Thinking outside the shots: Managing newly weaned calves

Dale A. Blasi
Kansas State University

2016 New York Beef Producers’ Association Annual Meeting, Winter Conference
Animal Sciences used to be Animal Husbandry
Primary challenges to competitiveness for the next 5 years

- Capital requirements relative to ROI
- Feed input costs
- Other input costs (fuel/labor)
- Land availability/purchase and lease price
- Labor availability
# Suggested Guide for Banana Ripening

## Pulp Temperatures °F

<table>
<thead>
<tr>
<th>Day Schedule</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Day 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Day Schedule</td>
<td>64°</td>
<td>64°</td>
<td>62°</td>
<td>60°</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Day Schedule</td>
<td>62°</td>
<td>62°</td>
<td>62°</td>
<td>62°</td>
<td>60°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Day Schedule</td>
<td>62°</td>
<td>62°</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>58°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Day Schedule</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>58°</td>
<td>58°</td>
<td></td>
</tr>
<tr>
<td>8 Day Schedule</td>
<td>58°</td>
<td>58°</td>
<td>58°</td>
<td>58°</td>
<td>58°</td>
<td>58°</td>
<td>58°</td>
<td>58°</td>
</tr>
</tbody>
</table>

## Notes:
- Temperatures are °F
- Temperatures are PULP not AIR
- Proper temperature, humidity, time, air circulation, mature bananas and ethylene are required for ripening.
- Use the Super-Ripening Center® and Ethy-Gen® II to hasten ripening.
- Maintain 100-150 ppm of ethylene until color breaks.
- After 24 hour ripening initiation period, vent room for 15-20 minutes with fan on.
- For delayed shipment hold at 58°F.

## Color Index No.

<table>
<thead>
<tr>
<th>No.</th>
<th>Peel Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
</tr>
<tr>
<td>2</td>
<td>Green – trace of yellow</td>
</tr>
<tr>
<td>3</td>
<td>More green than yellow</td>
</tr>
<tr>
<td>4</td>
<td>More yellow than green</td>
</tr>
<tr>
<td>5</td>
<td>Green tip</td>
</tr>
<tr>
<td>6</td>
<td>All yellow</td>
</tr>
<tr>
<td>7</td>
<td>Yellow – flecked with brown</td>
</tr>
</tbody>
</table>
In a perfect world, upon arrival, all calves would be:

- Healthy (not stale)
- Right breed combination
- Castrated
- Dehorned
- Upper medium/large frame
- Heavy (not extreme) muscling
- Available in truck-sized lots
Selected annual flows
Million head

- 0.3 - 0.9
- 1 - 2

= Intraregional flow

Source: State certificate data (generally 2001) compiled by Economic Research Service, USDA.
Direct

Sale Barn

Secondary Buyer

Order Buyer

Operation A

Operation B

Customer

Operation 1

Operation 2

Operation 3

Operation 4

Operation n

Lot #

Lot #

Lot #

Lot #

Lot #

Lot #

Lot #

Lot #

Lot #

Lot #
Stressors Encountered at Weaning

• Separation from dam
  – Milk deprivation
  – Change in solid feeds
  – Change in environment
    • Sale barns
    • Commingled and sorting
Stresses Encountered in Transit

• Further commingled
• Diesel fumes
• Loud noises
• Poor sanitation
• Start and stop, speeds, and turns
• Extreme weather
• Shrink (water and feed deprivation)
R² of beef calf wellness/ weight gain with location in a truck

- Calves in ROT section had lower gains compared to NOT, TOP and tended to be lower than BOT and NOB (P<.10)
- Cattle in the forward sections (NOT, NOB) were sig (p=.02) less likely to be treated at least once compared to cattle in the TOP and BOT.
- Calves with compartments with 15 hd or less tended to have lower odds of being treated compared to cattle in compartments with 16 - 30 head.
Anatomy of a Successful weaning/receiving Program

• Proper planning
  • Functional equipment
    – Working facilities
    – Waterers
    – Feeders
  • Quality ration ingredients
• Astute management
Equipment Specs

- Throat height no more than 18”
- Calves weighing up to 600 lbs
  - 18 to 22” bunk space/head
- Free-choice hay feeders
  - 6 to 8” space/head
Hayrack Design

