# KSU BEEF STOCKER FIELD DAY

September 26, 2013
KSU Beef Stocker Unit


# PROCEEDINGS

# Beef Stocker Field Day 2013
# September 26, 2013
# KSU Beef Stocker Unit

## Table of Contents

# Beef Stocker Field Day 2013
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Welcome to the 14th annual KSU Beef Stocker Field Day. We appreciate your attendance and support of this educational event. We are fortunate to have assembled an outstanding list of presenters and topics that we believe are relevant to your bottom line.

As always, if you have any questions on the program or suggestions for future topics, please let us know. Our strength in delivering relevant information lies in working closely with you, our stakeholder.

Sincerely,

Dale A. Blasi, PhD
Extension Beef Specialist
Department of Animal Sciences and Industry
College of Agriculture

## THANK YOU

We would like to express a special "THANK YOU" to Merck Animal Health for their support of today's educational program and activities for the beef stocker segment. With their financial assistance, we are able to deliver the caliber of programming that today's events have in store for you. Please take a moment to stop by their display to see the line of products that they have to offer.

MERCK Animal Health

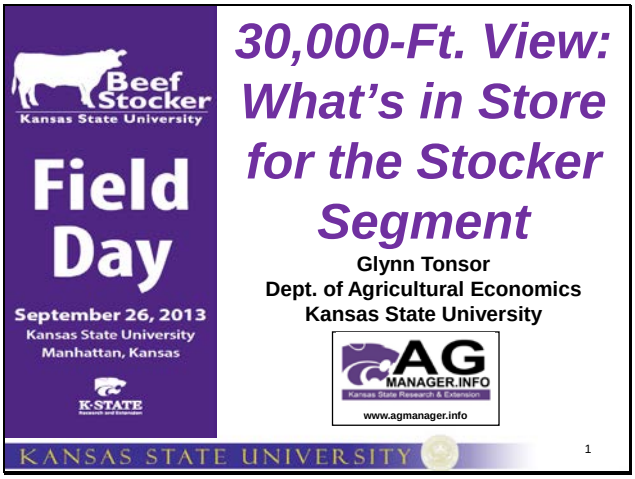
# Beef Stocker Field Day 2013
# September 26, 2013
# KSU Beef Stocker Unit

| | |
|---|---|
| 9:30 a.m. | Registration/Coffee |
| 10:15 a.m. | Introductions |
| 10:30 a.m. | **The 30,000-Ft. View: What's in Store for the Stocker Segment**<br>*Dr. Glynn Tonsor, Kansas State University* |
| 11:15 a.m. | **How Can Your Stocker Operation Fit?**<br>*Dr. Tom Field, University of Nebraska-Lincoln* |
| 12:00 Noon | Barbecue Brisket Lunch- View Posters<br>Commercial Company Demonstrations |
| 1:30 p.m. | **Receiving Health Programs- Are They the Same as 5 Years Ago?**<br>*Dr. Mark F. Spire, Merck Animal Health* |
| 2:30 p.m. | **Environmental Impacts on Beef Stocker Health and Wellness**<br>*Dr. Terry Mader, University of Nebraska* |
| 3:15 p.m. | **Break** |
| 3:45 p.m. | **Carry-Over Effects of Stocker Cattle Systems on Feedlot Performance and Carcass Characteristics**<br>*Dr. Ryan Reuter, Noble Foundation* |
| 4:30 p.m. | **Producer Panel: Do Flint Hills Stocking Rates Still Apply?**<br>*Moderator: Wes Ishmael, BEEF Magazine*<br>*Panelists: Mike Arndt, Emporia, Kan., Frank Brazle, Chanute, Kan., Tracy Brunner, Ramona, Kan., Kevin Gant, Wilsey, Kan., and Mark Sullivan, Dickson, Tenn.* |
| 5:30 p.m. | Complimentary Cutting Bull's Lament BBQ |

# Notes – Notes -- Notes

# The 30,000-Ft. View: What's in Store for the Stocker Segment

Dr. Glynn Tonsor
Kansas State University




## Overarching Economic Outlook

- Supplies
  - "Certain" Cattle Supplies (hd)
  - Less Certain Beef Supplies (lbs)
- Demand
  - Confusing for decades yet recently positive
  - Recent Beef Board Project; Must be ongoing
- ***Is there general sentiment of industry-wide structural change occurring?***

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## Economic Outlook Overview : Cow-Calf

- Compared to last year:
  - Better pastures (nationally), lower forage prices, and higher calf prices…
- Will this trigger breeding herd expansion?
  - To-date I'd say expansion has NOT been initiated
    - Wait for Jan. 2014 Cattle Inventory Report …

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## Economic Outlook Overview : Stockers

- Attractive Values of Gain (VOG) vs. COG
  - For those in many stocker/backgrounding areas …
- Salina, KS 9/26/13 situation:
  - Buy 550 lb steer on 10/16/13 ($172.44)
  - Sell 750 lb steer on 1/15/14 ($158.08) {2.17 ADG}
    - VOG: $118.58/cwt
      - ***IF*** COG=$90/cwt; Expected profit = +/- $57/hd

http://www.beefbasis.com/ForecastingTools/ValueofGain/tabid/1132/Default.aspx

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## How Should VOG Be Projected?

*Incorporate Recent Forecasting Error*

- **Use forward-looking approach**
- Salina, KS 9/26/13 situation with adjustments:
  - Buy 550 lb steer on 10/16/13 ($172.44)
    - **Currently have low forecast: $1.66**
  - Sell 750 lb steer on 1/15/14 ($158.08)
    - **Currently have low forecast: $1.24**
  - VOG: $118.58/cwt

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## How Should VOG Be Projected?
### *Incorporate Recent Forecasting Error*

- Salina, KS 9/26/13 situation with adjustments:
  - Buy 550 lb steer on 10/16/13 ($172.44)
    - Currently have low forecast: $1.66* 69% = $1.15
      - **Updated purchase price forecast: $173.21**
  - Sell 750 lb steer on 1/15/14 ($158.08)
    - Currently have low forecast: $1.24* 38% = $0.47
      - **Updated sales price forecast: $158.55**
  - VOG: $118.58/cwt
      - **Updated VOG forecast: $117.21**

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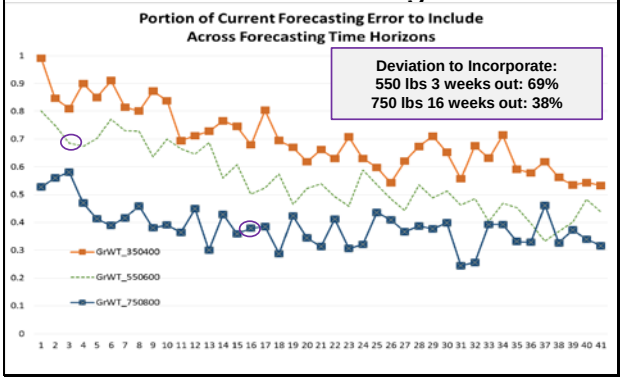
## VOG Projections: Incorporating Recent Forecasting Error




## Economic Outlook Overview : Feedlots

- Sector under most current pressure
- Excess capacity concerns continue to grow:
  - Heifer Retention (?), MCOOL, Mexico, etc.
- Closeouts been at historically high losses…
  - Recent improvements

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Historical and Projected Kansas Feedlot Net Returns
(as of 9/10/13')
(http://www.agmanager.info/livestock/marketing/outlook/newsletters/FinishingReturns/default.asp)

July 13': -$185.42/steer

**Table 1. Projected Values for Finishing Steers in Kansas Feedyards***

| Closeout Mo-Yr | Net Return | FCOG** | Fed Price | Feeder Price | Breakeven FCOG** | Breakeven Fed Price | Breakeven Feeder Price |
|---|---|---|---|---|---|---|---|
| Aug-13 | -112.02 | 119.01 | 121.80 | 133.88 | 98.16 | 129.79 | 120.92 |
| Sep-13 | -27.89 | 116.38 | 126.77 | 133.46 | 110.85 | 128.78 | 130.31 |
| Oct-13 | 28.63 | 111.66 | 129.77 | 134.36 | 117.32 | 127.73 | 137.55 |
| Nov-13 | 14.29 | 105.88 | 130.16 | 141.02 | 108.53 | 129.15 | 142.66 |
| Dec-13 | -7.53 | 100.31 | 130.54 | 148.83 | 98.98 | 131.07 | 147.94 |
| Jan-14 | -12.74 | 96.26 | 130.13 | 151.36 | 93.99 | 131.04 | 149.84 |

**Representative Barometer for Trends in Profitability**

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## *Zilmax*® Use

- Beef production direction 'certain'
  - +/- 29 lbs on steer carcass; 23 lbs for heifers
    - *Zilmax*® adds 6-8 lbs more than *Optaflexx*®
- *Magnitude of impact is very uncertain*
  - Ultimately, how does % of fed cattle on *Zilmax*®, *Optaflexx*®, Neither change?
    - ***How long will these changes last???***

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## Broader Perspective on *Zilmax*® Discussion

- The Center For Food Integrity (@foodintegrity) tweeted on Wed, Sep 04, 2013:

"Science tells us if we can do something.

Society tells us if we should do it."

-- See recent *In the Cattle Markets article:*
http://www.lmic.info/memberspublic/InTheCattleMarket.html

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# Broader Perspective on *Zilmax*® Discussion

- The Center For Food Integrity (@foodintegrity) tweeted on Wed, Sep 04, 2013:

"Science tells us if we <u>can</u> do something. *(Supply side)*

Society tells us if we <u>should</u> do it." *(Demand side)*

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**Quarterly Forecasts** (LMIC: 09/10/13)

| Year Quarter | Comm'l Slaughter | % Chg. from Year Ago | Average Dressed Weight | % Chg. from Year Ago | Comm'l Beef Production | % Chg. from Year Ago |
|---|---|---|---|---|---|---|
| 2012 | | | | | | |
| I | 8,026 | -3.5 | 782.7 | 1.5 | 6,282 | -2.0 |
| II | 8,309 | -3.8 | 779.0 | 2.6 | 6,473 | -1.3 |
| III | 8,333 | -4.6 | 790.3 | 2.5 | 6,586 | -2.2 |
| IV | 8,283 | -1.3 | 793.5 | 2.6 | 6,572 | 1.3 |
| Year | 32,951 | -3.3 | 786.4 | 2.3 | 25,913 | -1.1 |
| 2013 | | | | | | |
| I | 7,779 | -3.1 | 793.4 | 1.4 | 6,172 | -1.7 |
| II | 8,325 | 0.2 | 782.8 | 0.5 | 6,517 | 0.7 |
| III | 8,208 | -1.5 | 796.5 | 0.8 | 6,538 | -0.7 |
| IV | 7,660 | -7.5 | 798.6 | 0.6 | 6,117 | -6.9 |
| Year | 31,972 | -3.0 | 792.7 | 0.8 | 25,344 | -2.2 |
| 2014 | | | | | | |
| I | 7,216 | -7.2 | 801.3 | 1.0 | 5,782 | -6.3 |
| II | 7,750 | -6.9 | 790.6 | 1.0 | 6,127 | -6.0 |
| III | 7,589 | -7.5 | 804.3 | 1.0 | 6,104 | -6.6 |
| IV | 7,155 | -6.6 | 806.0 | 0.9 | 5,767 | -5.7 |
| Year | 29,710 | -7.1 | 800.4 | 1.0 | 23,780 | -6.2 |
| 2015 | | | | | | |
| I | 6,882 | -4.6 | 806.0 | 0.6 | 5,547 | -4.1 |
| II | 7,383 | -4.7 | 797.5 | 0.9 | 5,888 | -3.9 |
| III | 7,311 | -3.7 | 812.3 | 1.0 | 5,939 | -2.7 |
| IV | 6,979 | -2.5 | 811.6 | 0.7 | 5,664 | -1.8 |
| Year | 28,555 | -3.9 | 806.8 | 0.8 | 23,038 | -3.1 |

