KSU BEEF STOCKER FIELD DAY

September 27, 2012
KSU Beef Stocker Unit

PROCEEDINGS
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Welcome to the 13th 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 Bayer 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.
9:30 a.m.  Registration/Coffee

10:15 a.m.  Introductions

10:30 a.m.  **Cattle and Corn Market Outlook**  
*Dr. Glynn Tonsor, Kansas State University*

11:15 a.m.  **Producer Panel: Managing Around Fewer Cattle**  
*Moderator: Wes Ishmael, Associate Editor, BEEF magazine*  
Margaret Ann Smith – Southlex Cattle Company, Fairfield, VA  
Fred Berns – Stocker Operator, Peabody, KS  
Jeff George – Finney County Feedyard, Inc.  
Ken Woods – Frontier Farm Credit

12:00 Noon  Barbecue Lunch

1:30 p.m.  **Bayer R&D Update for Stocker Cattle**  
*Dr. Jason Nickell, Bayer Animal Health*

2:15 p.m.  **Antibiotic Classes and Uses for Stocker Operations**  
*Dr. Jim Sears, Bayer Animal Health*

2:30 p.m.  **Byproduct Utilization and Growing Cattle**  
*Dr. Terry Klopfenstein, Professor Emeritus, University of Nebraska*

3:15 - 5:30 p.m.  **Breakout Sessions**

**Pasture Weed Control**  
*Dr. Walt Fick, Kansas State University*

**Purchasing Commodity Feeds**  
*Rodney Derstein, Tallgrass Commodities*

**Why is he Dead? What a Necropsy can Tell Us**  
*Dr. Larry Hollis, Kansas State University*

5:30 p.m.  Complimentary Cutting Bull’s Lament BBQ
Beef & Cattle Market Outlook: Implications for Stockers

Glynn Tonsor
Dept. of Agricultural Economics
Kansas State University

Economic Outlook Overview: Cow-Calf Sector

- Strong calf price pullback during 2012
  - National vs. regional drought magnified cattle market impact compared to 2011
- Eventually: return as beneficiary of tight supplies and probable expanded heifer retention...
  - But note majority of owners (not industry share of cows) are not necessarily seeking to maximize profits as core goal ...
- Returns over cash costs
  - 2012 (2013) estimates have fell over $170/cow ($75) since early spring
  - Will 2015 now be "the peak return year"?
  - Further widening between top 1/3 and bottom 1/3 of producers?
- Cost management drives majority of differences in returns and likely is even more critical in period of drought response ...

As of: 9/26/12

http://www.agmanager.info/livestock/marketing/graphs/cattle/prices/default.asp
ESTIMATED AVERAGE COW CALF RETURNS
Returns Over Cash Cost (Includes Pasture Rent), Annual

C-P-66
03/21/12
Livestock Marketing Information Center
Data Source: USDA-AMS & USDA-NASS, Compiled & Analysis by LMIC

US RANGE AND PASTURE CONDITION
Percent Poor and Very Poor, Weekly

9/19/10: 15.5% of Cows

C-P-66
09/20/12
Livestock Marketing Information Center
Data Source: USDA-AMS & USDA-NASS, Compiled & Analysis by LMIC
Economic Outlook Overview:
Stockers

- Historically high Values of Gain (VOG)
  - But also historically high Costs of Gain (COG)...

- Of course, not everyone has their typical feedstuffs/resources to engage this fall/winter
  - VOG = rewards for sound management
  - COG = pain of hiccups or poor management
    - Many producers feeding something new...
How Should VOG Be Projected?

- Naive (current cash market offering) vs. Forward Looking (futures market & basis)
  - Important to recognize no crystal ball exist
  - Salina, KS / 550 to 750 lb in 3 month case / Jan. 07' to July 12' period: naïve is less accurate
  - Forward-looking based VOG projections are now updated daily on AgManager

http://www.agmanager.info/livestock/budgets/production/beef/KSU_FactSheet_ValueOfGainForecastingApproaches.pdf

http://www.agmanager.info/livestock/marketing/graphs/cattle/prices/VOG.asp
Historical VOG

Salina, KS VOG
(550 to 750 in 3 months)

Projections:
(9/26/12): $125-$130

Know your cost of gain (COG) …

<table>
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<tr>
<th>COG ($/cwt)</th>
<th>Projected VOG</th>
<th>80% of Projected VOG</th>
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<td>$85.00</td>
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<td>($35.32)</td>
<td>($86.26)</td>
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Trucking, interest, etc. must be subtracted to identify returns.

Factsheet resources and examples:
– “Buy-Sell” spreadsheet/web dashboard:
  http://www.agmanager.info/livestock/budgets/production/

Economic Outlook Overview:

Feedlots
• Excess capacity concerns remain & will be growing…
  – Drought: mitigates this initially / magnifies it later …
  – Mexican supplies: mitigates this recently / magnifies it soon
• Losses persist…
  – Recent closeouts are at historically high losses…
  • Elevated cost of gain + Feeders purchased before spring pullback
• Recent placements closer to break-even projections…
  – Important to watch response to shrinking available supplies
Historical and Projected Kansas Feedlot Net Returns (as of 9/6/12)

July-12: $265.35/steer
Rolling 12 month average thru July-$89.33/steer

QUARTERLY FORECASTS (LMIC: 9/23/12)

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<th>Year</th>
<th>Quarter</th>
<th>Slaughter</th>
<th>Year Ago</th>
<th>Average</th>
<th>% Chg.</th>
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QUARTERLY FORECASTS (LMIC: 9/23/12)

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Economic Outlook Overview:

Beef Demand

- Meat prices rising w/ basket of purchases...
  - “bacon shortage” discussions are exaggerations; record retail meat prices in 2013 are not...
  - as prices increase, public will require more quality to remain active consumers...
  - Debates on various technologies may intensify...
- Discussion on demand “getting complicated”
  - Growing interest in “how my food is produced”
  - Animal welfare, food safety, antibiotics, hormone use, local, organic, traceability...

Source: March 12, 2012 TIME magazine
Year-over-Year increases in 7 of last 8 quarters (since Q3 of '10); Q2.2012 = -0.26%

Actual Quantity & Price Changes:

1990:
- 67.8 lbs (per capita cons.);
- $2.15 (real choice price)

2011:
- 57.3 lbs (per capita cons.);
- $2.15 (real choice price)

Q2.2012: Per Capita Consumption = -2.3% (Year-over-Year)

Real All Fresh Beef Prices = +2.6%

U.S. BEEF AND VEAL EXPORTS
Carcass Weight, Annual

Data Source: USDA-ERS & USDA-FAS, Compiled & Analysis by LMIC

U.S. BEEF AND VEAL EXPORTS
As a Percentage of Production, Carcass Weight, Annual

Data Source: USDA-ERS & USDA-FAS, Compiled & Analysis by LMIC
Setting the Stage for our Panel…

• The U.S. beef cow industry has been downsizing for a long time…

• Alignment with those “in it for the long haul” is increasingly important

July 1 Cattle Inventory Report

• Report was eliminated, reinstated for 2012, and future availability is unknown …
  – Example of ongoing public/private data discussions

• Downsizing of herd continues (yr-on-yr changes)
  – Beef cows: -3% (900,000 hd)
  – Beef heifer replacements: 0% (was +1.4% in Jan.)
  – 2012 calf crop estimate: -2.3% (800,000 hd)
  – Feeder supplies outside feedlots: -3.2% (1.18 mil. Hd)
Do some regions have an economic advantage for expansion?