- Fenceline placement
- Visual feed
- Small squares
Drought and other adverse weather
Weather Extremes

Drought
- Changes forage quality and abundance – drought – protein quality, energy content, digestibility, trace minerals (Zn, Cu, Se)
- Changes water quality
- Changes cattle management practices – early weaning, out of season supplementation, preserving cow condition

Extreme Cold
- Changes calf viability – cold, wet and windy
- Changes cow’s ability to mount a good immune response

Rain
- Increased flies
- Weeds and grass bloom
Weather – Effect on Immunity

• Trace minerals – impacts response to vaccines and ability of a calf to fight disease causing organisms

• Low cow body condition – lower amount and quality of colostrum

• Absorption of colostrum - cold temperatures impact calving ease and reduces colostrum intake
Weather Extremes - Outcomes

• Increased brood cow herd problems – abortions, pneumonia in cows, pinkeye
• Increased calf problems – weak calves at birth, higher scours rates, increased summer pneumonia cases, higher parasite loads
• Increased weaning problems – poor response to vaccines, increased pneumonia cases with poor response to treatments
• Yearlings and replacement heifers – reduced performance, poor reproductive performance, pinkeye
Weather Extremes - $$$$$$

- Supplementation expenses – micro- and macro-nutrients – amount, sourcing and timing of delivery
- Commuter cattle
- Marketing changes
- Implant program revision
- Health products – choices and timing of delivery
Effects of shade on performance, health, physiology, and behavior of newly-arrived, high-risk, heat-stressed beef calves

Objective:

To determine the effects of shade use in receiving cattle systems on:

- Heat stress abatement
- Feedlot performance
- Pen environment
- Behavior
Use of shade during the initial 28 days of the receiving period offered limited improvements in F:G and ADG.

Pen surface temperatures were significantly different between shaded and control pens during both trials.

Shaded cattle spent less time drinking, eating, and walking during the 3 day observation periods, especially when THI values were greater than 82.

Respiratory rate and panting scores were reduced greatly by the use of shade.

Application of shade reduced body temperature when daytime heat stress climbed greater than 78 THI; however, control calves compensated more rapidly.
Main Points of Health Program*

• **Prompt** processing of new cattle
• **Early** detection of sick cattle
• **Effective** treatment of schedules and records
• **Recovery** pen management

* The key to a good health program is preventive medicine
Profitable Processing

- Processing cattle morning after arrival
- Work cattle in small groups
- Vaccinate for bacterial and viral diseases
- Deworm, delouse and degrub
- Implant
- Castrate, abort, tip horns -- delay if sick
- Take temperature -- treat & I.D. sick cattle
- Keep processing and health records
Bovine Respiratory Disease Complex

• Primary infectious disease affecting cattle.

• Multifactorial nature
  – Pathogen
    • Common bacterial causes are Mannheimia haemolytica, Pasteurella multocida and Haemophilus somnus, Arcanobacterium pyogenes and Mycoplasma
    • Various viruses, especially IBRV, BVDV, BRSV and PI3 often play a significant role in BRD outbreaks
  – Environmental
  – Animal
Pre- and postweaning Factors Affecting BRD

Preweaning factors:
- Prenatal nutrition
- Intake of colostrum
- Persistent BVD
- Preweaning health
- Temperament
- Preshipment management
  - Preconditioning
  - Vaccinations
  - Nutritional status

Postweaning factors:
- Transportation/marketing stress
- Commingling
- Receiving period management
  - Castration, dehorning, etc.
  - Implant programs?
- Receiving diet nutrients
  - Energy (roughage)
  - Protein
  - Minerals (Cu, Se, Zn)
  - Vitamins (E, antioxidants)
  - Prophylactic antibiotics

Immunity

BRD

Feedlot performance
Feedlot health
Carcass quality

Duff and Galyean, 2007
Health programs traditionally focus on intervention at arrival

• Vaccination – primarily viral but also Pasteurella and Histophilus and blackleg strains
• Deworming
• Fly and lice control
• Metaphylaxis – arrival use of antibiotics
The types of vaccines used can influence the inflammatory response
Endotoxin content

