meats.
- (5) Blood-splashed muscle.

□ Source: National Beef Quality Audit -- 2005.

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## Export Markets

- Top Five Beef Quality Concerns:
  - (1) Unknown Age & Source (Need Mandatory ID & Traceability)
  - (2) Size & Weight Variability
  - (3) Insufficient Marbling
  - (4) Dull & Dark Lean Color
  - (5) Administration Of Growth-Promoting Implants

SOURCE: National Beef Quality Audit -- 2005. July 2006.

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## Top 10 Quality Challenges: All Sectors of the Beef Industry

- ☞ Lack of uniformity in live cattle, carcasses and cuts
- ☞ Inadequate tenderness
- ☞ Insufficient marbling/quality grades too low
- ☞ Excess fat cover
- ☞ Carcass and cut weights too heavy
- ☞ Low cutability
- ☞ Presence of injection-site lesions
- ☞ Presence of bruises on carcasses and cuts
- ☞ Inadequate flavor
- ☞ Inadequate muscling

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## International

- Foreign markets like U.S. grain fed beef
- For years, U.S. has had little competition for producing grain fed beef
- Losing ground....
  - Australia

## Economic

- **2005 NBQA estimated the beef industry lost more than \$1.3 billion a year in profit due to**
  - excessive fat cover
  - too little marbling

## Eating Experience

- 3 most important traits affecting beef eating experience
  - Tenderness
  - Juiciness
  - Flavor
- Marbling directly or indirectly affects all 3 traits

## Eating Experience

- Given acceptable tenderness
  - The main driver for a “good” eating experience is the flavor, and marbling is one of the most important drivers for the flavor profile

## Is Marbling Important



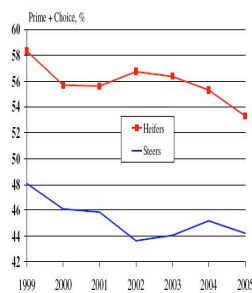
## Is Marbling Important



**YES!!!**

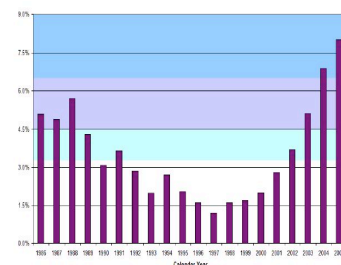
## Grades Are Dropping (Corah and McCully, 2006)

Figure 2. Prime & Choice by Year: Steers & Heifers.



## Cattle Are Fatter (Corah and McCully, 2006)

Figure 4. USDA Yield Grade 4 Beef – 1985-2004 (Percentage of Total Graded).





## Recent Spike in Quality Grade.....

- 15-16% increase in supply of choice cattle
- 30% increase in share of prime cattle
- 40% increase in CAB in last 3 years

## Recent Spike in Quality Grade.....

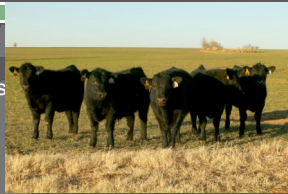
- Calves on feed longer?
  - Increased heifers to market
- Utilization DGS
  - Increased DMI
- Improved genetic selection
  - Technology
  - Instrument grading
- Increased health of calves
  - Improved programs/products

## Factors Affecting Quality Grade

- Implants
  - Need to balance growth and carcass quality
- Beta agonists
  - Beta 1- little if any affect
  - Beta 2- appears to affect carcass quality
- Backgrounding
  - Health of calves
- WEANING STRATEGY/ NUTRITION

## Historical Weaning Strategies

- Yearling calves
  - Lighter weaning weights
  - Placed on inexpensive winter feed (wheat)
    - Until 8-9 wts
    - Placed in feedlot
  - Resulted in heavier final body weights with moderate to low quality carcass



## Historical Weaning Strategies

- Calf feds
  - Improved genetic selection for growth has led to increased weaning weights
  - Increased emphasis on carcass quality
  - "cheap" corn
  - Moderate final body weights with higher quality carcasses



## Historical Weaning Strategies

- Early Weaned
  - Although younger, longer actual days on feed
  - Lighter carcasses (if fed to common backfat)
  - Higher quality carcasses
  - Added benefits to dams
    - Especially young females