ERS 2011 ($/cow): Value of Production LESS Operating Costs

USDA's longer-term projections (as of Feb. 2012) ...

- U.S. beef cow inventory:
  - 29.8 million in 2012
  - 34.5 million in 2021 (+/- 1997 levels) / was 39.3 million in 1982
    - More beef per cow will continue = less throughput in # hd...

- Domestic per capita red meat & poultry consumption:
  - 221 lbs in 2004-07 (Beef=65.7 lbs; Pork=50.4 lbs; Poultry=103.8 lbs)
  - 198 lbs in 2013 (Beef=51.3 lbs; Pork=46.3 lbs; Poultry=98.5 lbs)
  - 211 lbs in 2021 (Beef=58.7 lbs; Pork=47.2 lbs; Poultry=105.8 lbs)
  - These lower per capita volumes will be purchased with more consumer requests and hence requirements for industry-wide investment (& collaboration) in beef quality ...
Final points for discussion

- Global beef demand growth & restrictions from domestic industry heterogeneity must be watched…
  - Comparative position of U.S. is critical…
- Growth of cow-herd vs. # of operations
  - Will traits of those who expand be more aligned with changing consumer requirements???
- How does regionally varying cow-calf expansion & feedlot excess capacity resolution influence your stocker business?

What To Do?

- Utilize available resources
  - VOG projections, decision aides, these KSU events
- Do you know your comparative advantage?
  - Having a favorable cost structure is imperative…
- I encourage you to:
  - Recognize this “isn’t your father’s world” anymore and manage accordingly…
  - “Think globally, manage locally, and stay informed”

More information available at:

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

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Kansas State University
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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 efforts 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.

K-State Decision Aides: Cattle Price Oriented

http://www.beefbasis.com/

• Expectations on Future Cash Prices
  • http://www.beefbasis.com/
• Examine Feeder Cattle Risk Management Alternatives
  • "K-State Feeder Cattle Risk Management Tool"
• Project Premium/Discount of Calf/Steer Attributes
  • "K-State Feeder Cattle Price Analyzer"
• Stocker Breakeven Selling/Purchasing Prices
  • "Cattle Breakeven Selling and Purchase Prices"

Receive Weekly Email Updates for AgManager.info

http://www.AgManager.info/Evaluation/Email.htm
Other K-State Decision Aides
(http://www.agmanager.info/Tools/default.asp)

- NPV of Beef Replacements
  - “KSU-Beef Replacements”
- Beef Cow Lease Agreements
  - “KSU-CowLease”
- Determining Flint Hills Pasture Rents
  - “KSU-Graze.xls”

Beef-Cattle Economics webinar series

Series of quarterly webinars on beef-cattle markets and other industry-related issues.

2012 schedule (all webinars begin at 1:30 CST)
- February 7
- May 1
- August 7
- November 6

For details about specific topics and registering for webinars see additional information on AgManager.info AND
http://www.meatingplace.com/Industry/Webinars
Antibiotic Classes and Uses for Stocker Operations

Dr. Jim Sears
Bayer Animal Health

My agenda

- BRD basics
- Antibiotic basics
- Antibiotic uses
- Your questions

BRD Basics
Bovine Respiratory Disease (BRD)

- Shipping Fever
- Bronchopneumonia
- Fibrinous pleuropneumonia
- Hemorrhagic
- Respiratory
- Respy
- Your term?...................

Really -- BRDC

- Bovine Respiratory Disease Complex
- A complex disease
- Usually the result of many factors
- No single cause; no single cure

Bovine Respiratory Disease (BRD)

ementia

STRESS

VI RUSES

BACTERIA

BRD
**STRESS**

- Suppresses IMMUNE SYSTEM
  - Decreased WBC function
  - Decreased antibody function
  - IMMUNOSUPPRESSION
  - Increased susceptibility to disease
  - Decreased ability to respond to vaccination

**Common Stresses**

- Weaning
- Transportation
- Gathering and handling
- Processing
- Commingling
- Dust / heat / cold stress / rain & snow / mud
- Adaptation to new ration & environment
- Etc, etc.

**Viruses**

- IBR
- BVD
- BRSV
- PI3
- others
Bacteria

- Mannheimia haemolytica  
  (used to be Pasteurella haemolytica)
- Pasteurella multocida
- Histophilus somni
- Mycoplasma bovis

Antibiotic basics

What to Antibiotics Do?

STRESS

VIRUSES

BACTERIA

BRD
Classification of Antibiotics
(by how they work)

1. Time vs Concentration Dependent
2. Bactericidal (kill) vs. Bacteriostatic (inhibit)
3. Spectrum (Gram positive vs negative)
4. Where they work / site of action
5. Tissue Penetration

Site of action by antibiotics

PK Parameters

Cell Wall
Penicillins
Naxcel
Excede

Ribosomes
Nuflor / Resflor
Tetracyclines
Macrolides
Mico, Drax, Zant, Zupr
**Time Dependent Drug**

- Primary need: **Time** above MIC
- Most familiar BRD antibiotics

**Concentration-Dependent Activity**

- Primary Need: **Level** of drug above the MIC
- Only Baytril and Advocin

**Pharmacokinetics and Effect on Bacterial Populations**

- Concentration-dependent
- Time-dependent
Cmax

Tmax

MIC90

**Baytril: Concentration-Dependent**

Level of drug above the MIC

Time above MIC not very important

**Concentration killing: 2 major lines of Evidence**

- **Laboratory Bacterial Killing studies**

<table>
<thead>
<tr>
<th></th>
<th>1 hour</th>
<th>12 hours</th>
<th>24 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baytril</td>
<td>98</td>
<td>98</td>
<td>99</td>
</tr>
<tr>
<td>Nuflor</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Micotil</td>
<td>27</td>
<td>14</td>
<td>75</td>
</tr>
<tr>
<td>Draxxin</td>
<td>0</td>
<td>52</td>
<td>86</td>
</tr>
</tbody>
</table>

**Clinical trial: Baytril vs Draxxin with 7-day no retreat protocol**

Equal outcomes - if long duration were needed, Baytril should not have done so well.

**Antibiotic Classifications**

<table>
<thead>
<tr>
<th></th>
<th>Concentration Dependent</th>
<th>Time Dependent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cidal</td>
<td>Baytril, A180, Advocin</td>
<td>Naxcel, Excede</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excenel, Pen G</td>
</tr>
<tr>
<td>Static</td>
<td>None</td>
<td>All others</td>
</tr>
</tbody>
</table>
Antibiotic uses

BRD Treatment

BRD Control

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Chain of Factors for Treatment Response

1. Diagnosis
2. Spectrum of AB
3. Proper timing and dosage
4. Susceptibility of pathogen to AB
5. Existing Lung Damage
6. Immune status of animal
7. Stress Levels
8. Expectations

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BRD Treatment
**Therapy Dose & Administration**

- SQ, not more than 20ml/site
- Flexible dosage and duration of therapy:
  - *Single-dose*: 7.5 - 12.5 mg/kg  
    (3.4 – 5.7 ml / cwt)
  - *Multiple-day*: 3-5 days, 2.5 - 5.0 mg/kg

**Predominant Market Regimen:**

5 - 5.5ml/cwt, singe dose

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**BRD “Control”**

Approved for cattle at high risk of developing BRD

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**BRD “Control”**

General terms and justification

- Metaphylaxis
- Group therapy
- On-arrival treatment
- Early intervention – to get “ahead” of a likely BRD outbreak
- Reduce overall sickness (pull) rate
- Reduce labor
- Early treatment = better response
BRD “Control”
Potential Considerations - your operation

- High risk cattle
  - History
  - Current / recent conditions
  - Observation of cattle
    - Evidence of obvious stress / fatigue / etc.
  - Your facility / labor considerations
- Time of likely outbreak
  - Early outbreak = indication
  - Late outbreak = indication
- Cost benefit
  - Cost of drug
  - Number of pulls anticipated

Parting thoughts

- BRD - No single cause; No single solution
- Antibiotics
  - Only help with bacteria
  - Work in different ways
- Baytril 100
  - Large amount of information
  - 14-year track record of success
  - Preferred Treatment Use: Single dose 5.5 ml/cwt
  - Control Usage: Single dose 3.4 ml/cwt

Thank You!!