- Endotoxins injected into cattle can cause an animal to look sick, spike a fever and can suppress the immune response
- Frequently present in whole cell, Gram negative type vaccines (Ex: Pinkeye, Salmonella, Pasteurella, Histophilus, scours vaccines)
- Amounts vary but are generally low. The caution is the amounts can be additive if multiple vaccines are given at the same time
- Damaged or dated products can contain more endotoxin levels
- Endotoxins can be found in other types of injectables, not just vaccines
Change what’s used

• Decrease sheer number of injectable products used
• Select products wisely – less irritating
• Don’t stack gram negative or endotoxin prone products
• If use modified live viral vaccines in face of high level of inflammation can over compensate in response and decrease effectiveness of the vaccine (Roth, 2009)
A field study evaluating health, performance, and behavior differences in crossbred beef calves administered different vaccine-parasiticide product combinations

Published in *Vaccine* 2010; 28 : 5998-6005

Gregg A. Hanzlicek, Brad J. White, David G. Renter, Dale A. Blasi
Study Objective

• Compare health, performance, and behavior differences between two stocker-calf arrival health programs—one a minimally invasive program (MIN) and the other a more invasive program (MOR)

• Hypothesis: calves administered the minimally invasive program may outperform in health and performance and behave differently than calves administered the more invasive program.
<table>
<thead>
<tr>
<th>Minimal Invasive (MIN)</th>
<th>More Invasive (MOR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arrival</strong></td>
<td><strong>Arrival</strong></td>
</tr>
<tr>
<td>- 1 intranasal 4-way BRDC viral vaccine</td>
<td>- 1 intramuscular 4-way BRDC viral vaccine</td>
</tr>
<tr>
<td>- 1 subcutaneous 2 cc Clostridium</td>
<td>- 1 subcutaneous 5 cc Clostridium</td>
</tr>
<tr>
<td>- Oral parasiticide</td>
<td>- 1 subcutaneous parasiticide</td>
</tr>
<tr>
<td>- Topical parasiticide</td>
<td></td>
</tr>
<tr>
<td><strong>Revaccination (day 28)</strong></td>
<td><strong>Revaccination (day 28)</strong></td>
</tr>
<tr>
<td>- 1 subcutaneous 2 cc Clostridium</td>
<td>- 1 single antigen BRDC intramuscular vaccine</td>
</tr>
<tr>
<td></td>
<td>- 1 subcutaneous 5 cc Clostridium</td>
</tr>
</tbody>
</table>
Study overview

- Kansas State Beef Stocker Unit (KBSU)
- Two replicates
  - Approx. 300 calves each
  - 3 truckloads/replicate
- Approximately 42 days in length
- Crossbred bulls and steers
- Purchased through order-buyer
- Each truckload housed within 8 pens
  - 11-14 calves per pen
Outcomes

- Calf aversion to program administration (arrival only)
  - Vocalization

- Health-bovine respiratory disease (BRDC)
  - Morbidity
  - Mortality
  - Case-fatality
  - 1st treatment success
  - Chronicity

- Performance
  - ADG
    - Arrival to day 28
    - Day 28 to day 42
    - Arrival to day 42
      - Feed to gain
      - Feed intake (feed delivered)

- Behavior: 2 weeks after arrival and 2 weeks after revaccination (day 28)
  - Mean steps taken/24 hours
  - Percentage of time spent lying down/24 hours
Percentage Vocalizing at Initial Program Administration

- MIN: 40.0%
- MOR: 48.2%

Program

Percentage vocalizing

0% 20% 40% 60%

Knowledge for Life
## Health—(BRDC)

Percentages and *p*-values for health outcomes by program

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Program</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN</td>
<td>MOR</td>
<td><em>p</em>-value**</td>
<td></td>
</tr>
<tr>
<td>Morbidity</td>
<td>59.7%</td>
<td>47.8%</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(184/308)</td>
<td>(146/305)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>3.5%</td>
<td>1.9%</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(11/308)</td>
<td>(6/305)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case Fatality</td>
<td>5.9%</td>
<td>4.1%</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(11/184)</td>
<td>(6/146)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic</td>
<td>16.8%</td>
<td>11.6%</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(31/184)</td>
<td>(17/146)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Treatment success</td>
<td>39.1%</td>
<td>35.6%</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(72/184)</td>
<td>(52/146)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Performance
(mortalities removed from data set)