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**Quarterly Forecasts** (LMIC: 09/10/13)

| Year Quarter | Live Sltr. Steer Price 5-Mkt Avg | % Chg. from Year Ago | Feeder Steer Price Southern Plains 7-800# | Feeder Steer Price Southern Plains 5-600# |
|---|---|---|---|---|
| 2012 | | | | |
| I | 125.30 | 13.8 | 154.25 | 182.41 |
| II | 120.91 | 7.2 | 152.65 | 178.65 |
| III | 119.69 | 4.9 | 141.82 | 150.57 |
| IV | 125.54 | 2.9 | 146.50 | 161.42 |
| Year | 122.86 | 7.1 | 148.81 | 168.26 |
| 2013 | | | | |
| I | 125.51 | 0.2 | 142.41 | 170.13 |
| II | 124.95 | 3.3 | 137.34 | 159.71 |
| III | 122-123 | 2.3 | 155-156 | 172-174 |
| IV | 127-130 | 2.4 | 153-156 | 169-174 |
| Year | 125-126 | 2.1 | 147-148 | 167-170 |
| 2014 | | | | |
| I | 129-133 | 4.4 | 154-158 | 179-185 |
| II | 131-136 | 6.8 | 157-163 | 185-192 |
| III | 128-134 | 6.9 | 160-167 | 182-190 |
| IV | 131-138 | 4.7 | 158-166 | 178-188 |
| Year | 130-135 | 5.6 | 159-162 | 183-187 |
| 2015 | | | | |
| I | 133-141 | 4.6 | 161-170 | 183-194 |
| II | 134-143 | 3.7 | 162-173 | 186-198 |
| III | 130-140 | 3.1 | 163-175 | 187-200 |
| IV | 134-145 | 3.7 | 160-173 | 182-196 |
| Year | 134-141 | 3.8 | 163-171 | 186-196 |

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## Situation Summary

- Historically tight supplies & high prices
- Industry is in midst of multiple changes
- Many “old” as well as “new” issues will guide profitability and characterize future of the industry…
- Stocker segment will have to adjust accordingly

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## 30,000-Ft Points: Beef Demand

- Critical Concept – Yet Frequently Confused
- Positive recent story warrants appreciation
- Imperative to move away from:
  - Per capita consumption focus
  - Typical consumer focus
  - Aggregated demand analyses
    - Steak vs. Ground; Generational
    - Sunbelt vs Rustbelt; Domestic vs. Export
    - FAFH vs. FAH

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## Ranked Priorities

**Highest Priority**

1. **Food Safety**
2. **Product Quality**
3. **Price**

**Middle Priority**

4. **Nutrition**
5. **Health**

**Lower Priority**

6. **Social Aspects**
7. **Sustainability Dimensions**

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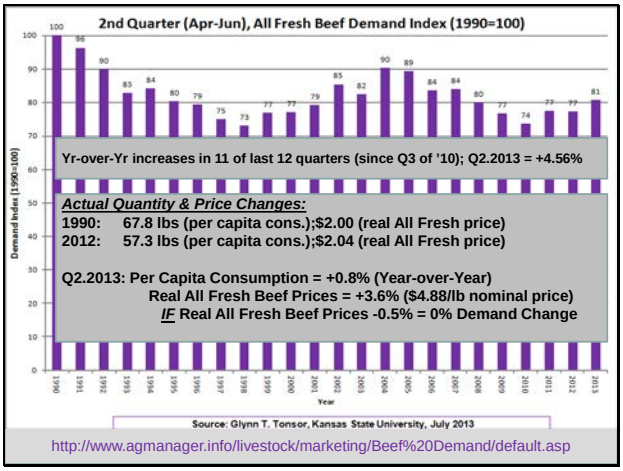


http://www.agmanager.info/livestock/marketing/Beef%20Demand/default.asp

## 30,000-Ft Points: Learn from Past

- See Purcell (2002; http://ag.arizona.edu/arec/wemc/cattlemarket/BeefIndustry%27sFuture.pdf)
  - 1979 - 1986 (demand decline)
    - +/- constant per capita cons. & real price decline of 30%
  - 1986 - 1991 (demand decline)
    - +/- constant real price & reduced per capita cons. of 12 lbs
  - 1992 - 1998 (demand decline)
    - +/- constant per capita cons. & real price declines
  - 1999 – 2004 (demand increase)
    - reduced per capita cons. & real price increases
  - 2005 – 2010 (demand decline)
    - reduced per capita cons. & real price declines
  - 2011 – **????** (demand increase thru 12')
    - reduced per capita cons. & real price increases

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## 30,000-Ft Points: Herd Growth

- LMIC 14' returns forecast: $270/cow
  - Prior high of $150/cow in 2004
- ERS (Feb. 13'): 32.2 mil beef cows in 2018
- FAPRI (Aug. 13'): 31.0 mil beef cows in 2018
  - 2015 first year of increases in both forecasts
- Distinguish agg. herd (hd) and operation (#) growth
  - $100 dif. in COP = $400 NPV of replacements
- Relative movement of national herd to NW?

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## 30,000-Ft Points: Excess Capacity

- 12% herd growth (ERS by 22')
  - Likely not sufficient to "resolve" issue
- Will feedlot industry "move" northeast?
- Expanded specialized feedlot backgrounding?
  - Firm level: historically low fixed costs opportunity?
  - Macro level: industry response to "losing pasture?"

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## 30,000-Ft Points: Reduce In-Fighting

- Country of Origin Labeling
- Animal Identification & Traceability
- "Commodity" Marketing vs. Product Differentiation

  - +/- 750,000 cow-calf producers
    - 50% < 20 cows /// 80% < 50 cows
  - +/- 75,000 feedlot operations
    - 2,100 >1,000 hd capacity /// 790 > 4,000 hd capacity
  - ? Stocker/backgrounding producers
    - ***Coordinating efforts is like "herding cats" at times…***

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## 30,000-Ft Points: Social Issues

- Scientific Feasibility vs. Public Acceptance
  - Here to stay so you must appreciate it
  - Has important R&D implications
    - Also may require willingness to change from "tradition"
  - Quickly leads to unproductive exchanges
    - Producer-Consumer
    - Producer-Customer
    - Internally between production firms within the industry

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## 30,000-Ft Points: Purcell (02') Prescriptions for Positive Future

1. Improve efficiency & reduce COP
2. Increase quality signaling (align prod & cons)
3. Invest in new products & market development
4. More open perspective on trade
5. Continued support for checkoff program
6. Increase pricing of fed cattle by ind. carcass
7. Elect sound industry leadership

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## 30,000-Ft Points: Purcell (02') Prescriptions for Positive Future

**"Overall, the key will be to remember that the industry is providing a consumer product and that the only dollars financing the various players along the supply chain are the consumers' dollars."**

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## Setting the Stage: Upcoming Speakers

- "Creative destruction"
  - Commodity market industries are often pushed forward by innovations and ingenuity of the minority
- Alternative or more active management
  - X% savings worth more on higher valued animals
- Scientific feasibility, public acceptance distinction
  - A "new normal" and cost of doing business in U.S.
- Value creation across market levels
  - Stocker segment will increasingly respond to consumer valuation signals

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## Stocker Synthesis

- Increasing herd
  - less stockers initially, more later
- Decreasing bunks
  - less # of customers than in the past
- Increasing social issue dialogue
  - Likely more changes in stocker prod. practices
- Increasing quality signaling & coordination
  - Likely more changes in stocker prod. practices

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More information available at:

AGMANAGER.INFO
Kansas State Research & Extension
www.agmanager.info

This presentation will be available in PDF format at:
http://www.agmanager.info/about/contributors/individual/tonsor.asp

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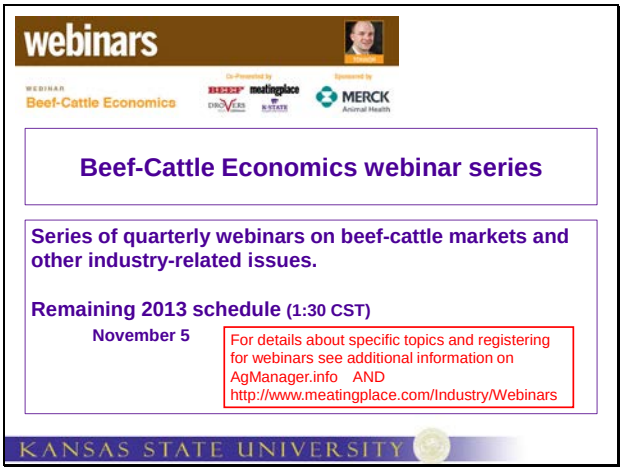
webinars
Beef-Cattle Economics
meatingplace
MERCK
Animal Health
Beef-Cattle Economics webinar series
Series of quarterly webinars on beef-cattle markets and other industry-related issues.
Remaining 2013 schedule (1:30 CST)
November 5
For details about specific topics and registering for webinars see additional information on AgManager.info AND http://www.meatingplace.com/Industry/Webinars
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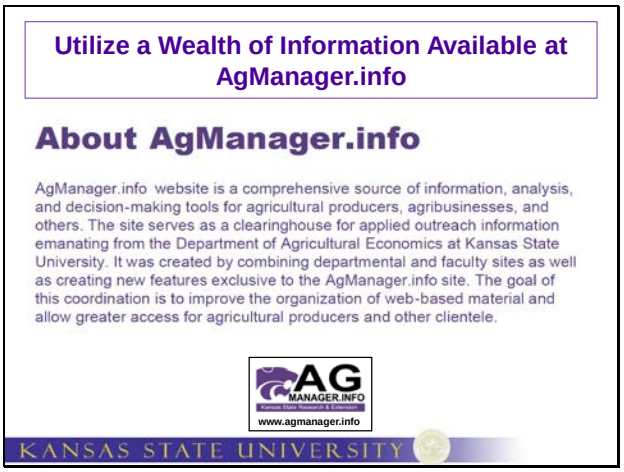
Utilize a Wealth of Information Available at AgManager.info
About AgManager.info
AgManager.info website is a comprehensive source of information, analysis, and decision-making tools for agricultural producers, agribusinesses, and others. The site serves as a clearinghouse for applied outreach information emanating from the Department of Agricultural Economics at Kansas State University. It was created by combining departmental and faculty sites as well as creating new features exclusive to the AgManager.info site. The goal of this coordination is to improve the organization of web-based material and allow greater access for agricultural producers and other clientele.
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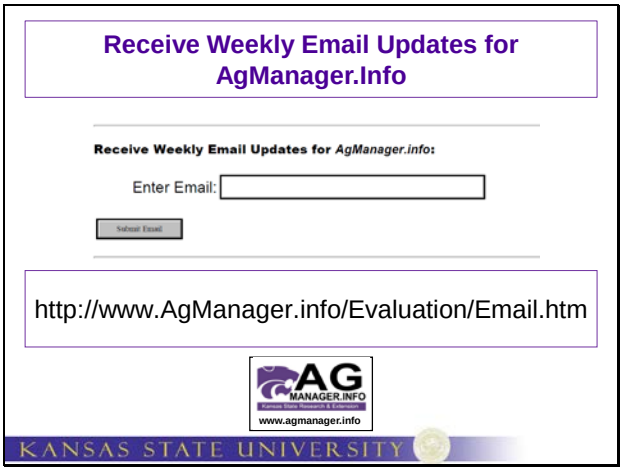
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http://www.AgManager.info/Evaluation/Email.htm
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# Notes – Notes -- Notes

# How Can Your Stocker Operation Fit?

Dr. Tom Field
University of Nebraska- Lincoln

Assigned – How can your stocker operation fit?