Questions?
Baytril 100® Injectable Solution

Research and Development Update for Stocker Cattle

Jason Nickell DVM, PhD, DACVPM
Bayer HealthCare – Animal Health
Research and Development

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Brief History of Baytril 100®

- Original Baytril 100® Approval
  - July 24, 1998: approved for BRD treatment in U.S.
  - Preceded by a long & intense debate
  - The "concern":
    - FQs should be reserved for human use
      - FQs are important class of human-use antimicrobial (Ciprofloxacin ("Cipro")
    - Resistant Salmonella found in the UK after approval of Baytril 100 in the UK
      - These reports surfaced in summer of 1998, and nearly derailed the U.S. approval
Only human use of FQs?

- Little or no data in 1998 to support exclusive human use
- FDA / CVM initiated surveillance program
  - Rigorous pre-approval studies / requirements
  - Extensive post-approval monitoring system
- Safeguards
  - Prescribed on the order of a licensed veterinarian
  - Off-label usage is prohibited

Baytril 100 met the additional requirements prior to approval.

National Antimicrobial Resistance Monitoring System (NARMS)

- Nation-wide surveillance program
  - USDA, FDA, CDC
  - Since 1996
- Objective
  - To monitor antimicrobial resistance among human foodborne pathogens
  - at the farm level (USDA), in retail meats (FDA), and in humans (CDC)
- Based upon 2010 NARMS report (most recent):
  - No ciprofloxacin resistance in beef and pork
  - Baytril 100 has not induced resistance in human foodborne pathogens found on beef and pork products

Additions to Baytril 100 Label (Since 1998)

- 2008
  - BRD treatment in dairy heifers (up to 20 months of age)
  - Swine respiratory disease (SRD)
    - treatment & control
- 2010
  - Mycoplasma bovis
Baytril 100 is now approved for the control of bovine respiratory disease (BRD) among cattle at high risk of developing BRD

Baytril 100 label changes

PRODUCT DESCRIPTION:
Baytril 100 is a sterile, ready-to-use injectable anti-microbial solution that contains enrofloxacin, a broad-spectrum, broad-spectrum anti-microbial agent. Each mL of Baytril 100 contains 100 mg of enrofloxacin. Enrofloxacin is an antibiotic active against various Gram-positive and Gram-negative bacteria, as well as some Mycoplasma species. Enrofloxacin is a fluoroquinolone with a broad spectrum of activity against a wide range of bacteria, including Gram-positive and Gram-negative organisms.

CHEMICAL NATURE AND STRUCTURE:
1-[cyclohexanecarbonyl]-4-dihydro-6-ethoxy-3-oxo-4-quinolone

INDICATIONS:
Cattle - Single-Use Therapy: Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with Mycoplasma bovis and Pasteurella multocida. In addition, Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with Mycoplasma bovis, P. multocida, and S. aureus.

Cattle - Multiple-Use Therapy: Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with Mycoplasma bovis and Pasteurella multocida. In addition, Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with Mycoplasma bovis, P. multocida, and S. aureus.

Baytril 100 label changes

DOSAGE AND ADMINISTRATION:
Baytril 100 provides flexibility in dosing and duration of therapy. Baytril 100 is administered as a single dose for one dose for treatment and control of BRD cattle and 100 mg/mL, for multiple doses for BRD treatment. Administration of the appropriate dose and duration of therapy for BRD treatment in cattle should be based on an assessment of the severity of the disease, pathogen susceptibility and clinical response.

Single-Use Therapy (BRD Treatment): Administer a subcutaneous dose of 10 mg/kg of body weight (30 mg/kg) of Baytril 100. Examines of cattle should be repeated at 30 to 45 days or at the time of the next dose.

Multiple-Use Therapy (BRD Treatment): Administer a subcutaneous dose of 20 mg/kg of body weight (60 mg/kg) of Baytril 100. Examines of cattle should be repeated at 30 to 45 days or at the time of the next dose.

SIDE EFFECTS:
No side effects were observed in cattle treated with Baytril 100. However, when treating with Baytril 100, it is important to monitor for any signs of adverse reactions. If any signs of adverse reactions are observed, they should be reported to the veterinarian immediately.

PRECAUTIONS:
Before administering Baytril 100, it is important to ensure that the animal is healthy and free of any existing infections. Additionally, Baytril 100 should not be administered to any animal that is pregnant or lactating.

CONTRAINDICATIONS:
Baytril 100 should not be administered to any animal that is pregnant or lactating. Additionally, Baytril 100 should not be administered to any animal that is allergic to enrofloxacin or any of the excipients in the formulation.

ADVERSE REACTIONS:
No adverse reactions were observed in cattle treated with Baytril 100. However, when treating with Baytril 100, it is important to monitor for any signs of adverse reactions. If any signs of adverse reactions are observed, they should be reported to the veterinarian immediately.

INTERACTIONS:
No significant interactions were observed with Baytril 100. However, when treating with Baytril 100, it is important to ensure that the animal is healthy and free of any existing infections. Additionally, Baytril 100 should not be administered to any animal that is pregnant or lactating.

ADMINISTRATION:
Baytril 100 is administered subcutaneously in cattle. It is important to ensure that the injection site is clean and free of any infections before administering Baytril 100.

STORAGE:
Baytril 100 should be stored at room temperature and protected from light. It should not be frozen or refrigerated.

MANUFACTURER:
Baytril 100 is manufactured by Bayer HealthCare Animal Health.
Pivotal BRD Control Field Study

**Objective:** Evaluate the clinical efficacy of Baytril® 100 Injectable Solution for the control of naturally occurring bovine respiratory disease (BRD) in beef and non-lactating dairy cattle
- Single-injection therapy
- Associated with
  - *M. haemolytica*,
  - *P. multocida*,
  - *H. somni*, and
  - *M. bovis*
- At high risk of developing the disease.