<table>
<thead>
<tr>
<th>Production parameter*</th>
<th>MIN</th>
<th>MOR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG, (lbs) arrival to day 28</td>
<td>2.74</td>
<td>2.95</td>
<td>0.04</td>
</tr>
<tr>
<td>ADG, (lbs) day 28 to day 42</td>
<td>2.18</td>
<td>2.27</td>
<td>0.46</td>
</tr>
<tr>
<td>ADG, (lbs) arrival to day 42</td>
<td>2.55</td>
<td>2.71</td>
<td>0.04</td>
</tr>
<tr>
<td>Feed: gain (lbs as fed: lbs gain)</td>
<td>7.31</td>
<td>6.91</td>
<td>0.72</td>
</tr>
<tr>
<td>Feed intake (mean pounds/pen/day)</td>
<td>192.3</td>
<td>191.8</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*Model included program as fixed and load and replicate as random effects
Behavior—steps taken/24 hours
(morbid calves removed from data set)

<table>
<thead>
<tr>
<th></th>
<th>MIN</th>
<th>MOR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival (day 1-13)</td>
<td>2620</td>
<td>2449</td>
<td>0.07</td>
</tr>
<tr>
<td>Revaccination (day 28-42)</td>
<td>3584</td>
<td>3362</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Measured by pedometer
*Gender, replicate and pen random effects
Behavior: Percentage of time lying down revaccination to day 41 (morbid calves removed from data set)
Summary

- Unique study looking at complete arrival health programs

- Neither program was particularly effective in preventing BRDC in this study

- Differences found
  - Vocalization
  - Morbidity
  - Average daily gain
  - Activity
Metaphylaxis

• Clearest benefit of all processing practices (Taylor et al., 2010)
• Reduces sickness and death losses about 50% (Schumann et al., 1990, Gallo et al., 1995, Guthrie et al., 2004, Wileman et al., 2009)
• Increases performance about 0.24 lbs./day (Wileman et al., 2009)
• May not reduce chronic rates (Guthrie et al., 2004)
• Allows cattle to adjust to the stresses of transport, commingling, processing and diet change

However, we see far to frequently that managers get “behind” on loads of cattle. Metaphylaxis is not a “cure-all”.

KSU Stocker Unit Studies – 2012 -2013

• 4 studies were conducted over an 8-month period evaluating pre-shipment management strategies compared to minimal or full processing at arrival

• Over 1,000 head of heifers from the SE were used in the studies

• Sale barn origin – avg. weight 475, assembled over a three-day period
The Theory

Shift disease intervention from an at-arrival application to its use pre-shipment, as cattle are assembled. The goal was to aid in the control of bacterial, viral and parasitic pathogen loads as cattle are prepared to move from one management type to another.
Study Design

• BVD PI calves identified prior to shipment and removed
• 45-day studies
• Standard receiving and starting rations
• Treatment for BRD could begin the day following arrival
• All deads had complete necropsy and diagnostic workup
Study Design

• Three study groups:

  1) NPP – cattle given intranasal vaccine, dewormed and an antibiotic administered 3-5 days before arrival – processed at arrival with 5-way viral + Pasteurella and blackleg vaccines and implanted

  2) NMA – no processing pre-shipment, processed at arrival with 5-way viral + Pasteurella and blackleg vaccines, dewormed, implanted and no antibiotic given

  3) ZPA - no processing pre-shipment, processed at arrival with 5-way viral + Pasteurella and blackleg vaccines, dewormed, implanted and antibiotic given
## KSU Pre-shipment Study Outcomes