**Reality – How will any of us fit in the future?**

Tom Field

Engler Chair in Agribusiness Entrepreneurship
University of Nebraska

Field Land & Cattle Co. LLC
Parlin, CO

## Themes

**CUSTOMERS, GROWTH MARKETS, "*IT'S THE ECONOMY*"**

**DECISIONS, WEALTH CREATION, TRADE-OFFS**

**MISSION, MOVE, MOMENTUM**

*Sunrise or Sunset?*

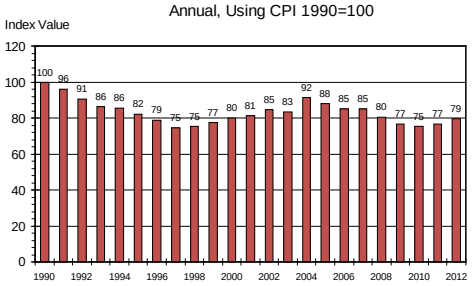
**138 trillion**

**$200+ billion**


**1.42 million**

**RETAIL ALL FRESH BEEF DEMAND INDEX**

Annual, Using CPI 1990=100




Livestock Marketing Information Center

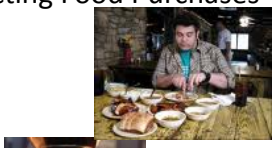
Data Source: Bureau of Labor Statistics, USDA-ERS, Compiled & Analysis by LMIC

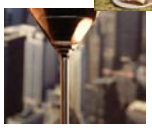

## Dominant Factors Affecting Food Purchases

| Factor | % of Consumers |
|---|---|
| **Taste** | **75** |
| **Quality** | **73** |
| **Price** | **70** |

Consumers from the U.S., United Kingdom, Germany, Argentina, China

Source: Ketchum, 2008





## KSU Beef Demand Report - 2013

- Price
- Food Safety
- Product Quality

## Retail Meat & Poultry Price Change 2000-2013

+87% +53% +30%


## Exports…..why they matter…

Top 10 Ports – Container Ship
1. Shanghai, China
2. Singapore, Singapore
3. Hong Kong, China
4. Shenzhen, China
5. Bussan, South Korea
6. Ningbo-Zhoushen, China
7. Guangzhou Harbor, China
8. Qingdao, China
9. Dubai, UAE
10. Tianjin, China

World Shipping Council, www.worldshipping.org


## Consider….

China -

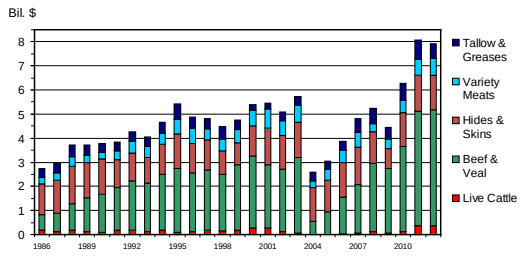
**10 of the top 20 busiest container ports**

**U.S.**


**4 of the world's top 50**

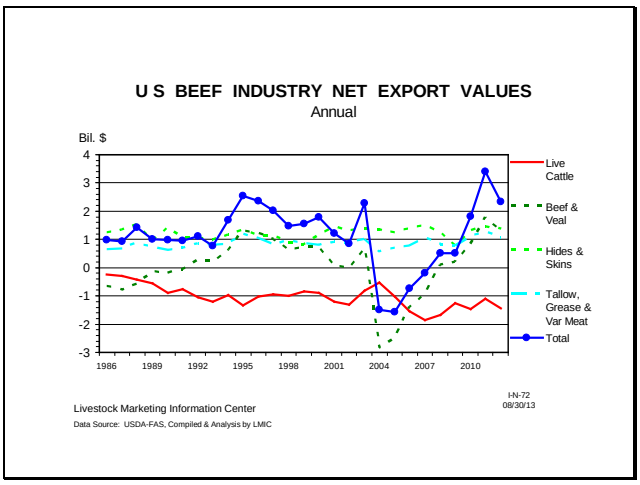
L.A. (16),Long Beach (22), N.Y.-N.J. (24), Georgia Ports (45)

**U S BEEF INDUSTRY EXPORT VALUES**
Annual




I-N-70
08/06/13

Livestock Marketing Information Center
Data Source: USDA-FAS, Compiled & Analysis by LMIC

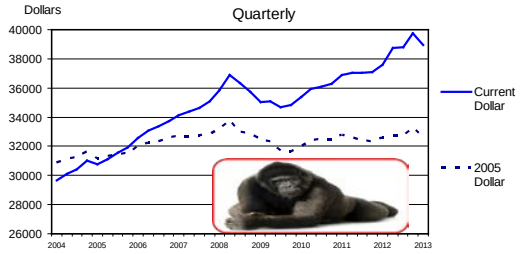

U S BEEF INDUSTRY NET EXPORT VALUES
Annual
Bil. $
4
3
2
1
0
-1
-2
-3
1986
1989
1992
1995
1998
2001
2004
2007
2010
Live Cattle
Beef & Veal
Hides & Skins
Tallow, Grease & Var Meat
Total
I-N-72
08/30/13
Livestock Marketing Information Center
Data Source: USDA-FAS, Compiled & Analysis by LMIC


ECONOMY


TURN
ONE WAY
ONE WAY
STOP
POSTED
NO HUNTING FISHING TRESPASSING
DETOUR
LEFT
WAY

**PER CAPITA DISPOSABLE PERSONAL INCOME**

Quarterly



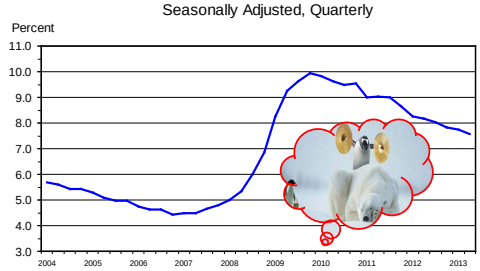

Livestock Marketing Information Center

08/12/13

Data Source: Bureau of Economic Analysis

**U.S. UNEMPLOYMENT RATE**

Seasonally Adjusted, Quarterly



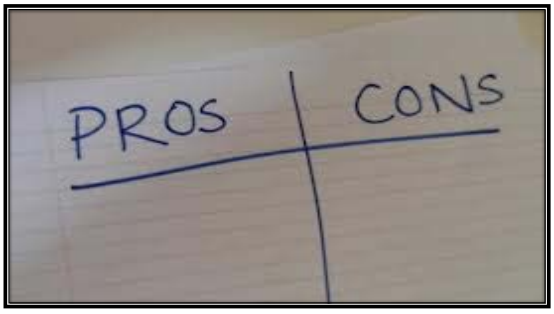

Livestock Marketing Information Center

08/12/13

Data Source: Bureau of Labor Statistics, Compiled & Analysis by LMIC

**DO YOU SEE WHAT I SEE?**

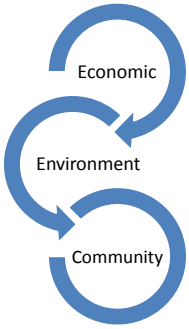
## Decisions



## Trade-offs



## Three Filters for Decisions



Choices involve……..

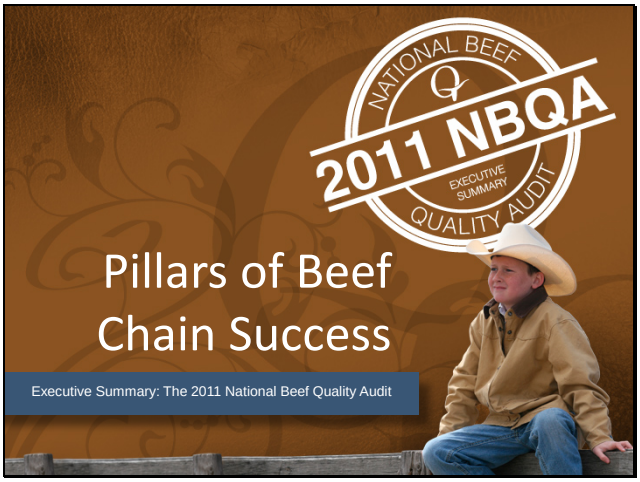



Table 1. Comparison of the Quality Challenges Ranked by Priority for Each of the National Beef Quality Audits

| 1991 | 1995 | 2000 | 2005 | 2011 |
|---|---|---|---|---|
| External Fat | Overall Uniformity | Overall Uniformity | Traceability | Food Safety |
| Seam Fat | Overall Palatability | Carcass Weights | Overall Uniformity | Eating Satisfaction |
| Overall Palatability | Marbling | Tenderness | Instrument Grading | How and Where the Cattle Were Raised |
| Tenderness | Tenderness | Marbling | Market Signals | Lean,Fat, Bone |
| Cutability | External/Seam Fat | Reduced Quality Due to Implants | Segmentation | Weight and Size |
| Marbling | Cut Weights | External Fat | Carcass Weights | Cattle Genetics |

## Weaknesses

- **Hide color as a proxy for product quality is not a long term solution.**
- **BQA is a set of suggestions, the market wants a set of standards, so who delivers?**
- **Ribeye – 28% of the studied population was outside 12-16 sq. in.**


## Challenges and Obstacles

- **The supply chain defines value attributes differently from segment to segment – this communication barrier must be resolved.**
- **"Traceback" is the wrong word BUT THE RIGHT CONCEPT. Effective supply chain management and brand equity depends on our ability to verify action steps.**
- **The transport sector and dairy industry is still a weak link in quality – go after this gap with vigor.**

## Opportunities:

- **There are significant pull through signals for increased numbers of program cattle.**
- **Enhance the value of dairy calves – male dairy calves are an undervalued resources largely due to management issues.**
- **The interactions among handling/stress, weather, feed, and genetics (both breed and sire lines) hold potential for enhanced productivity and profitability.**

## Production Questions

- **How do we better optimize weight (growth), Quality Grade mix, Yield Grade mix with both management and genetics?**
- **Do we understand the system wide impact of weight being the primary price signal and do we have effective strategies to manage weight and rate of maturity differences in the cattle population?**
- **Are there systems interventions to improve product flavor?**

## Beef Supply Chain Questions

- **Can we resolve the lack of clarity on "words of importance" across the supply and distribution chain and then develop metrics to allow measurement and communication?**
- **Can industry create its own effective and simple (but no simpler) system of supply chain information logistics that facilitates data flow, communicates real time information, and enhances management decisions?**
- **Can we create a verified health management system that is functional and trusted (within the production chain and consumers)?**

## Consumer Trust Questions

- **Have we conducted a thorough supply chain risk assessment to determine potential threats to consumer demand/trust? Have we created a blueprint for how to proactively address these issues?**
- **Where is the process to independently evaluate production technologies from a systems perspective – risk to consumer trust, market access, animal well-being, product flavor, consumer eating experience as well as the production benefits?**

## HOW DO I (WE) DELIVER BEST IN WORLD PRODUCTS AND SERVICES?

***Seriously, is anything else really worth the effort?***

## Mission! Move! Momentum!

**"RELENTLESS POSITIVE ACTION"**

This concept is at the core of actually making a difference – this philosophy depends on three basic rules:

1. No blame, no turf, no politics!
2. No fights over who gets credit!
3. Full transparency, accountability, and commitment to continuous improvement!