Pivotal BRD Control Field Study

**Sites:** Six investigators in five geographic regions in the U.S. and Canada

<table>
<thead>
<tr>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
<th>Site 4</th>
<th>Site 5</th>
<th>Site 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly Lechtenberg, DVM, PhD&lt;br&gt;Midwest Veterinary Services, Inc. (MVS1)&lt;br&gt;Oakland, NE</td>
<td>David Bechtol, DVM&lt;br&gt;Agri Research Center, Inc. (ARC)&lt;br&gt;Canyon, TX</td>
<td>Breck Hunsaker, DVM, PhD&lt;br&gt;Summit Research (SR)&lt;br&gt;Wellington, CO</td>
<td>Calvin Booker, DVM, MVetSc&lt;br&gt;Feedlot Health Management Services (FHMS)&lt;br&gt;Okotoks, Alberta, Canada</td>
<td>Teresa Schieber, DVM&lt;br&gt;Midwest Veterinary Services, Inc. (MVS2)&lt;br&gt;Oakland, NE</td>
<td>Terry TerHune, DVM, PhD&lt;br&gt;HMS Veterinary Development, Inc. (HMS)&lt;br&gt;Tulare, CA</td>
</tr>
</tbody>
</table>

Demographics of Study Animals

- 1150 calves enrolled
- Commercial, crossbred, weaned beef-type calves
- At least 4 months of age
- Average weight: 525 lbs (range 302-774 lbs)
- Gender was not differentiated
  - Calves at a particular site included all intact females, all males (intact and castrated), or a combination thereof.
Pivotal BRD Control Field Study: High-risk factors

- Transportation with animals from two or more farm origins.
- An extended transport time with few to no rest stops.
- An environmental temperature change of ≥30° F from origin to study site.
- A ≥30° F range in temperature fluctuation at a study site within a 24-hour period.
- Exposure to wet or cold weather conditions.
- Excessive shrink (more than would be expected with a normal load of cattle).
- Surgical arrival processing procedures (castration or dehorning).
- Exposure within the prior 72 hours to animals showing clinical signs of BRD.

Pivotal BRD Control Field Study: High-risk factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Transportation with animals from two or more farm origins</th>
<th>An extended transport time with few to no rest stops</th>
<th>An environmental temperature change of ≥30° F from origin to study site</th>
<th>A ≥30° F range in temperature fluctuation at a study site within a 24-hour period</th>
<th>Exposure to wet or cold weather conditions</th>
<th>Excessive shrink</th>
<th>Surgical arrival processing procedures</th>
<th>Exposure within the prior 72 hours to animals showing clinical signs of BRD</th>
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<td>Yes</td>
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<td>Yes</td>
</tr>
</tbody>
</table>

Pivotal BRD Control Field Study

- Inclusion Criteria
  - Good health with no complicating injuries and no clinical signs of BRD at enrollment
  - depression score = 0, and respiratory score ≤1, and a rectal temperature <104.0ºF, and only if they had experienced one or more high-risk factors for BRD.

- BRD Definition:
  1) a depression score = 1 or 2 and rectal temperature ≥104.0º F, or
  2) a respiratory score = 2 and rectal temperature ≥104.0ºF, or
  3) a respiratory or depression score = 3, regardless of the rectal temperature.
**Pivotal BRD Control Field Study**

- **Design**
  - Maximum of 200 animals/site with 10 head/pen.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of animals per site</th>
<th>Product</th>
<th>Regimen</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>85 – 100</td>
<td>Saline</td>
<td>One dose, day 0, 0.075 mL/kg</td>
<td>Subcutaneous injection</td>
</tr>
<tr>
<td>2</td>
<td>85 – 100</td>
<td>Baytril® 100</td>
<td>One dose, day 0, 0.075 mL/kg (7.5 mg/kg)</td>
<td>Subcutaneous injection</td>
</tr>
</tbody>
</table>

**Post-Inclusion Removal Criteria**

- Daily assessments days 1-14
- Treatment failures (i.e. cattle diagnosed with BRD) were removed from pen and study
- Recovery, morbidity, or death did not change treatment failure status.
- All treatment failures were included in the study’s data analysis.

**Results (BRD morbidity on Day 14)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Saline (N = 571)</th>
<th>Baytril® 100 (N = 573)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRD pulls</td>
<td>19%</td>
<td>12%</td>
<td>0.0012</td>
</tr>
</tbody>
</table>

Baytril 100 reduced BRD morbidity (pull rate) by 37% compared to controls.
Summary

- Baytril 100 significantly reduced BRD pull rate when administered metaphylactically to calves at high risk of developing BRD.

Baytril 100 label changes

PRODUCT DESCRIPTION:
Baytril 100 is a sterile, ready-to-use injectable antimicrobial solution that contains enrofloxacin, a broad-spectrum quinolone antimicrobial agent. Each mL of Baytril 100 contains 100 mg of enrofloxacin. Excipients and Linseed oil base 10.0 mg, polyethylene glycol 300 mg, benzyl alcohol 10.0 mg, and water for injection q.s.

CHEMICAL NOMENCLATURE AND STRUCTURE:
1-cyclohexyl-7-[(4-methyl-1-piperidinyl)-6-nitro]-1,4-dihydro-4-oxo-3-quinolonesulfonic acid.

INDICATIONS:
Cattle - Single-Dose Therapy: Baytril 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with Mannheimia haemolytica. Administration of the appropriate dose and duration of therapy in BRD should be based on an assessment of the severity of the disease, pathogen susceptibility, and disease progression.

Baytril 100 label changes

DOSAGE AND ADMINISTRATION:
Baytril 100 provides flexible dosages and durations of therapy. Baytril 100 may be administered in a single dose for one day for treatment associated with BRD. It may be repeated at 24-hour intervals for up to 5 days for treatment of BRD. Selection of the appropriate dose and duration of therapy should be based on an assessment of the severity of the disease, pathogen susceptibility, and disease progression. Baytril 100 (3.75% - 12.5% of body weight) may be given as a single dose or as a multiple divided at 24-hour intervals for up to 5 days. It should be given to the animal that has a clinical improvement on the first day of therapy.

Baytril 100 label changes

Single-Dose Therapy (BRD Treatment): Administration of a subcutaneous dose of 7.5 to 12.5 mg/kg of body weight is recommended. The first dose should be administered at 24-hour intervals for 5 days. Additional treatments may be given if the animal does not respond to the initial treatment. The duration of therapy should be based on an assessment of the severity of the disease, pathogen susceptibility, and disease progression.

THERAPY:
An antibiotic therapy regimen with the following characteristics:
- An oral or intravenous dose with the recommended route.
- An appropriate route and dosage regimen for the treatment regimen.
- An initial or a maintenance dose of 2.5 mg/kg of body weight for at least 5 days.
- An initial or a maintenance dose of 5 mg/kg of body weight for at least 10 days.
- An initial or a maintenance dose of 7.5 mg/kg of body weight for at least 15 days.
- An initial or a maintenance dose of 10 mg/kg of body weight for at least 20 days.

Cattle - Multiple-Dose Therapy (BRD Treatment): Administration of a subcutaneous dose of 3.75 mg/kg of body weight is recommended. The first dose should be administered at 24-hour intervals for up to 5 days. Additional treatments may be given if the animal does not respond to the initial treatment. The duration of therapy should be based on an assessment of the severity of the disease, pathogen susceptibility, and disease progression.

Bayer Healthcare
### Backup: Depression Score

<table>
<thead>
<tr>
<th>Score</th>
<th>Magnitude</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
<td>Bright, alert, and responsive.</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>May stand alone with its head down or ears drooping, but will quickly respond to minimal stimulation.</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>May stand alone with its head down and may show signs of muscle weakness, protein catabolism, or holding shortness in outstretched ears, wagging the tail, or limping. Shows a delayed response to minimal stimulation or requires greater stimulation before showing a response.</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>May be recumbent and reluctant to rise, or if standing isolated, may be recumbent for more than 30 minutes. May be evident in bracing, muscle tremors, trembling, or sweating. May be evident when standing. Head turned down with ears flat and tail drooping. Shows signs of dehydration and/or hyperthermia.</td>
</tr>
</tbody>
</table>