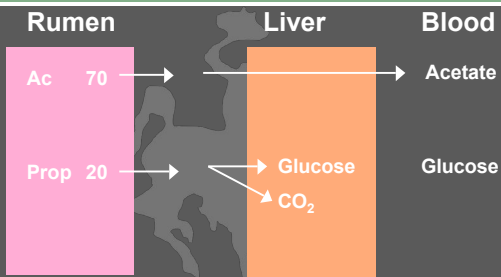


## Alternative Strategies

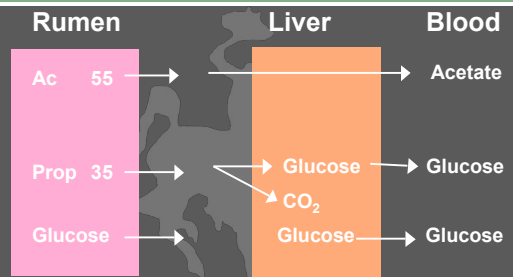
- Creep feeding
  - Increase weaning weights
  - Benefit to dam
  - Increase health advantage
  - Mixed results for carcass quality
    - Starch vs non-starch



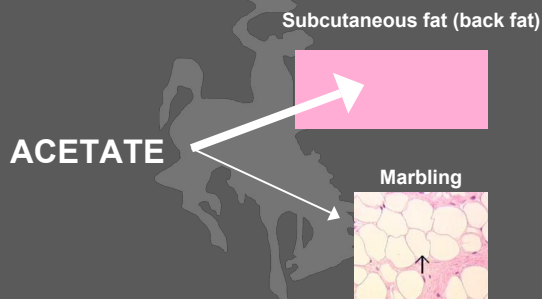
## Forage based diets



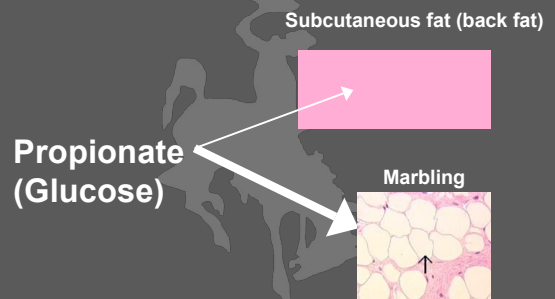
## Grain (Starch) based diets



## Destination of Energy Substrates



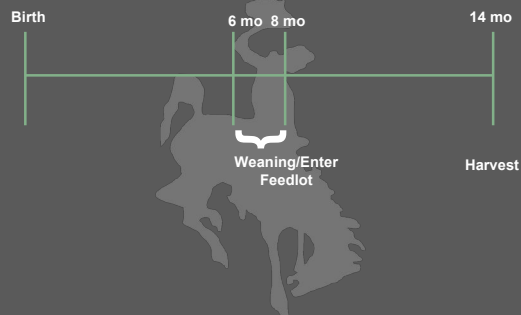
## Destination of Energy Substrates



## When Does Marbling Begin...

- Extensive research reveals marbling begins early in life
- Impacts of early nutrition (100 days of age) can be realized at finishing
  - Creep feeding
  - Early weaning
  - Starch

## Calf Timeline



## Calf Timeline



## Investigating Strategic Feeding

- Wanted to take advantage of benefits of early weaning on carcass quality
- Decrease days in feedlot compared to traditional early weaned calves
- Increase carcass size compared to traditional early weaned calves

## Investigating Strategic Feeding

- Early wean calves (~100-120 DOA)
  - Place on high grain (starch) ration in feedlot (100 days)
    - Develop marbling
    - High cost diet, but at a time they don't eat much
  - In fall, manage like a traditional stocker calf
    - Low input winter feed
  - Finish in the feedlot for last 90 days

## Investigating Strategic Feeding

- Preliminary Results (Purdue University; very small numbers):
  - Early weaned calves had greater ultrasound marbling at the time traditionally managed calves were weaned
  - This advantage was maintained through the winter feeding period (comparing with calf feds)
  - Resulted in more choice or higher carcasses

## Investigating Alternatives...

- Collaborative Study between University of Wyoming, USDA-ARS Mandan North Dakota, South Dakota State University
- Preliminary Data:
  - EW calves had 10% greater marbling score after 100 d than the conventionally weaned calves

## Thank you

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