## We can't afford to be selectively transparent!

We must evaluate decisions, processes, inputs and technologies by asking three questions…..

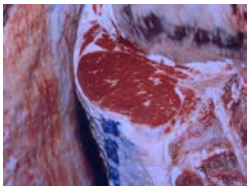
a. **Will this decision affect eating satisfaction?**

b. **Does this decision improve product integrity and thus consumer trust?**

c. **Am I be proud to make this part of the beef story?**

## Key Action Step….

- Build a proactive strategy based on the recognition that **quality encompasses both product and process** (root cause of future demand loss).



## Key Action Steps

**Embrace Continuous Improvement**

The productivity of people requires continuous learning, as the Japanese have taught us. It requires adoption in the West of the specific Japanese Zen concept where **one learns to do better what one already does well**.

*Peter Drucker*

**Intense Focus**
**NO EXCUSES**
**UNRELENTING EFFORT**

Where does our performance fit?

- ❑ **EXCEED EXPECTATIONS**
- ❑ **GET IT DONE**
- ❑ **ALMOST BUT NOT QUITE**
- ❑ **NICE TRY**
- ❑ **OOPS**

"If we don't take advantage of becoming customer-oriented, we'll just be one more generation that missed the opportunity. The food business climate is one of impatient customers and aggressive marketers. What you decide here will determine the direction the industry takes."

Chuck Schroeder, 2000

Two options in business….

**We can get it right!**


OR…..

**We can explain to customers, clients, and critics why we didn't!**

# The Choice Is Ours!

# Notes – Notes -- Notes

# Receiving Health Programs- Are They the Same as 5 Years Ago?

Dr. Mark F. Spire
Merck Animal Health

Receiving health programs: Are they the same as five years ago?

Mark F. Spire DVM, MS, DACT
Technical Services Manager
Merck Animal Health

Let's talk about the weather, bugs, worms, drugs, shots and a "Lesson Learned!"

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

## Parasite Resistance and Management Strategies

## Has product efficacy changed over the past 5 years ?

## FECRT Efficacy for Pour-on Endecticide Products

| Pour-on Formulation | Trials | Samples | Pre Rx* | Post Rx* | Efficacy |
|---|---|---|---|---|---|
| **Ivomec®** ivermectin | 15 | 598 | 67.1 | 30.4 | 54.8% |
| **Ivermectin** ivermectin | 77 | 3,167 | 64.8 | 30.3 | 53.2% |
| **Dectomax®** doramectin | 22 | 898 | 65.6 | 23.1 | 64.9% |
| **Cydectin®** moxidectin | 21 | 878 | 55.7 | 14.5 | 74.0% |
| **Eprinex®** eprinomectin | 5 | 224 | 38.1 | 25.7 | 32.5% |
| **Summary** | **140** | **4,720** | **64.9** | **26.7** | **59.5%** |

Thru 8-31-13

*** Egg Counts/3 grams**

## FECRT Efficacy for Injectable Endecticide Products

| Injectable Formulation | Trials | Samples | Pre Rx* | Post Rx* | Efficacy |
|---|---|---|---|---|---|
| **Ivomec®** ivermectin | 24 | 1,312 | 71.8 | 37.9 | 47.2% |
| **Ivomec® Plus** ivermectin/clorsulon | 16 | 667 | 106.5 | 58.5 | 45.1% |
| **Dectomax®** doramectin | 31 | 1,278 | 62.4 | 13.5 | 78.4% |
| **Cydectin®** moxidectin | 9 | 394 | 32.1 | 5.2 | 83.8% |
| **LongRange®** eprinomectin | 1 | 40 | 16.8 | 4.5 | 73.1% |
| **Ivermectin** avermectin | 13 | 630 | 90.0 | 46.6 | 48.3% |
| **Summary** | **94** | **4,321** | **73.6** | **31.5** | **57.1%** |

Thru 8-31-13

*** Egg Counts/3 grams**

## FECRT Efficacy Summary for all Products

| Products | Trials | Samples | Pre Rx* | Post Rx* | Efficacy |
|---|---|---|---|---|---|
| Injectable Endecticide | 99 | 4,547 | 79.2 | 29.8 | 57.2% |
| Pour-On Endecticide | 151 | 5,806 | 66.0 | 26.7 | 57.7% |
| Safe-Guard® or Panacur® | 168 | 7,235 | 57.6 | 0.8 | 98.7% |
| FBZ Endecticide Combination | 58 | 2,618 | 77.3 | 0.5 | 99.4% |

Thru 8-31-13

*** Egg Counts/3 grams**

## PERFORMANCE CHANGE 2008-2011

**Table 6: Comparison of FECRT Efficacy for ML Pour-Ons 2008(AABP) vs. 2011(Jan.12)**

| Products | No. of Trials 2008 | Percent Efficacy | No. of Trials 2011 | Percent Efficacy | Efficacy Change |
|---|---|---|---|---|---|
| Ivomec® | 8 | 72.3% | 13 | 58.8% | -13.5% |
| Ivermectin | 35 | 59.7% | 69 | 54.9% | -4.8% |
| Dectomax® | 8 | 78.9% | 17 | 66.5% | -12.4% |
| Cydectin® | 9 | 67.2% | 16 | 73.4% | +6.2% |
| **Summary** | **60** | **66.1%** | **115** | **59.4%** | **-6.7%** |

## PERFORMANCE CHANGE 2008-2011

**Table 7: Comparison of FECRT Efficacy ML Injectables: 2008(AABP) vs. 2011(Jan. 12)**

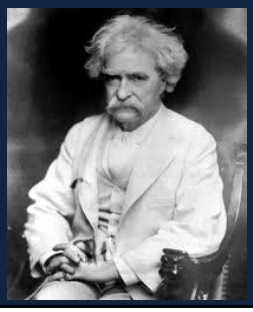
| Products | No. of Trials 2008 | Percent Efficacy | No. of Trials 2011 | Percent Efficacy | Efficacy Change |
|---|---|---|---|---|---|
| Ivomec® | 6 | 76.2% | 14 | 53.8% | -22.4% |
| Ivomec® Plus | 6 | 42.6% | 12 | 43.1% | +0.5% |
| Ivermectin or Ivermectin plus | 1 | 50.0% | 11 | 52.5% | +2.5% |
| Dectomax® | 11 | 90.5% | 25 | 77.2% | - 13.3% |
| Cydectin® | 2 | 98.1% | 8 | 85.1% | -13.0% |
| **Summary** | **26** | **72.5%** | **70** | **59.4%** | **-13.1%** |

## Recommendations ?

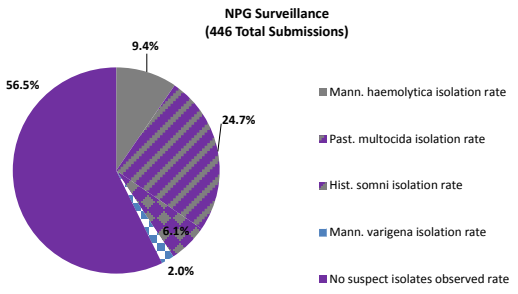
- Strategic deworming
  - Adjust to geographic area and weather conditions
- Holiday Scheduling – Easter, Fourth of July, Thanksgiving
- Don't buy other people's parasite resistance. Consider dual product administration
- Any program built solely on repeated administration of a drug will eventually fail
  - need to integrate management,
    - Pasture –don't overgraze, prepared seedbed
    - Dosing - Dose by weight not by avg. weight.
    - Don't use dewormers for Fly Control

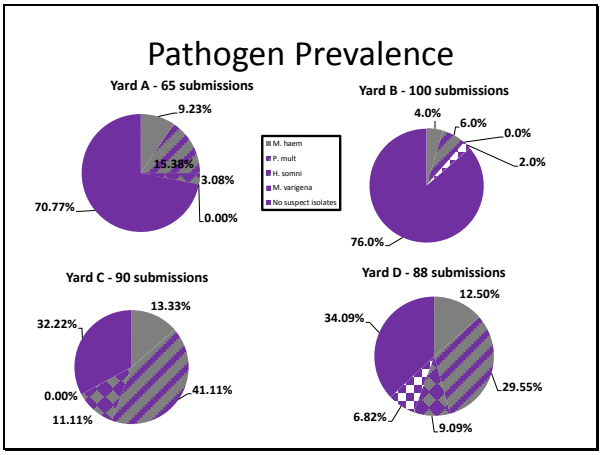
Antibiotics – "It's all about the bugs'"

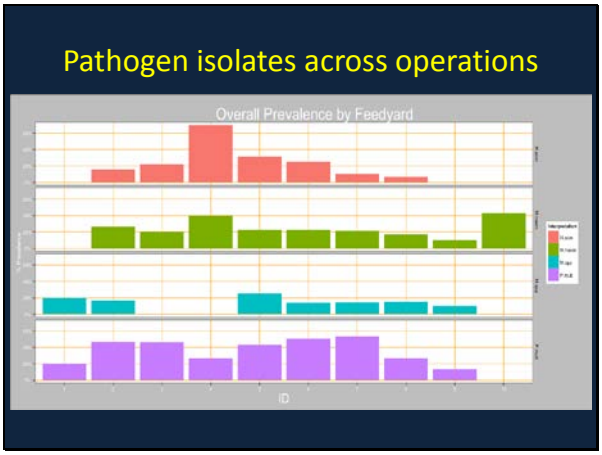
"Supposing is good, but to find out is even better" (Mark Twain, 1907)