### Backup: Respiratory Score

<table>
<thead>
<tr>
<th>Score</th>
<th>Magnitude</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
<td>No abnormal respiratory symptoms. Respiratory rate and effort are appropriate for the environment.</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Mucous or mucopurulent nasal or ocular discharge and/or cough.</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Mucous or mucopurulent nasal or ocular discharge and/or increase in respiratory rate or effort.</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>Marked increase in respiratory rate or effort, with oral and/or nasal discharge, open mouth breathing, abnormal snorting, and/or exertional distress.</td>
</tr>
<tr>
<td>Site Number</td>
<td>Treatment 1</td>
<td>Treatment 2</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>89/100</td>
<td>86/100</td>
</tr>
<tr>
<td></td>
<td>(89.00%, 82.87, 95.13)</td>
<td>(86.00%, 79.20, 92.80)</td>
</tr>
<tr>
<td>2</td>
<td>69/90</td>
<td>80/90</td>
</tr>
<tr>
<td></td>
<td>(76.76%, 67.93, 85.40)</td>
<td>(88.89%, 82.40, 95.38)</td>
</tr>
<tr>
<td>3</td>
<td>61/81</td>
<td>72/84</td>
</tr>
<tr>
<td></td>
<td>(75.31%, 63.32, 84.78)</td>
<td>(85.71%, 76.23, 95.21)</td>
</tr>
<tr>
<td>4</td>
<td>97/100</td>
<td>95/100</td>
</tr>
<tr>
<td></td>
<td>(97.00%, 93.66, 100.00)</td>
<td>(95.00%, 90.73, 99.27)</td>
</tr>
<tr>
<td>5</td>
<td>66/99</td>
<td>72/84</td>
</tr>
<tr>
<td></td>
<td>(66.67%, 57.38, 75.95)</td>
<td>(85.71%, 78.23, 93.20)</td>
</tr>
<tr>
<td>6</td>
<td>81/100</td>
<td>98/100</td>
</tr>
<tr>
<td></td>
<td>(81.00%, 73.31, 88.69)</td>
<td>(98.00%, 95.26, 100.00)</td>
</tr>
</tbody>
</table>
Byproduct Utilization and Growing Cattle

Dr. Terry Klopfenstein
Professor Emeritus, University of Nebraska

Backgrounding

• Feedlots — daily slaughter/replacement
• Economics of backgrounding
• Feed resources
• Commodity prices
• Forage less expensive than grains/byproducts
• Calf-feeding to yearlings?

UNL Research

• Systems research since 1980
• 200 to 300 calves/year
• Spring-born, fall weaned
Growing and Finishing System

Increasing Backgrounding Gains

1. Forage Quality
2. Time on Forage
3. Implants and Ionophores
4. Protein and/or Energy Supplements

DDG fits forage programs

- Summer DDG
  - Availability
  - Prices

- Both UIP and fat contribute to improved cattle performance
  (MacDonald et al., 2006)
DDG energy (forage diet)

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>HIGH</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG, lb/d</td>
<td>.81</td>
<td>1.57</td>
<td>.05</td>
</tr>
<tr>
<td>corn</td>
<td>.99</td>
<td>1.89</td>
<td>.05</td>
</tr>
<tr>
<td>DDG</td>
<td>12.8</td>
<td>8.0</td>
<td>.5</td>
</tr>
<tr>
<td>F:G</td>
<td>15.9</td>
<td>9.8</td>
<td>.5</td>
</tr>
</tbody>
</table>

DDG ~127% of corn

Loy et al., 2003 Nebraska Beef Report

Energy Value of WDGS

<table>
<thead>
<tr>
<th>Item</th>
<th>DRC</th>
<th>WDGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial BW, lb</td>
<td>629</td>
<td>630</td>
</tr>
<tr>
<td>Final, BW, lb</td>
<td>811</td>
<td>824</td>
</tr>
<tr>
<td>DMI, lb/d</td>
<td>17.9</td>
<td>17.7</td>
</tr>
<tr>
<td>ADG, lb</td>
<td>2.72</td>
<td>2.89</td>
</tr>
<tr>
<td>F:G</td>
<td>6.61</td>
<td>6.15</td>
</tr>
<tr>
<td>Energy</td>
<td>100</td>
<td>130</td>
</tr>
</tbody>
</table>

• DGS range of energy values
  – Loy et al., 2008: 118-130%
  – Nuttelman et al., 2009: 130%
  – Nuttelman et al., 2010: 142-149%
  – Current based on predicted ADG: 130%
  – Current corrected using NRC: 114-119%
Gluten Feed vs Corn\(^1\)

<table>
<thead>
<tr>
<th></th>
<th>CON(^1)</th>
<th>CORN</th>
<th>DCGF(^1)</th>
<th>WCGF(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMI</td>
<td>11.66</td>
<td>18.02</td>
<td>16.44</td>
<td>16.19</td>
</tr>
<tr>
<td>ADG</td>
<td>1.16</td>
<td>2.25</td>
<td>2.15</td>
<td>2.36</td>
</tr>
<tr>
<td>F/Gain</td>
<td>10.5</td>
<td>8.01</td>
<td>7.64</td>
<td>6.86</td>
</tr>
</tbody>
</table>

\(^1\)Oliveros et al. (1987).

*Forage diet unsupplemented or supplemented with 40% corn, dry corn gluten feed or wet corn gluten feed.

---

**Daily gain of steers supplemented with wet corn gluten feed on cornstalks.**

Slope = 0.245  
Standard Error = 0.016  
Max. Gain = 1.88 lb/d  
Standard Error = 0.10

---

**ADG response to DDGS supplementation**

\[ y = -0.01x^2 + 0.20x + 0.50 \]
### Wintering Costs of Gain

<table>
<thead>
<tr>
<th>System</th>
<th>$/lb gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>East NE drylot</td>
<td>$.90</td>
</tr>
<tr>
<td>Sandhills Ranch drylot</td>
<td>$.93</td>
</tr>
<tr>
<td>Sandhills range, corn, SBM, hay</td>
<td>$.82</td>
</tr>
<tr>
<td>Sandhills DDGS</td>
<td>$.65</td>
</tr>
<tr>
<td>Cornstalk grazing, WDGS</td>
<td>$.63</td>
</tr>
</tbody>
</table>

\(^1\)Corn = $6/bu.; hay = $.049/lb DM; WDGS = $.10/lb DM; SBM = $.18/lb DM; mineral = $.04/day; East NE drylot yardage = $.40/day; Ranch drylot yardage = $.30/day; range = $16.50/AUM, $.20/day yardage; stalks = $.14/day, $.30/day yardage.
What do they eat?

<table>
<thead>
<tr>
<th>Parts They Eat</th>
<th>lb/bu DM available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husk</td>
<td>2.6</td>
</tr>
<tr>
<td>Leaf blade</td>
<td>8.5</td>
</tr>
<tr>
<td>Leaf Sheath</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15.3</strong></td>
</tr>
</tbody>
</table>

Distribution of Plant Parts

- Husk — 6.7%
- Leaf Blade — 22.1%
- Leaf Sheath — 10.8% (39.6%)
- Cob — 11.9%
- Stem — 48.5%

¹10 hybrids, 4 densities, 600 plants
Digestibility (%)

<table>
<thead>
<tr>
<th></th>
<th>Current Values (2010)</th>
<th>Previous Research (88-91)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf Blade</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Leaf Sheath</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Top 1/3 Stem</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>Bottom 2/3 Stem</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>Husk</td>
<td>61</td>
<td>67</td>
</tr>
<tr>
<td>Cob</td>
<td>41</td>
<td>34</td>
</tr>
<tr>
<td>Shank</td>
<td>49</td>
<td>49</td>
</tr>
</tbody>
</table>

Grazing Removal

- 200 bu/ac corn yield
- 1600 lb leaf/husk/ac consumed (2.4 AUM/ac)
- 7680 lb/ac total residue
- 21% removal
- 45% indigestible (11.6% removal)