<table>
<thead>
<tr>
<th></th>
<th>NMA Group 24 pens (309 head) No process preship - No AB</th>
<th>NPP Group 24 pens (310 head) Process pre ship w/ AB</th>
<th>ZPA Group 32 pens (412 head) No process preship; AB admin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BRD Morbidity (%)</strong></td>
<td>&lt; 0.01</td>
<td>65.61&lt;sup&gt;a&lt;/sup&gt; (5.10)</td>
<td>52.51&lt;sup&gt;b&lt;/sup&gt; (5.53)</td>
</tr>
<tr>
<td><strong>First Tx Success (%)</strong></td>
<td>0.11</td>
<td>48.02 (3.82)</td>
<td>45.73 (4.13)</td>
</tr>
<tr>
<td><strong>Case Fatality (%)</strong></td>
<td>&lt; 0.01</td>
<td>9.86&lt;sup&gt;a&lt;/sup&gt; (2.75)</td>
<td>24.10&lt;sup&gt;b&lt;/sup&gt; (5.12)</td>
</tr>
<tr>
<td><strong>Chronic (&gt; 3 Tx) (%)</strong></td>
<td>&lt; 0.01</td>
<td>19.65&lt;sup&gt;a&lt;/sup&gt; (3.04)</td>
<td>14.45&lt;sup&gt;ac&lt;/sup&gt; (2.51)</td>
</tr>
<tr>
<td><strong>Overall Mortality (%)</strong></td>
<td>&lt; 0.01</td>
<td>7.07&lt;sup&gt;ac&lt;/sup&gt; (1.93)</td>
<td>12.15&lt;sup&gt;b&lt;/sup&gt; (2.86)</td>
</tr>
</tbody>
</table>
KSU Pre-shipment Studies: “Lessons Learned”

Compared to pre-shipment processing, full processing at arrival:

- Decreased sickness 27.2%
- Increased first treatment success rates 21.8%
- Decreased deads by 56.8%
- Decreased case fatality rates by 59.6%
- Decreased chronics by 39.9%

All values were significant (p=0.01)
Conclusion from KSU studies: Processing cattle prior to shipment has no advantage over processing at arrival.
<table>
<thead>
<tr>
<th>Item</th>
<th>Gender Status</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steer</td>
<td>Bull</td>
</tr>
<tr>
<td>Number head</td>
<td>967</td>
<td>1795</td>
</tr>
<tr>
<td>Start weight, lbs</td>
<td>468</td>
<td>464</td>
</tr>
<tr>
<td>Revaccination weight, lbs</td>
<td>519</td>
<td>506</td>
</tr>
<tr>
<td>Revaccination ADG, lbs/d</td>
<td>1.22</td>
<td>.65</td>
</tr>
<tr>
<td>End weight, lbs</td>
<td>599</td>
<td>581</td>
</tr>
<tr>
<td>Receiving period ADG, lbs/d</td>
<td>2.23</td>
<td>1.95</td>
</tr>
<tr>
<td>Morbidity, %</td>
<td>18.72</td>
<td>25.07</td>
</tr>
<tr>
<td>Death loss, %</td>
<td>0.72</td>
<td>2.28</td>
</tr>
</tbody>
</table>

*27 truck loads of calves received at KSU Beef Stocker Unit to present
Meloxicam

- Meloxicam tablets have 100% oral bioavailability
- Human generic tablets cost 4c/15mg tab or $0.20/100 lbs
- Oral meloxicam at 1mg/kg has a half-life of 27 hours
- EU meat withdrawal period is 15 days (0.5 mg/kg IM) and Canadian withdrawal is 20 days
258 male Angus X Beef calves (193 – 285 kg)

145 Bulls

113 Steers

Day -1
Identification, entry weight determination, randomization and treatment

71 Bulls

74 Bulls

58 Steers

55 Steers

MEL-CAST
Treat once with Meloxicam 1mg/kg PO, 24 hr pre-castration

CONT-CAST
Oral Placebo, once, 24 hr pre-pre-castration

MEL-SHAM
Treat once with Meloxicam 1mg/kg PO, 24 hr pre-pre-castration

CONT-SHAM
Oral Placebo, once, 24 hr pre-pre-castration

Surgical Castration Group

Sham Castration Group

DAY 0
Surgical castration and Blood Sample collection
Immediately prior to sham or surgical castration: Blood sample for plasma meloxicam concentration

Pen Assignment
8 – 14 calves/ pen grouped by treatment; (1) MEL-CAST (n=6 pens), 2) CONT-CAST (n=6 pens), 3) MEL-SHAM (n=6 pens), (4) CONT-SHAM (n=6 pens)