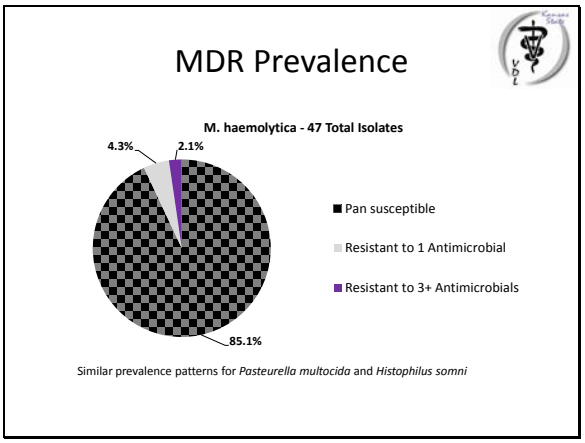


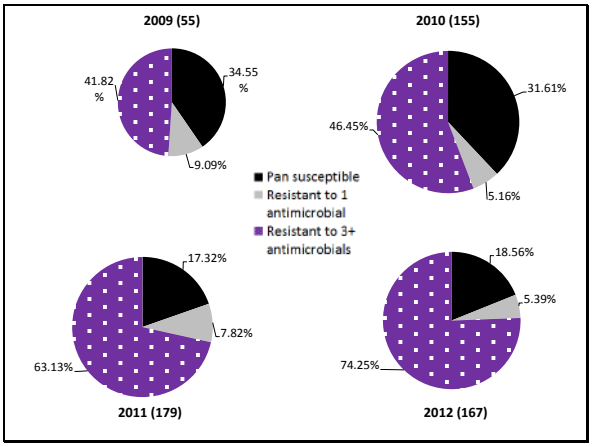
## Pathogen Prevalence

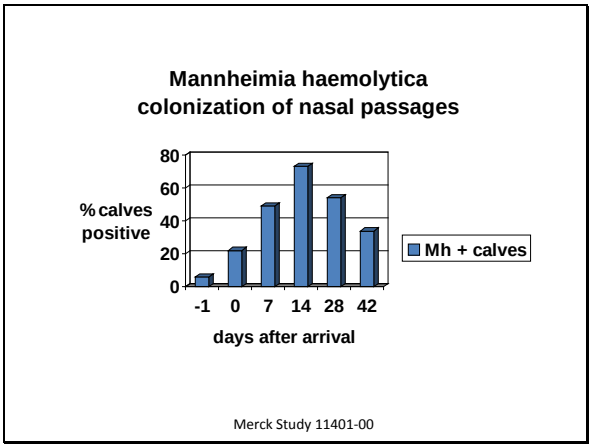


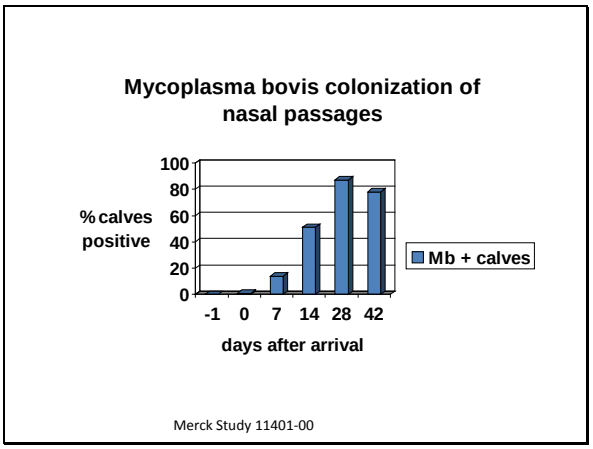

Pathogen Prevalence
Yard A - 65 submissions
9.23%
15.38%
3.08%
0.00%
70.77%
M. haem
P. mult
H. somni
M. varigena
No suspect isolates
Yard B - 100 submissions
4.0%
6.0%
0.0%
2.0%
76.0%
Yard C - 90 submissions
13.33%
32.22%
0.00%
41.11%
11.11%
Yard D - 88 submissions
12.50%
34.09%
29.55%
6.82%
9.09%


Pathogen isolates across operations
Overall Prevalence by Feedyard

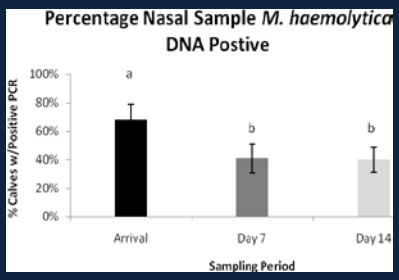

MDR Prevalence
M. haemolytica - 47 Total Isolates
4.3%
2.1%
85.1%
Pan susceptible
Resistant to 1 Antimicrobial
Resistant to 3+ Antimicrobials
Similar prevalence patterns for Pasteurella multocida and Histophilus somni


2009 (55)
2010 (155)
41.82 %
34.55 %
9.09%
31.61%
46.45%
5.16%
Pan susceptible
Resistant to 1 antimicrobial
Resistant to 3+ antimicrobials
17.32%
7.82%
63.13%
18.56%
5.39%
74.25%
2011 (179)
2012 (167)


Mannheimia haemolytica colonization of nasal passages
% calves positive
80
60
40
20
0
-1 0 7 14 28 42
days after arrival
Mh + calves
Merck Study 11401-00

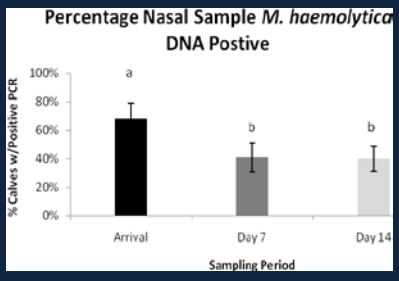

Mycoplasma bovis colonization of nasal passages
% calves positive
100
80
60
40
20
0
-1 0 7 14 28 42
days after arrival
Mb + calves
Merck Study 11401-00

## Impact of metaphylaxis on nasal colonization




MS Onset – 02-08 in Hanzlicek *et al.*, Vaccine, 2010

## Impact of metaphylaxis on nasal colonization




MS Onset – 02-08 in Hanzlicek *et al.*, Vaccine, 2010

Similar findings with Micotil have been reported (Allen *et al.*, 2013)

## Why is one not working and the other does?

- Look at how products are used on an operation
- High risk calves - early non-response (old sick) v. later good response (new sick)
- Are calves given a chance to heal?
- What is the case fatality rate?

The last five years has taught us a lot about the products we use to process cattle

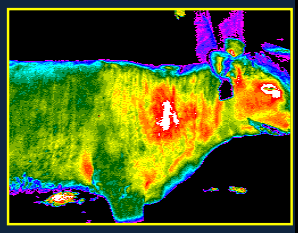
"Little things add up. Think about what we do at processing and for the first two weeks after arrival can set the stage for success or failure."

## Inflammation in Cattle

- Changes behavior
- Causes a core temperature spike or actual fever
- Reduces appetite
- Suppresses portions of the immune system while exaggerating other parts
- Can change growth and virulence of bacteria, mycoplasma and viruses
- Affects market value

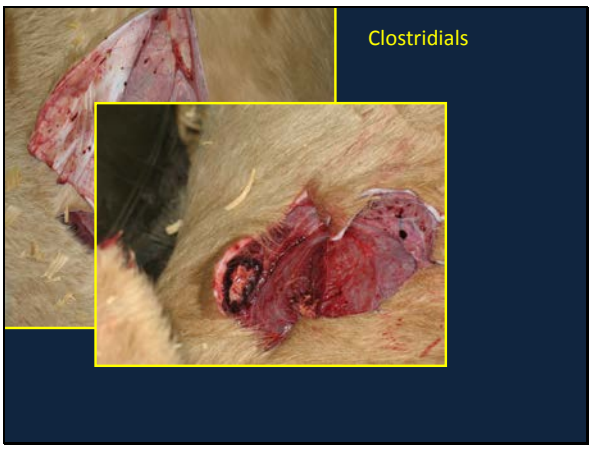
## Injectables – “Use them wisely!”

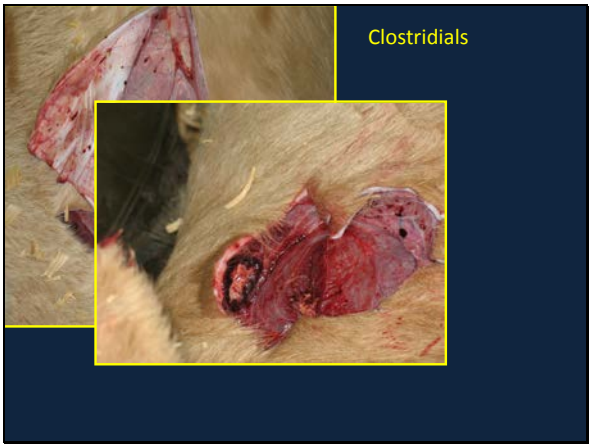
## Most often associated with products we choose, castration and injuries

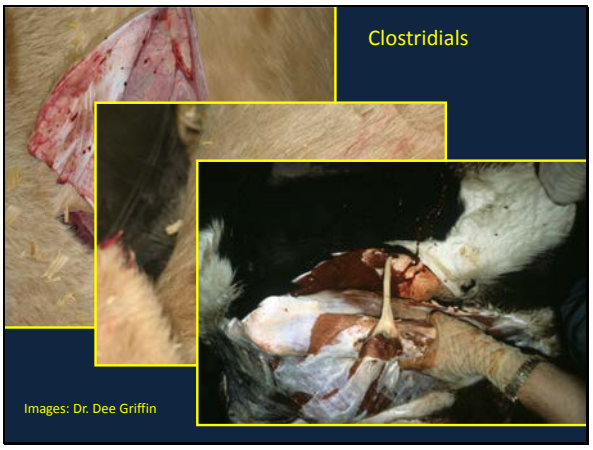


Products: bacterins, gram negatives, mineral mixes, product carriers, and irritating products

## Clostridials


Clostridials


Clostridials


Clostridials
Images: Dr. Dee Griffin

Avermectin injectables

Dr. Dee Griffin


Dr. Dee Griffin

Micotil – IM

Dr. Dee Griffin

## Micotil – IM

Dr. Dee Griffin

## Mineral Mix - IM

Dr. Dee Griffin

Comparison of milk production for a 3-day post-vaccination period with the 3-day pre-vaccination period (Bergeron and Elsener, Vet Therapeutics, Vol. 9 2008)

Triangle 4 + Type 2 BVD = - 0.63 kg (1.4 lb./day)[b]

Cattlemaster Gold FP5 = -1.83 kg (4.0 lb./day)[a]

Saline = + 0.02 kg (<0.1 lb./day)[b]

[a,b] Values with different superscripts differ significantly ($p<0.05$)

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 shear 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)

"Theories are great, they sound great; but the minute you are asked to prove one in actual life, why the whole thing blows up!" – Will Rogers

## 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

## 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".

## "The Theory"

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

.

## 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 1000 head of heifers from the SE were used in the studies
- Sale barn origin – avg. weight 475, assembled over a three-day period

## 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

## 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

## KSU Pre-shipment Study Outcomes

| | | NMA Group 24 pens (309 head) | | | NPP Group 24 pens (310 head) | | | ZPA Group 32 pens (412 head) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | P value | Mean (SE) | Lower CI | Upper CI | Mean (SE) | Lower CI | Upper CI | Mean (SE) | Lower CI | Upper CI |
| BRD Morbidity (%) | < 0.01 | 65.61$^{a}$ (5.10) | 54.90 | 74.93 | 52.51$^{b}$ (5.53) | 41.58 | 63.21 | 38.21$^{c}$ (5.01) | 28.87 | 48.52 |
| First Tx Success (%) | 0.11 | 48.02 (3.82) | 40.54 | 55.60 | 45.73 (4.13) | 37.70 | 53.98 | 58.50 (4.19) | 50.01 | 66.51 |
| Case Fatality (%) | < 0.01 | 9.86$^{a}$ (2.75) | 5.59 | 16.81 | 24.10$^{b}$ (5.12) | 15.40 | 35.64 | 9.73$^{a}$ (2.92) | 5.27 | 17.27 |
| Chronic (≥ 3 Tx) (%) | < 0.01 | 19.65$^{a}$ (3.04) | 14.30 | 26.39 | 14.45$^{ac}$ (2.51) | 10.14 | 20.18 | 8.67$^{b}$ (1.64) | 5.82 | 12.45 |
| Overall Mortality (%) | < 0.01 | 7.07$^{ac}$ (1.93) | 4.07 | 12.00 | 12.15$^{b}$ (2.86) | 7.52 | 19.06 | 5.25$^{c}$ (1.45) | 3.01 | 9.00 |

## 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

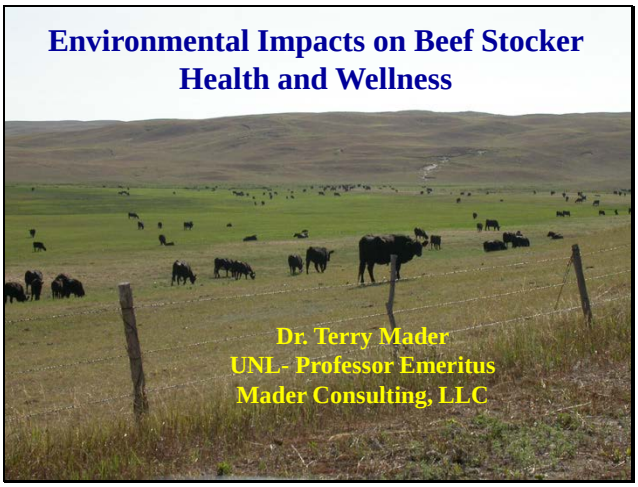
## So, have things changed in the last five years? Absolutely!