Consequences

- Subsequent Crop Yields
- Soil
- Water
Crop Yields – Fall/Winter Grazing

- Linear-Move, ’96 – ’11, corn/soybean
  Soybeans, 60.4 vs 62.4 grazed
  Corn, 205.8 vs 208.9 grazed
- Dryland ’93 - ’95, corn/corn
  Corn, 147 vs 149.5 grazed
**Corn Yields**

<table>
<thead>
<tr>
<th>Year</th>
<th>Control</th>
<th>1 AUM/Ac</th>
<th>2 AUM/Ac</th>
<th>Baling</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>124</td>
<td>128</td>
<td>133</td>
<td>124</td>
</tr>
<tr>
<td>2010</td>
<td>141</td>
<td>144</td>
<td>145</td>
<td>142</td>
</tr>
<tr>
<td>2011</td>
<td>165</td>
<td>159</td>
<td>170</td>
<td>166</td>
</tr>
<tr>
<td>Average</td>
<td>143</td>
<td>144</td>
<td>149</td>
<td>144</td>
</tr>
</tbody>
</table>

**Crop Residues Produced in Kansas**

- Corn, 4.2 million acres
  - @ 140 bu/ac = 16.5 million tons
- Wheat, 8 million acres
  - @ 42 bu/ac = 6 million tons
- Sorghum, 2 million acres
  - @ 65 bu/ac = 1.82 million tons
- Total = 24.32 million tons
- Sustainable total? = 11.5 million tons

**Kansas Cattle/Residues**

- Cows – 1.6 million (200d)
- Stockers – 1 million (200d)
- Feedlot – 2.5 million (5 lb/d)
- Total usage = 7.5 million tons
### Wet Distillers Grains and Straw

<table>
<thead>
<tr>
<th>WDGS</th>
<th>30%</th>
<th>45%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial wt, lb</td>
<td>509</td>
<td>510</td>
</tr>
<tr>
<td>DMI, lb</td>
<td>9.2</td>
<td>9.7</td>
</tr>
<tr>
<td>ADG, lb</td>
<td>0.82</td>
<td>1.22</td>
</tr>
<tr>
<td>F:G</td>
<td>11.3</td>
<td>8.0</td>
</tr>
</tbody>
</table>

1Buckner et al., 2010 BR

### Wet Distillers Grains Plus Solubles with Straw

<table>
<thead>
<tr>
<th>WDGS</th>
<th>25%</th>
<th>35%</th>
<th>45%</th>
<th>55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Wt., lb</td>
<td>562</td>
<td>557</td>
<td>554</td>
<td>555</td>
</tr>
<tr>
<td>DMI, lb</td>
<td>9.0</td>
<td>9.73</td>
<td>10.84</td>
<td>11.17</td>
</tr>
<tr>
<td>ADG, lb</td>
<td>0.47</td>
<td>0.94</td>
<td>1.23</td>
<td>1.60</td>
</tr>
<tr>
<td>F:G</td>
<td>21.0</td>
<td>10.5</td>
<td>9.20</td>
<td>6.86</td>
</tr>
</tbody>
</table>

1Peterson 2009 BR.  
2Ensiled mixes.

### Performance summary of five winter supplementation trials at two supplementation levels

<table>
<thead>
<tr>
<th>Winter phase</th>
<th>Low1</th>
<th>High2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial BW, lb</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Days</td>
<td>143</td>
<td>143</td>
</tr>
<tr>
<td>ADG, lb/d</td>
<td>0.49</td>
<td>1.41</td>
</tr>
<tr>
<td>Summer phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days</td>
<td>135</td>
<td>135</td>
</tr>
<tr>
<td>ADG</td>
<td>1.46</td>
<td>1.09</td>
</tr>
<tr>
<td>Winter phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOF</td>
<td>112</td>
<td>107</td>
</tr>
<tr>
<td>ADG, lb/d</td>
<td>4.15</td>
<td>4.35</td>
</tr>
<tr>
<td>DMI, lb/d</td>
<td>28.2</td>
<td>29.2</td>
</tr>
<tr>
<td>Finishing phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final BW, lb</td>
<td>1240</td>
<td>1325</td>
</tr>
</tbody>
</table>

1Low = cattle supplemented during the winter phase for a low daily gain.  
2High = cattle supplemented during the winter phase for a high daily gain.
Profitability Analysis of High and Low Winter Supplementation Levels

<table>
<thead>
<tr>
<th></th>
<th>Low(^1)</th>
<th>High(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial purchase cost, $/hd</td>
<td>850.34</td>
<td>850.34</td>
</tr>
<tr>
<td>Winter phase Cornstalk grazing cost, $/hd</td>
<td>45.76</td>
<td>45.76</td>
</tr>
<tr>
<td>MDGS cost, $/hd</td>
<td>34.32</td>
<td>85.80</td>
</tr>
<tr>
<td>Grazing cost, $/hd</td>
<td>107.68</td>
<td>107.68</td>
</tr>
<tr>
<td>Finishing phase Finisher diet cost, $/hd</td>
<td>408.72</td>
<td>406.22</td>
</tr>
<tr>
<td>Feedyard yantage, $/hd</td>
<td>50.18</td>
<td>48.15</td>
</tr>
<tr>
<td>Total revenue, $/hd</td>
<td>1487.52</td>
<td>1590.48</td>
</tr>
<tr>
<td>Profit, $/hd</td>
<td>-9.48</td>
<td>46.53</td>
</tr>
</tbody>
</table>

\(^1\)Low = cattle supplemented during the winter phase for a low daily gain with 2 lb MDGS/head daily
\(^2\)High = cattle supplemented during the winter phase for a high daily gain with 5 lb MDGS/head daily

Objectives

Determine the effects of supplementing modified distillers grains with solubles (MDGS) while grazing native range.

Modified Wet Distillers Grains (MDGS) During Summer Grazing

<table>
<thead>
<tr>
<th>Item</th>
<th>CON</th>
<th>SUPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial BW, lb</td>
<td>505</td>
<td>504</td>
</tr>
<tr>
<td>Spring BW, lb</td>
<td>747</td>
<td>750</td>
</tr>
<tr>
<td>Summer BW, lb</td>
<td>929</td>
<td>1032</td>
</tr>
<tr>
<td>Summer ADG, lb</td>
<td>1.39</td>
<td>2.07</td>
</tr>
<tr>
<td>Feedlot BW, lb</td>
<td>1409</td>
<td>1412</td>
</tr>
<tr>
<td>Feedlot DMI, lb</td>
<td>30.0</td>
<td>30.1</td>
</tr>
<tr>
<td>Feedlot ADG, lb</td>
<td>3.83</td>
<td>3.77</td>
</tr>
<tr>
<td>Feedlot GF</td>
<td>0.128</td>
<td>0.125</td>
</tr>
<tr>
<td>Feedlot DOF, d</td>
<td>125</td>
<td>101</td>
</tr>
<tr>
<td>BF, in</td>
<td>0.50</td>
<td>0.52</td>
</tr>
<tr>
<td>MARB</td>
<td>590</td>
<td>546</td>
</tr>
</tbody>
</table>
Pasture vs Feedlot

760 lb (dm) Feedlot diet - $129.20
Feedlot yardage difference $10.52
17% less grass - $13.50
680 lb (dm) MDGS - $115.60
Pasture yardage difference $16.04
Net $21.58.