Day 0 – Day 28
Daily: Measure feed intake on a pen level basis (DDMI). Monitor health status of individual animals (Pull Rate, Morbidity and Mortality). Day 14 and 28: Weigh individual animals for pen level weight gain determination (ADG).
Overall Pull Rate

Days to first pull

Cumulative Pull Rate

CONT-CAST
MEL-CAST
CONT-SHAM
MEL-SHAM
Refrigerators

• University of Nevada
  – 20 ranches, 4 feed stores
  – 25% of the refrigerators failed to maintain vaccines in the safe zone (35 to 45 deg. F)

• University of Arkansas
  – 180 refrigerators tested
    • 45 were only at proper temp range 5% of the time.
    • 76% were unacceptable for storing animal health products.
    • 23% < 5yrs, 34% 6 – 10 years, 22% 11 – 15 years and 21% >15 years of age.
## Keep Tabs on the Lot Numbers!

<table>
<thead>
<tr>
<th>Incoming Date</th>
<th>Lots</th>
<th>% 1st pulls, respiratory</th>
<th>Comments</th>
<th>BRD vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar-06</td>
<td>102-104</td>
<td>4.2</td>
<td></td>
<td>Merial</td>
</tr>
<tr>
<td>May-06</td>
<td>105-107</td>
<td>10.3</td>
<td></td>
<td>Merial</td>
</tr>
<tr>
<td>Oct-06</td>
<td>108-110</td>
<td>0.71</td>
<td></td>
<td>Merial</td>
</tr>
<tr>
<td>Feb-07</td>
<td>111-113</td>
<td>1.2</td>
<td>Study longer than 45 days; Limit intake study</td>
<td>Merial</td>
</tr>
<tr>
<td>Jun-07</td>
<td>115-117</td>
<td>40.4</td>
<td>Vaccine found to be bad</td>
<td>Jencine 4</td>
</tr>
<tr>
<td>Aug-07</td>
<td>118-120</td>
<td>51.5</td>
<td>Vaccine found to be bad</td>
<td>Jencine 4</td>
</tr>
<tr>
<td>Nov-07</td>
<td>121-123</td>
<td>28.8</td>
<td></td>
<td>Pfizer</td>
</tr>
<tr>
<td>Mar-08</td>
<td>124-126</td>
<td>19.2</td>
<td></td>
<td>Pfizer</td>
</tr>
<tr>
<td>May-08</td>
<td>128-130</td>
<td>39.6</td>
<td>Study longer than 45 days</td>
<td>Pfizer</td>
</tr>
<tr>
<td>Aug-08</td>
<td>131-133</td>
<td>59.9</td>
<td>vaccine study</td>
<td>Pfizer/Schering</td>
</tr>
<tr>
<td>Oct-08</td>
<td>134-136</td>
<td>47.6</td>
<td>vaccine study</td>
<td>Pfizer/Schering</td>
</tr>
<tr>
<td>Mar-09</td>
<td>137-139</td>
<td>10.9</td>
<td>500 lbs heavier arrival wt</td>
<td>Pfizer</td>
</tr>
<tr>
<td>Jun-09</td>
<td>141-143</td>
<td>1.5</td>
<td>600 lb arrival wt/local cattle</td>
<td>Pfizer</td>
</tr>
<tr>
<td>Oct-09</td>
<td>145-147</td>
<td>31.2</td>
<td>450 lb heifers</td>
<td>Fort Dodge</td>
</tr>
</tbody>
</table>
Receiving Ration Philosophy

- Do not Compound Stress!!!!!!!
• Quality feed ingredients
• Clean bunks/stale feed removed
• Clean waterers
• Feed analysis - critical
• Formulated nutritionally balanced diets
• Standardized, thorough mixing
• Timed, uniform delivery
Cross-Section of a Successful Starter Ration

• Palatable
• High (rumen friendly) energy and protein
• Fortified with minerals and vitamins
  • Chelates vs inorganic ??
• Expense may vary depending upon situation
• Avoid least cost formulations
Feedstuffs to Avoid Initially Upon Arrival/Weaning

• Finely ground grain (sorghum or corn)
  — Excessive fines - sub-clinical acidosis
• Silage or other fermented feeds
  — Possible depressed intake
Questions ?
Dale A. Blasi
Kansas State University
dblasi@ksu.edu