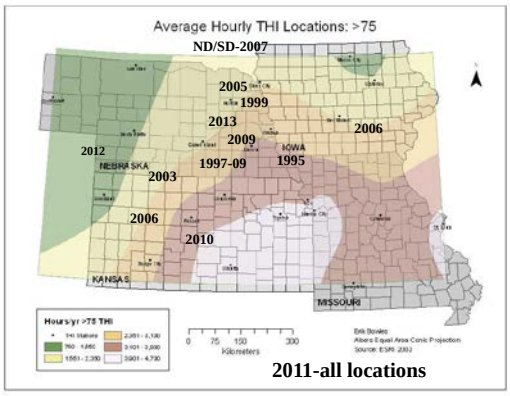
- Weather has played a major role in the quality of cattle entering the supply chain
- Evidence strongly suggests that parasiticides are not working as efficiently as they have in the past
- Multi-drug resistant bacterial respiratory pathogens are present in the cattle population and their prevalence may be increasing
- We may be killing cattle with kindness by the way we manage and process cattle

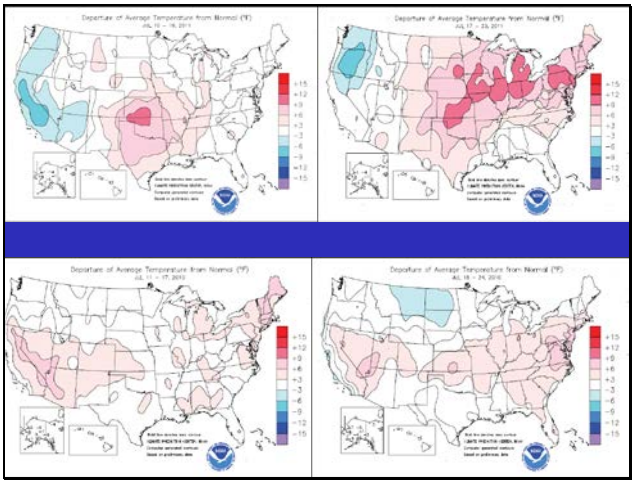
# Notes – Notes -- Notes

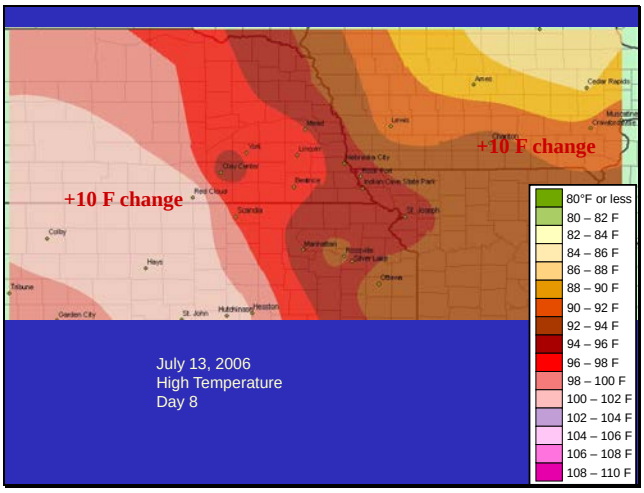
# Environmental Impacts on Beef Stocker Health and Wellness

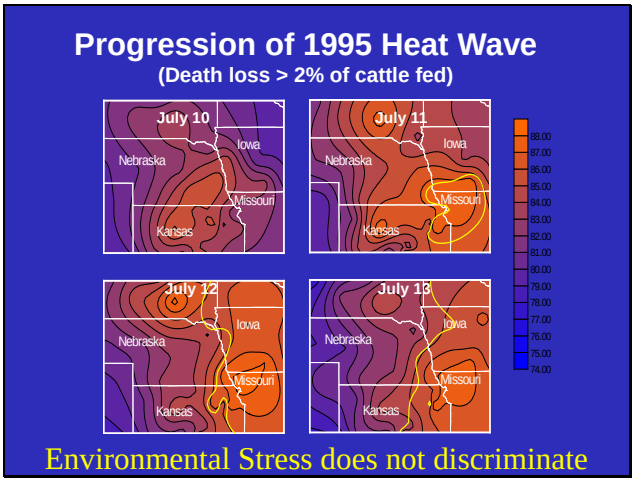
Dr. Terry Mader
Professor Emeritus, University of Nebraska






+10 F change
+10 F change
80°F or less
80 – 82 F
82 – 84 F
84 – 86 F
86 – 88 F
88 – 90 F
90 – 92 F
92 – 94 F
94 – 96 F
96 – 98 F
98 – 100 F
100 – 102 F
102 – 104 F
104 – 106 F
106 – 108 F
108 – 110 F
July 13, 2006
High Temperature
Day 8


Progression of 1995 Heat Wave
(Death loss > 2% of cattle fed)
July 10
July 11
July 12
July 13
Nebraska
Iowa
Missouri
Kansas
Environmental Stress does not discriminate

## Central US Cattle Environmental related Losses

- **SUMMER - HEAT**
  - **1995 AND 1999 ~5,000 HD/YEAR**
  - **1992 – 1997 – 2003 ~1,000 HD/YEAR**
  - **2005 ~ 2,500 HD (NE)**
  - **2006 SW (Beef and Dairy) into KS (~2500 HD)**
  - **2007~2500 HD (SD)**
  - **2009 ~ 5000 HD (KS-NE-IA)**
  - **2010 >2600 HD (KS)**
  - **2011 >14,000 HD (Central and N Plains)**
  - **2012 ~ 2,000 HD (CO-KS-NE)**
  - **2013 ~ 5,000 HD (Northern Plains)**
- **Heat stress prevalence increasing - .5 to 1 %/year**

## Heat Stress Susceptibility

- Deaths losses
  - Feedlot
  - Dairies
  - Confined animals
  - Non-confined animals
- Performance/productivity
  - All animals
    - Non-discriminating

Dehydration
Intravascular coagulation
Respiratory collapse
Death

Tremors
Lack of coordination
Neurological collapse
Death

## Heat Stress Factors

- Unhealthy/previously sick
- Dark Hided
- High Producing
- Water access/competition
- Endophyte infected grasses

NebGuide

University of Nebraska–Lincoln Extension, Institute of Agriculture and Natural Resources

Know how. Know now.

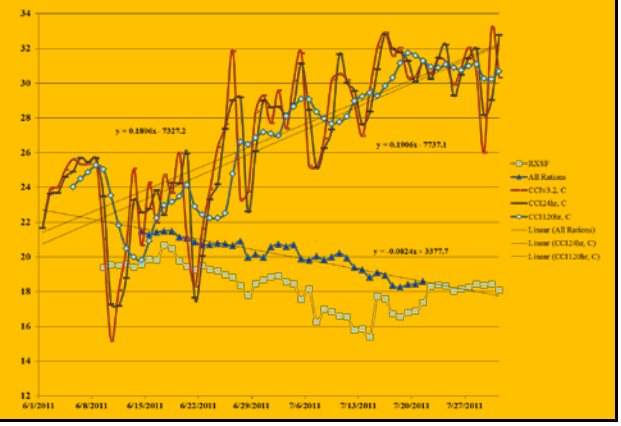
G2121

**Heat Stress — What You Should Know to Make Livestock Shows a Success**

Lindsay M. Chichester, Extension Educator
Terry L. Mader, Extension Beef Specialist

Heat Stress Indicators
Heat Index – human
Temperature Humidity Index – livestock
USDA – MARC –cattle respiration rate/index
HLI – Australia –black globe index
CCI – Comprehensive Climate Index

## Mean daily Temp (CCI,C) and DMI,lb



Comprehensive Climate Index (CCI) to describe apparent temperature

- Adjust ambient temperature for:
  - Relative humidity (RH)
  - Windspeed (WS)
  - Radiation (R)
    - Solar and Surface effects
    - Bare ground temperatures can be 50 degrees greater than air temperature
    - Green grass and trees buffer solar effects

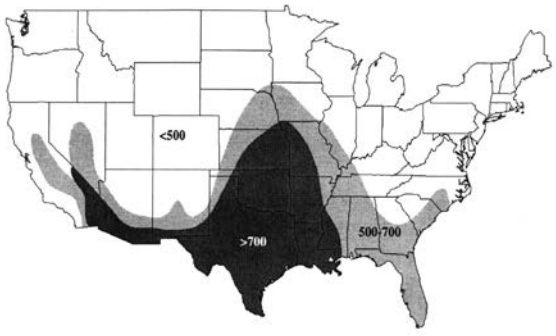
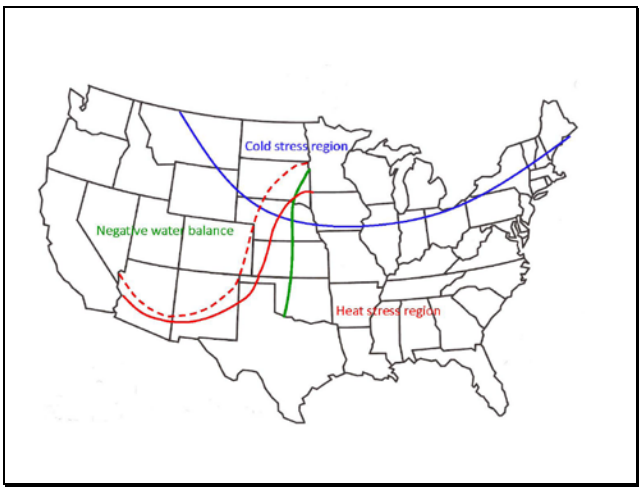




Figure 3. Areas of the mainland United States having selected categories of yearly hours above 29.4 °C (Garrett, 1963)


Cold stress region
Negative water balance
Heat stress region

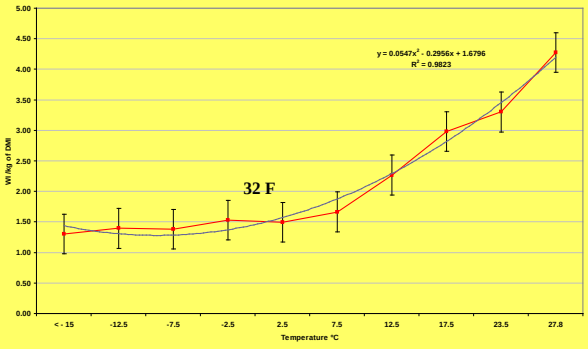

Behavior issues
Space (20-30 sq ft)
Sick Animals
Shade ↓ BT 1-3 ºF

Sprinkling management – social order is important

- difficult to get all animals treated/cooled everyday

-Animal adapt rapidly - extremely addictive


Water intake per kg of DMI for steers by temperature across season.