Urea and Pasture Prices

\[
y = 28.797x + 3227.5 \\
R^2 = 0.9966
\]

Effect of N rate on total bromegrass forage production

\[
y = 28.797x + 3227.5 \\
R^2 = 0.9966
\]
Hypothesis

• Supplementation and management strategies can be used on smooth bromegrass pastures grazed by yearling beef cattle to increase N capture and to reduce N excretion, thus increasing N use efficiency.

Materials and Methods

• 3 treatments
  – Fertilized (FERT)
    • 80 lbs/acre
    • 4.0 AUM/acre
  – Supplemented (SUPP)
    • 0.6% of BW
    • 4.0 AUM/acre
  – Control (CONT)
    • 69% stocking rate
    • 2.75 AUM/acre

• 3 replications per treatment

Cattle Performance 2005-2009

<table>
<thead>
<tr>
<th></th>
<th>CONT</th>
<th>FERT</th>
<th>SUPP</th>
<th>SEM</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days</td>
<td>158</td>
<td>158</td>
<td>158</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial BW, lbs</td>
<td>718</td>
<td>716</td>
<td>713</td>
<td>12.78</td>
<td>0.96</td>
</tr>
<tr>
<td>End BW, lbs</td>
<td>959</td>
<td>954</td>
<td>1046</td>
<td>15.40</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>ADG, lbs/d</td>
<td>1.53</td>
<td>1.51</td>
<td>2.11</td>
<td>0.07</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

a,b Means without a common superscript differ (P<0.01)
Economics

- DDGS, $/hd
- Fertilizer, $/hd
- Cash rent, $/hd
- Total, $/hd
- Revenue, $/hd
- Profit, $/hd

<table>
<thead>
<tr>
<th></th>
<th>CON</th>
<th>FERT</th>
<th>DDGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDGS, $/hd</td>
<td>--</td>
<td>--</td>
<td>59.14</td>
</tr>
<tr>
<td>Fertilizer, $/hd</td>
<td>--</td>
<td>35.48</td>
<td>--</td>
</tr>
<tr>
<td>Cash rent, $/hd</td>
<td>105.71</td>
<td>69.65</td>
<td>70.78</td>
</tr>
<tr>
<td>Total, $/hd</td>
<td>953.97</td>
<td>951.14</td>
<td>971.69</td>
</tr>
<tr>
<td>Revenue, $/hd</td>
<td>947.77</td>
<td>942.43</td>
<td>994.48</td>
</tr>
<tr>
<td>Profit, $/hd</td>
<td>-6.20</td>
<td>-8.71</td>
<td>22.79</td>
</tr>
</tbody>
</table>

Economics

- N fertilizer price
- Cash rent
- DG price
Figure 1. Effect of DDGS supplementation on ADG for growing cattle supplemented DDGS

Pen ADG
\[ y = -0.0202x^2 + 0.3235x + 1.2059 \]

Pasture ADG
\[ y = -0.013x^2 + 0.1894x + 1.4732 \]

Grass vs N Fertilizer

$23.86/AUM
$390/Ton Urea-equivalent COG
Ratio = 16.3
AUM ↑ $30 ≈ $489/ton urea
Grass vs DG

$23.86/AUM
$197/Ton DG-equivalent COG
Ratio = 8.26
AUM ↑ $30 ≈ $248/ton DG

DG vs Fertilizer

$390/Ton urea
$197/ton DG
Ratio = 2
Notes – Notes -- Notes
Pasture Weed Control

Dr. Walt Fick
Kansas State University

Pasture Weed Control

Walter H. Fick
K-State Research & Extension

Rangeland & Pasture in Kansas

- 15.8 million acres rangeland
- 2.5 million acres pastureland
- 6.1 million cattle
- 1.43 million beef cows

What is a weed?

- Plant growing out of place
- A plant whose virtues have yet to be discovered
- Any plant not eaten by livestock
Causes of Weed Invasion

- Reduction of fire
- Climatic fluctuations
- Seed transport by animals, wind, water, etc.
- Grazing by domestic livestock
- Decreased fertility in tame pastures

Value of forbs and woody plants

- Add to production and forage quality
- Browse for sheep, goat, deer, cattle
- Watershed protection
- N-fixation by legumes
- Woody plants provide shade, winter protection and cover

Grazing intensity and forb disappearance at Hays, KS

<table>
<thead>
<tr>
<th>Stocking Rate</th>
<th>Acres/head</th>
<th>Forb Yield (lbs/acre)</th>
<th>% Disappearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy</td>
<td>2.0</td>
<td>270</td>
<td>74</td>
</tr>
<tr>
<td>Moderate</td>
<td>3.5</td>
<td>710</td>
<td>49</td>
</tr>
<tr>
<td>Light</td>
<td>5.0</td>
<td>1020</td>
<td>40</td>
</tr>
</tbody>
</table>
### Consumption of forbs by steers in the Flint Hills

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (lbs/acre)</th>
<th>% Disappearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late spring burn</td>
<td>160</td>
<td>31</td>
</tr>
<tr>
<td>Not burned</td>
<td>300</td>
<td>40</td>
</tr>
</tbody>
</table>

---

**Catclaw sensitivebriar**

---

**Illinois bundleflower**
% Crude protein

% Total Digestible Nutrients

Non-grass species cows eat in the Flint Hills

Dotted gayfeather  Heath aster
Leadplant  Purple prairie clover

Obermeyer and Blocksome, 2009 (Woodson and Wabaunsee Co.)
Factors Influencing Control

- Growth habit
- TNC cycle
- Density/cover relationships
- Environmental conditions

Herbaceous Weeds

<table>
<thead>
<tr>
<th>Annual</th>
<th>Biennial</th>
<th>Perennial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broomweed</td>
<td>Musk thistle</td>
<td>Western ragweed</td>
</tr>
<tr>
<td>Lanceleaf ragweed</td>
<td>Common mullein</td>
<td>Baldwin ironweed</td>
</tr>
<tr>
<td>Japanese brome</td>
<td>Curlycup gumweed</td>
<td>Goldenrod</td>
</tr>
</tbody>
</table>

Root/Crown Nonstructural Carbohydrates
Sericea Lespedeza - 1989

[Graph showing TNC (%)]

<table>
<thead>
<tr>
<th>Date</th>
<th>TNC (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/9</td>
<td>0</td>
</tr>
<tr>
<td>5/9</td>
<td>4</td>
</tr>
<tr>
<td>6/9</td>
<td>8</td>
</tr>
<tr>
<td>7/9</td>
<td>12</td>
</tr>
<tr>
<td>8/9</td>
<td>16</td>
</tr>
<tr>
<td>9/9</td>
<td>20</td>
</tr>
</tbody>
</table>

[Graph showing TNC (%) over dates]
Western Ragweed (lb/ac)

Native Grass (lb/ac)

Ragweed Composition in Mixed Grass 1958 and 2008

Threshold Level ~ 40% Composition

Prepared by Keith Harmoney

Musk Thistle Density Effects on Grass Production

Grass Production (lbs/acre)

Thistle density (no./sq. foot)

1982

1983
Control Options

- Grazing management
- Mechanical
- Prescribed burning
- Biological
- Chemical

Grazing Management

- Kind of animal
- Season of use
- Distribution of grazing
- Stocking rate
Combination Grazing

Mowing effects on sericea lespedeza

![Graph showing effects of mowing on sericea lespedeza over years.](image-url)
Lespedeza webworm

Sericea Lespedeza Control
Pottawatomie County (1 YAT)