5 gallons of water at 68 ºF can

reduce body temperature 1.8 ºF

or 1 ºC for an 800 lb animal and

1.2 ºF for a 1200 lb animal

## Water temperature effects (sheep)

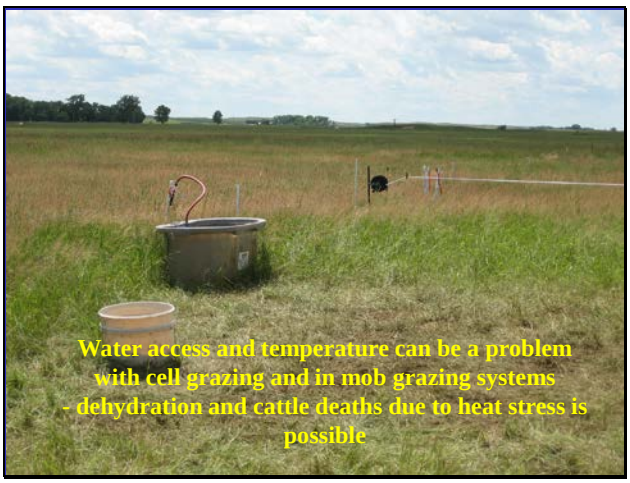
| | Water temperature | | |
|---|---|---|---|
| | 68 ºF | 86 ºF | 104 ºF |
| | - - - cool room (68 ºF) - - - | | |
| DWI, % increase | -- | 11.2 | 6.5 |
| | - - - hot room (95 ºF) - - - | | |
| DWI, % increase | -- | 28.8 | 50.4 |

Savage et al., 2008 – Warm water is not efficient as cool water for cooling animals

## Water temperature effects (3 years)

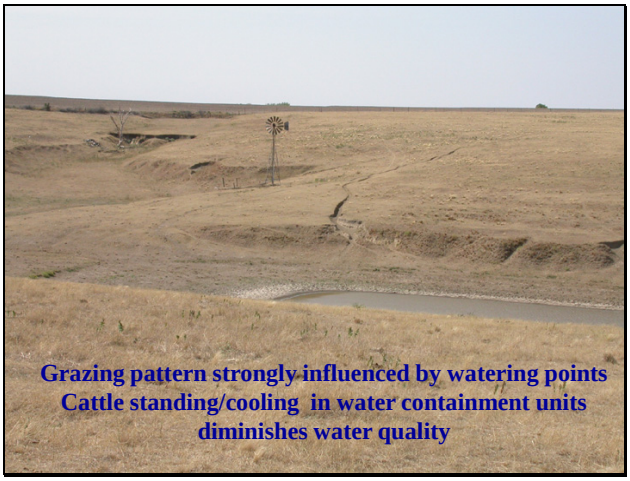
| | 65 ºF | 90 ºF | Δ, % |
|---|---|---|---|
| DM intake, lb | 18.7 | 17.9 | -4.3 |
| Daily gain, lb | 2.61 | 2.34 | -10.3 |
| | | | |

Lofgreen et al., 1975 – Warm water decreases intake and gain.



Water access and temperature can be a problem with cell grazing and in mob grazing systems - dehydration and cattle deaths due to heat stress is possible

Minimize use of above ground black PVC hose and containers – hot water (> 70 F) will contribute to hot cattle.

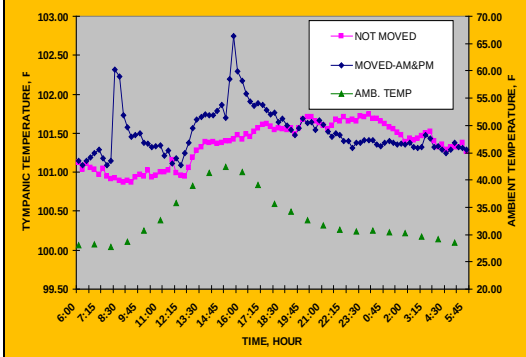


**Grazing pattern strongly influenced by watering points**
**Cattle standing/cooling in water containment units diminishes water quality**

## Other Heat Stress Contributors Feedlot and Stockers

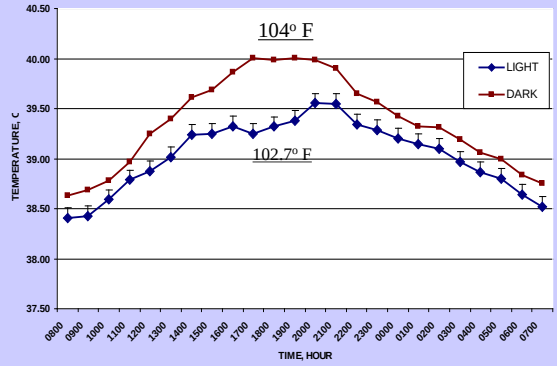
- **Flies/other parasites**
- **Extra body condition**
- **Limited air movement**
- **Processing/activity**
- **Hair coat length and color**
  - **Rapidly turns hot**
  - **No prior adaptation**

**Effect of moving cattle on tympanic temperature**



**Coat color effects on body temperature**

**(shade – greatest benefit to dark-hided cattle)**




## Steps to minimize heat stress (confined & non-confined)

- Minimize activity and movement
- Control flies/parasites
- Coat color/body condition – provide shade
- Insure water accessibility/cleanliness

## Dietary Manipulation

- Salt
- Potassium
- Fat/lipid - Corn by-products
- Ionophores?
- Niacin, choline, betaine, glycerin
- Prebiotics, probiotics, antibiotics
- Yeasts, seaweed, herbs, vitamin C?
- Combinations (shotgun approach)

## Heat Stress Characterization

(degree of discomfort/suffering)

**Panting Score**

**1 (~80bpm) and 2 (2.5) →**

**3 and 4 (>130bpm) ↓**

Mader et al., 2010

## Animal discomfort/deaths under hot and/or cold conditions

**What is acceptable?**

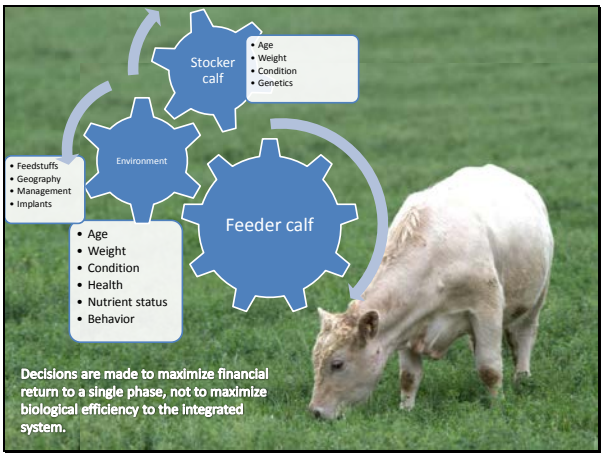
**What yardstick should be used?**

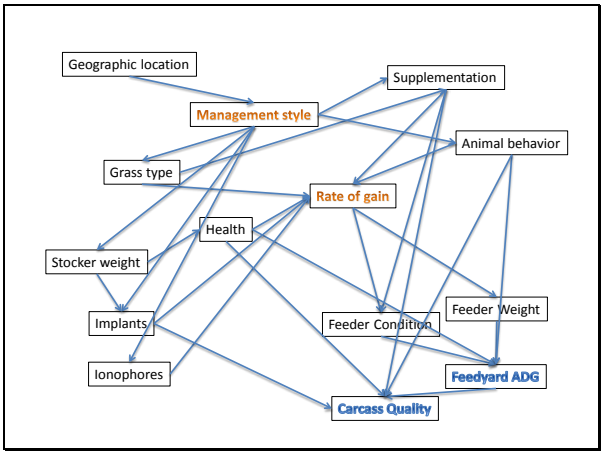
**Who decides – producer or consumer?**

## Questions

# Carry-Over Effects of Stocker Cattle Systems on Feedlot Performance and Carcass Characteristics

Dr. Ryan Reuter
Noble Foundation

## Drouillard and Kuhl, 1999 (JAS)

"Presumably, body fat content of 28% could be attained by an infinite number of discontinuous patterns of growth."

"A wide range of genotypes thus can be used to arrive at a given phenotype."

## Drouillard and Kuhl, 1999 highlights

- Carryover effects are hard to find and inconsistent
  - Factors are confounded
  - Production systems are variable
    - So are research procedures and gut fill
- Forages can have limited effects
  - Stocking rate has little effect on finishing ADG
    - Confounded with stocker ADG and placement weight
  - Toxic fescue compared to other forages seems to create compensatory gain
    - Potentially confounded by gut fill differences
  - Forage types didn't differ in tenderness, and linoleic acid differences drove differences in grass flavor, but dissipated after 54 d on feed
- Supplements don't have a lot of effects
  - Creep feeding calves had little carryover finishing effect
  - Energy, protein and mineral supplements have inconsistent carryover effects
    - Trend for protein to have less detrimental effects on finishing ADG than energy supplements
    - Compensatory gain seemed greater following high-quality forage grazing, seems counter-intuitive. Supplementation may affect gut fill more in high-quality forage.
- Implants have minimal carryover effect
- Research is limited, need more integrated systems research

## What has been published since 1999?


## What has been published since 1999?

- Age at feedlot placement
  - Klopfenstein et al., 2000
    - Groups
      - Calves (n = 45, 14 months)
      - Yearlings (n = 45, 20 months)
    - Results
      - Calves had 0.4 cm more fat than yearlings
      - No difference in taste panel ratings or WBS

## What has been published since 1999?

- Age at feedlot placement
  - Sainz and Vernazza Paganini, 2004
    - Groups
      - Calves (n = 60, fed at 230 kg @ 180 DOA)
      - Short Yearlings (n = 60, fed at 300 kg at 300 DOA)
      - Long Yearlings (n = 60, fed at 425 kg at 550 DOA)
    - Results
      - Older/heavier placements
        - » increased DMI and FBW @ constant BF (apparent mature size).
        - » No difference in G:F
        - » Decreased % Choice
      - Regardless of age or pasture ADG, BF gain on pasture ≈ 0

## What has been published since 1999?

- Age at feedlot placement
  - Janovick Guretzky et al., 2005
    - Groups
      - Calves (n = 36 fed at 236 kg @ 180 DOA)
      - Short Yearlings (n = 36 fed at ? )
      - Long Yearlings (n = 36 fed at ? )
    - Results
      - Yearlings gained faster
      - No effect on quality grade

## What has been published since 1999?

- Age at feedlot placement
  - Barham et al., 2011
    - Groups
      - Calves (n = 72 fed at 300 kg @ 285 DOA)
        - » 4 implants vs. 1 implant
      - Yearlings (n = 72 fed at 310 kg @ 410 DOA)
        - » 4 implants vs. 1 implant
    - Results
      - Age improved ADG
      - Age decreased marbling
      - Age had no effect on WBSF

## What has been published since 1999?

- Age at feedlot placement
  - Robinnette et al., 2012
    - Groups
      - Calf-fed * implant (n=32)
      - Unrestricted growth yearling * implant (n=32)
      - Restricted growth yearling * implant (n=32)
    - Results
      - Unrestricted growth yearlings were heavier at placement, ate more feed, and were heavier at slaughter

## What has been published since 1999?

- Age at feedlot placement
  - Several other studies, similar effects
    - Age/BW at placement
      - Increases ADG, HCW, and DMI
        - » Total feed consumption can be similar
      - Typically decreases G:F
      - May produce leaner carcasses
      - No consistent effect on meat quality
        - » May affect palatability traits not explained by marbling


## What has been published since 1999?

- Stocker ADG
  - Klopfenstein et al., 2000
    - Groups
      - Hi and Low summer ADG (n = 372)
      - Hi and Low winter ADG (n = 418)
    - Results
      - No effect on BF-adjusted % Choice

## What has been published since 1999?

- Stocker ADG
  - Hersom et al., 2004
    - Groups
      - Hi, Med and Low ADG (n = 96)
    - Results
      - Linear increase in fat accretion with grazing ADG
      - No effect on ADG or G:F
      - Hi gain produced lower DMI as %BW
      - Body composition was similar
      - Restriction during stocker phase increased maintenance requirements during finishing