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate/A</th>
<th>6-4-10</th>
<th>9-17-10</th>
<th>10-6-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escort</td>
<td>1 oz</td>
<td>12</td>
<td>96</td>
<td>93</td>
</tr>
<tr>
<td>MAT 28 + Escort</td>
<td>3.75 + 1 oz</td>
<td>82</td>
<td>98</td>
<td>100</td>
</tr>
<tr>
<td>MAT 28 + Telar</td>
<td>3.75 + 1 oz</td>
<td>91</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>PastureGard</td>
<td>2 pt</td>
<td>91</td>
<td>98</td>
<td>81</td>
</tr>
<tr>
<td>Remedy</td>
<td>1 pt</td>
<td>88</td>
<td>97</td>
<td>58</td>
</tr>
</tbody>
</table>
Musk Thistle Control – Pottawatomie County
Treated June 10, 2011

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>1 MAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>F9007-2</td>
<td>1 oz</td>
<td>90</td>
</tr>
<tr>
<td>F9007-2 + 2,4-D ester</td>
<td>1 oz + 0.25 lb</td>
<td>92</td>
</tr>
<tr>
<td>Ally</td>
<td>0.25 oz</td>
<td>92</td>
</tr>
<tr>
<td>Ally + 2,4-D LVE</td>
<td>0.2 oz + 0.5 lb</td>
<td>92</td>
</tr>
<tr>
<td>Grazon P+D</td>
<td>2 pt</td>
<td>96</td>
</tr>
<tr>
<td>Milestone</td>
<td>4 oz</td>
<td>98</td>
</tr>
<tr>
<td>ForeFront R&amp;P</td>
<td>2 pt</td>
<td>100</td>
</tr>
<tr>
<td>Chaparral</td>
<td>2.5 oz</td>
<td>98</td>
</tr>
<tr>
<td>Weedmaster</td>
<td>2 pt</td>
<td>96</td>
</tr>
<tr>
<td>2,4-D LVE</td>
<td>1.5 lb</td>
<td>97</td>
</tr>
</tbody>
</table>

Keys to herbicide use

- Identify weed
- Select appropriate product
- Time application correctly
- Apply correctly
- Follow grazing & hay restrictions
Grazing/Haying Restrictions (days)

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Before grazing</th>
<th>Before haying</th>
<th>Before grazing</th>
<th>Before haying</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D</td>
<td>0</td>
<td>30</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Chaparral</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Escort XP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ForeFront R&amp;P</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Grazon P+D</td>
<td>0</td>
<td>30</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Milestone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PastureGard</td>
<td>0</td>
<td>14</td>
<td>Next growing season</td>
<td>14</td>
</tr>
<tr>
<td>Remedy Ultra</td>
<td>0</td>
<td>14</td>
<td>Next growing season</td>
<td>14</td>
</tr>
<tr>
<td>Telar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weedmaster</td>
<td>0</td>
<td>37</td>
<td>7</td>
<td>30</td>
</tr>
</tbody>
</table>

Hay Meadow Management and Weed Control

- Harvest date
- Cutting height
- Fertilization
- Prescribed burning
- Grazing
- Weed control

Johnsongrass Control – 2 WAT
Outrider (Sulfosulfuron)

1.3 oz/acre
Johnsongrass Control - 2WAT
Pastora (Nicosulfuron + Metsulfuron)
1 oz/acre

Caucasian Bluestem
Yellow Old World Bluestem
Benefits of weed and brush control

- Increased forage production/availability
- Easier livestock handling
- Reduction of toxic plants
- Wildlife habitat manipulation
- Increased water yield from watersheds
- Clear area for other practices, e.g. seeding
- Reduce insect and disease problems

Contact Information

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Department of Agronomy – TH
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Manhattan, KS 66506
Phone: (785) 532-7223
E-mail: whfick@ksu.edu
Website: http://www.agronomy.ksu.edu/extension/p.aspx?tabid=15
Purchasing Commodity Feeds

Rodney Derstein
Tallgrass Commodities LLC

Mission Statement
- Our Mission is to foster professional relationships with feed ingredient manufacturers, transportation personnel, and end users.
- Help provide a FAIR PRICE, reliable service, and quality feed ingredients.

Tallgrass Commodities LLC
Purchasing Commodity Feeds

- **Buying Direct**
  - Generally give just FOB prices
  - Limited to specific commodity
  - Terms are ACH/cod/net 10 days
  - Good for customers that sell grain to plant

- **Brokers compared to Merchandisers**
  - Brokers connect buyers to sellers
    - Normally work with specialized ingredient
    - Freight taken care of by the buyer OR the seller
    - AR is ran through the seller
    - Generally prepay/cod/net 10 days
    - Broker is paid commission for their service
    - High tonnage/low margin
      - Work with several customers
      - Work with large customers

- **Merchandisers purchase several different commodities**
  - Generally take care of freight
  - Price commodity on a delivered basis
  - Inherit some risk by purchasing commodity
  - Make money on market move, volume opportunities, and cheaper freight
    - Potential to lose money on market move/freight
  - General terms are Net 10-15 depending credit
  - Usually have more options if using different commodities
    - Buy from multiple plants
    - High tonnage/low margin
Purchasing Commodity Feeds

- What does your ration need?
  - Work closely with your extension agent and or nutritionist
  - Corn/milo/forage needs
    - Byproducts – several options
      - Distillers Grains
      - Soy products
      - Midd products
      - Corn Gluten products
      - Cotton products

Purchasing Commodity Feeds

- Tallgrass Commodities LLC
  - Find pricing for all feedstuffs in a ration
    - Also buy corn/milo/hay
    - Mineral
    - Cubes
    - Balancer
      - ONE-STOP SHOP

Purchasing Commodity Feeds

- Freight
  - Rail & Transload
    - 85-100 ton/railcar
  - Bulk truck loads
    - 25 ton/load
  - Delivery options
    - Hopper/grain trailer
    - End dump
    - Belt/Live bottom
Purchasing Commodity Feeds

Prices Today
- All high
- All relative

Reasoning
- DROUGHT
  - Taken its toll on all commodities
- Ethanol
  - Bad margins = plants idol
  - What will the future bring???

Purchasing Commodity Feeds

Results of plants going idol
- Demand to product ratio
  - Higher pricing for certain products
  - Plant selling radius for dry compared to wet
  - Products figured on a DM (dry matter basis)
  - Back to What Does Your Ration Need???

Purchasing Commodity Feeds

Options?
- Distillers grains
  - Dried Distillers Grain
  - Modified Distillers Grain
  - Wet Distillers Grain
- Compare ALL on a DM
  - Which is a better buy?
Purchasing Commodity Feeds

- Consider different alternatives
  - Plans/Projections
    - What are your options
    - What does Your Ration Need?
      - With high inputs
      - Extension Agent
      - Nutritionist
      - Commodity Buyer
      - Know the market

QUESTIONS???
Why is he Dead?
What a Necropsy Can Tell Us

Dr. Larry Hollis
Kansas State University
Is a dead animal a total loss to you?

Diagnostic Tool
Necropsy
Necropsy = Autopsy

Necropsy

• History
  – Who
  – What
  – When
  – Where
  – How
Necropsy

• External evaluation

• Internal evaluation
Necropsy

• Gross lesions
  – Present?
  – Absent?

• Samples for lab analysis
  – Histopath
  – Culture for bacteria or viruses
  – Toxicology

Summary

• A dead animal may give clues to:
  – What caused it’s death
  – What may be poised to cause additional production or death losses in your herd

• A dead animal potentially has value to you!

• Don’t wait until the 10th animal has died to get a necropsy done!
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”