## What has been published since 1999?

- Stocker ADG
  - Sharman et al., 2013
    - Groups
      - DNR, DNR+corn, WP-, and WP+ (n = 148)
    - Results
      - Large differences in BW, fat, marbling at feedlot placement
      - Very minimal difference at slaughter
        - » Fed to common fat thickness

## What has been published since 1999?

- Stocker ADG / condition
  - Grona et al., 2002
    - Evaluated incoming feeder cattle for fleshiness
    - Fatter feeder cattle had heavier, fatter carcasses with more marbling
      - Also heavier at placement
      - $R^2 = 0.41$ with initial BW
    - No measurement of ADG or G:F

## What has been published since 1999?

- Stocker ADG / forage systems
  - Coleman et al., 1995
    - Fed either corn-based or silage-based growing diets
      - Limit fed to equal ADG
    - Corn finishing diet
    - At 45d of finishing, silage produced tougher and less flavorful steaks
    - At 75d of finishing, no difference

## What has been published since 1999?

- Stocker ADG / forage systems
  - Several additional studies in Reuter & Beck 2012
  - Take home:
    - Grazing systems are complex
    - The longer the finishing period is, the fewer carryover effects you will see
    - Compensatory gain is variable and only about 50-60% of the restriction can be expected

## What has been published since 1999?

- Supplementation
  - Felix et al., 2011
    - Groups
      - ADG (0.9 and 1.4 kg/d) * energy source (corn and DDGS) (n = 144)
    - Results
      - More energy in growing phase decreased finishing ADG
      - Interaction of ADG and energy source for marbling
        - » ADG realized didn't conform to design

## What has been published since 1999?

- Supplementation
  - Horn et al, 2005
    - Energy supplementation on wheat pasture had no affect on DMI or G:F, and only 1 year decreased ADG
  - Pavan and Duckett, 2008
    - Supplemented tall fescue with either corn or corn oil
    - No effect of supplement type on carcass traits
    - Supplementation produced greater yield and quality grades

## What has been published since 1999?

- Supplementation
  - Meeter et al., 2013
    - Groups (calves; n = 200)
      - Early-weaned or creep-fed * fiber or corn diets
    - Results
      - No effect of energy source
      - Early-weaning
        - » increased calf ADG
        - » decreased finishing ADG & G:F
        - » Increased marbling (no data on placement fat thickness)
      - Used an "aggressive" data analysis model


## What has been published since 1999?

- Implants
  - Duckett and Andrae, 2001
    - Review of implants
    - Conclusions
      - Calf and stocker phase implants have minimal carryover effects.
      - Recommended implant in every phase of production
        - » Worth about $93 per animal

## What has been published since 1999?

- Implants
  - Platter et al., 2003
    - Groups
      - 10 lifetime implant programs + non-implanted
        - » n = 550
    - Results
      - Controls had increased marbling compared to implanted
      - Implants at branding, weaning, and backgrounding had no effect on marbling
        - » Branding & weaning had no effect on WBS or taste panel
        - » Background implant increased WBS, no effect on taste panel
      - Implants improved:
        - » ADG by 11.8 -20.5% (weaning to slaughter)
        - » HCW by 8.9 – 13.8%
        - » REA
        - » No effect on fat thickness

## What has been published since 1999?

- Implants
  - Barham et al., 2011
    - Groups
      - Aggressive implant program (4 implants)
      - Delayed implant program (1 implant)
      - Two experiments, n = 80 and 64
    - Results
      - Aggressive program improved ADG in both experiments.
        - » Decreased marbling and WBSF in Exp. 1
          - No effect in Exp. 2.
      - Aggressive program improved net return in one experiment and had no effect in the other (Beck et al., 2011)

## What has been published since 1999?

- Implants
  - Robinnette et al., 2013
    - Groups
      - Calf-fed * implant (n=32)
      - Unrestricted growth yearling * implant (n=32)
      - Restricted growth yearling * implant (n=32)
    - Results
      - Stocker implants tended to decrease marbling and tenderness
      - Unrestricted yearlings had greater HCW (correlated with greater placement weight)

## What has been published since 1999?

- Implants
  - Reuter et al., unpublished data
    - Groups
      - 5 stocker implant treatments on wheat pasture (heifers)
        - » Control, Rev G, Syn H early, Syn H late, Syn H 2X
    - Results
      - Implant treatments had no consistent carryover effects.
      - The two aggressive treatments increased WBSF compared to control
        - » When steaks were aged 7 d
        - » No effect when steaks were aged 14 d

## Health or PI status?

- Waggoner et al., 2007
  - No difference in QG due to morbidity


## Some other interesting stuff

- Allen et al., 1996
  - Grass finishing systems
    - n = 420 over 5 years
  - Results
    - Stocker-phase forage type influenced finishing-phase and carcass performance more than finishing forage type.

## Some other interesting stuff

- Lewis et al., 1990
  - System types
    - Integrated, intensive (calf-fed)
    - Extensive (yearling)
    - n = 568
  - Results
    - COG was lower in extensive unless corn price was very low relative to other inputs.
    - Extensive system had increased interest cost.
    - Increasing purchase price had essentially no effect on ranking of the systems.
    - Extensive system = more weight = lower B/E.

## Some other interesting stuff

- Anderson & Gleghorn, 2007
  - Review of non-genetic factors affecting marbling
    - Photoperiod and Vitamins D & A might affect marbling
      - Spring placement yield lowest QG
        - » long days and high Vit. D during finishing
        - » High Vit. A might inhibit adipocyte development (wheat pasture?)
    - QG correlated to ADG, DMI, G:F, or HCW
      - 3.5 mil carcasses
      - **$R^2 < 0.04$**
    - Marbling is not well understood
      - But it can be valuable

## Some other interesting stuff

- Galyean et al., 2011
  - Used ISBW and sex to predict feedlot performance
    - n = > 600,000 animals
  - Results
    - ISBW and sex accounted for:
      - 69% of DMI variation
      - 37% of ADG variation
      - 8% of G:F variation
      - 74% of FSBW variation
      - 73% of HCW variation

514 Reuter and Beck

**Table 1.** Explanatory power of selected traits of individual feeder cattle at placement on finishing and carcass performance

| | Predictor trait[1] | | | | |
|---|---|---|---|---|---|
| Performance trait[2] | BW, kg | Fat, mm | HH, cm | $ADG_s$, kg/d | Model $R^2$ |
| Reuter et al., 2011[3] | | | | | |
| DOF, d | 39%, −0.41 | 11%, −3.2 | 7%, 1.7 | – | 57% |
| ADG, kg/d | 12%, 0.002 | – | – | 4%, 0.30 | 16% |
| HCW, kg | 27%, 0.32 | 11%, −3.7 | 8%, 2.3 | – | 46% |
| DP, % BW | – | – | 7%, 0.10 | 4%, −1.86 | 11% |
| Marbling score | – | 4%, 4.2 | – | – | 4% |
| Ribeye area, $cm^2$/kg HCW | – | – | 9%, −0.0014 | – | 9% |
| Robinette et al., 2012[4] | | | | | |
| DOF, d | 59%, −0.29 | 1%, −2.11 | | 20%, 41.7 | 80% |
| ADG, kg/d | 12%, 0.0015 | – | – | – | 12% |
| G:F | – | – | – | – | – |
| HCW, kg | 70%, 0.56 | 1%, −3.7 | – | 4%, 28.3 | 75% |
| DP, % BW | 9%, 0.01 | – | – | 15%, −2.8 | 24% |
| Marbling score | – | – | – | – | – |
| Ribeye area, $cm^2$/kg HCW | 22%, −0.0004 | – | – | – | 22% |

[1]Trait of feeder cattle known at the beginning of the finishing period. Fat = 12th rib fat depth; HH = hip height; $ADG_s$ = ADG during the previous stocker period.

[2]Selected finishing and carcass performance traits. Model $R^2$ is the coefficient of determination from the final model of the performance trait modeled as a function of the predictor traits in PROC GLMSELECT (SAS Inst. Inc., Cary, NC). The body of the table reports 2 terms: 1) the partial $R^2$ of each independent variable when added in this order: BW, Fat, HH, and $ADG_s$; and 2) the coefficient for each independent variable in the final model. DOF = days on feed; DP = dressing percentage.

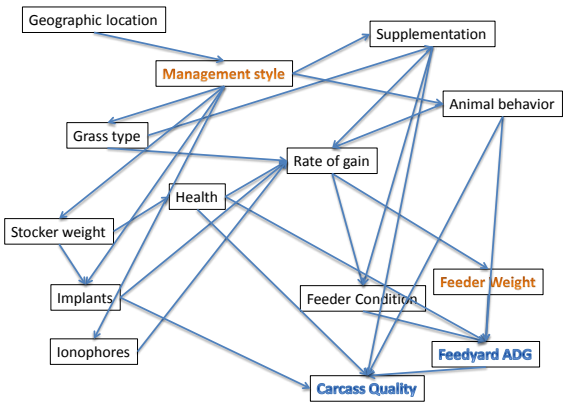
[3]$n$ = 253 animals

[4]$n$ = 93 animals. Hip height data was not available. No independent variables entered the model for F:G ratio or marbling score.

## Some other interesting stuff

**Table 2.** Coefficients observed from selected datasets from regressing finishing-phase ADG on placement BW

| Citation | No. steers (or pens) | $r^2$ | Coefficient |
|---|---|---|---|
| Galyean et al., 2011 | 1,986 pens | 0.46 | 0.0014 |
| Lancaster et al., 2011 | 1,558 | 0.00 | 0.00006 |
| Reuter et al., 2011 | 263 | 0.12 | 0.002 |
| Robinette et al., 2012 | 93 | 0.12 | 0.0015 |

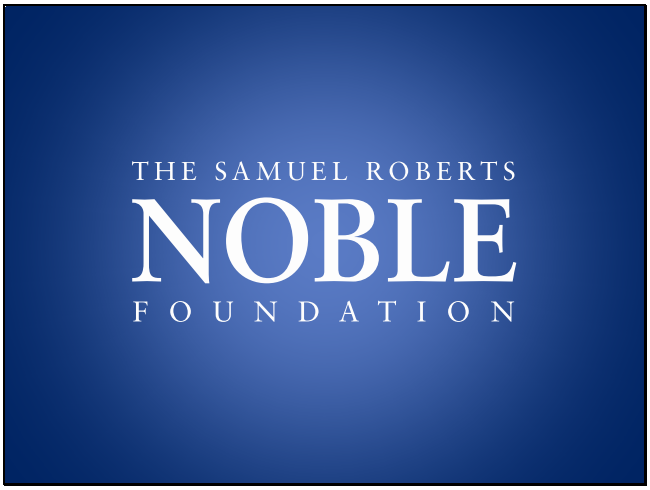


## Conclusions

- Cattle are adaptable animals.
- Stocker production decisions don't seem to affect finishing or carcass performance much.
  - Lbs. are lbs.
- Producers can/should maximize their economic return during their ownership phase.

## Future research ideas

- Energy source effects
- Individual animal responses vs. group responses?
- Improved research quality
  - Measuring effects (gut fill, etc.)
  - Reporting conditions for meta analysis
  - Holding factors constant
- Building pieces of a model vs. comparing integrated systems?


THE SAMUEL ROBERTS
NOBLE
FOUNDATION

# Notes – Notes -- Notes

Be sure to visit the BeefStockerUSA website at:

**www.beefstockerusa.org**

**An information site for stocker producers presented by Kansas State University Research and Extension:**

**Department of Animal Sciences & Industry**

**Food Animal Health and Management Center**
**College of Veterinary Medicine**

**“Knowledge for Life”**