

BEEF STOCKER FIELD DAY

KANSAS STATE UNIVERSITY



**BEEF
STOCKER
UNIT**

October 2, 2008
KSU Beef Stocker Unit
Manhattan, Kansas

Proceedings

Department of Animal Sciences and Industry
Kansas State University





Beef Stocker Field Day 2008

October 2, 2008

KSU Beef Stocker Unit

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Beef Stocker Field Day 2008

Welcome

Welcome to the 2008 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 Alpharma 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.





Beef Stocker Field Day 2008

Program Agenda

- 9:30 a.m. Registration/Coffee
- 10:15 a.m. Introductions
- 10:30 a.m. **Key Findings from the National Stocker Survey**
Wes Ishmael, BEEF Magazine/Stocker Trends
- 11:15 a.m. **New Realities of Conducting Business in the Stocker Segment**
Kevin Dhuyvetter, Kansas State University
- 12:00 Noon Barbecue Lunch
- 1:00 p.m. **Current Concepts in Medicated Feed Additives**
Denny Hausmann, Alpharma Animal Health
- 2:00 - 5:00 p.m. **Breakout Sessions**
- What is the Importance of Temperature when Diagnosing Sickness?**
Jason Nickel, Kansas State University
- Making Rational Choices for Stocker Therapy**
Mike Apley, Kansas State University
- Use of Byproducts for Exploiting Efficient Performance**
Chris Reinhardt, Kansas State University
- What are the Implications of Heavier Cattle Being Fed for Shorter Days?**
Michael Dikeman, Kansas State University
- A Visual Tour of the Progression of Pneumonia**
Gary Anderson and Gregg Hanzlicek, Kansas State University
- Proper Injection Considerations for the Assurance of Quality Beef**
Larry Hollis, Kansas State University
- How Much Do Cutting Bulls Really Cost?**
Frank Brazle, Kansas State University
- 5:00 p.m. Cutting Bull's Lament BBQ

NOTES - NOTES -- NOTES

KEY FINDINGS FROM THE NATIONAL STOCKER SURVEY

WES ISHMAEL
BEEF MAGAZINE/STOCKER TRENDS



Landmark Study

- Represents 70% of stocker cattle nationwide
- Includes 11 Land Grant Universities
- Assesses characteristics by operation type, operation size, producer age, producer tenure and involvement in value-based marketing.
- Provides regional benchmarks and analysis.
- Represents an industry-wide partnership

The Players

Dale Blasi	Kansas State University
Bruce Bye	Elanco Animal Health
Kevin Dhuyvetter	Kansas State University
Terry Engelken	Iowa State University
Scott Grau	Penton Media
Greg Highfill	Oklahoma State University
Max Irsik	University of Florida
Wes Ishmael	BEEF Magazine
Bill Mies	Elanco Animal Health
Vern Pierce	University of Missouri
Matt Poore	North Carolina State University
Walt Prevatt	Auburn University
Justin Rhinehart	Mississippi State University
Jason Sawyer	Texas A&M University
Nevil Speer	Western Kentucky University
Ron Torell	University of Nevada
Matt Sutton-Vermeulen	CMA

You !

• **Pure Stocker (Stocker-only)**—those involved exclusively in stockering and backgrounding cattle.

• **Cow-calf Stocker (CCS)**—those involved in both the cow-calf business as well as stockering and backgrounding cattle.

• **Feedlot Stocker (FS)**—those involved in both stockering and feeding cattle.

• **Whole Cycle Stocker (WCS)**—Operators involved in cow-calf, stocker and cattle feeding segments of the business.

General Take-aways

- There's not many Pure stockers.
- Cow-calf producers are more vested in the stocker business than we might think.
- On paper, stocker producers say health is better than experience suggests.
- A passel of stockers say they limit-feed.

General Take-aways

- Too many folks who PI-test and find positive calves take them to the sale barn without identifying them as such.
- Hardly anybody is getting feedlot and carcass data, regardless of retained ownership.
- Average size is growing.

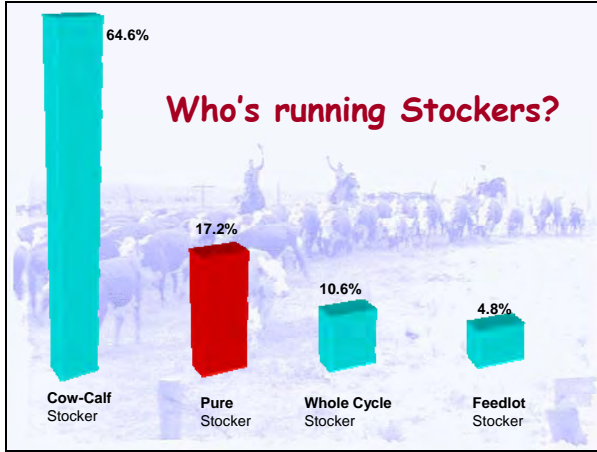
General Take-aways

- There isn't as much profit buying—procuring somebody else's mistakes cheap to straighten out as dogma suggests.

Who's Driving?

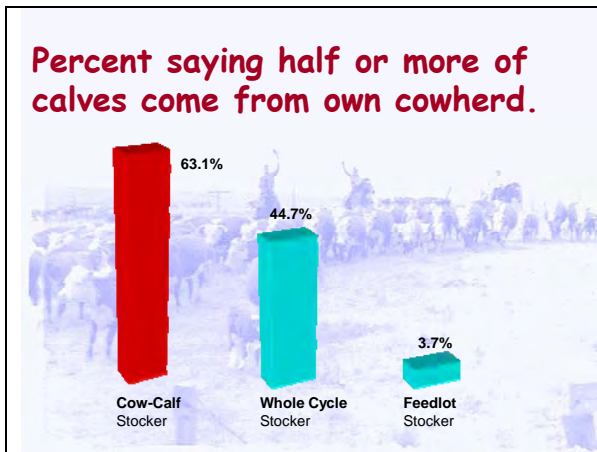
Who's Being Driven?

Who's on the Highway?



Key Finding...

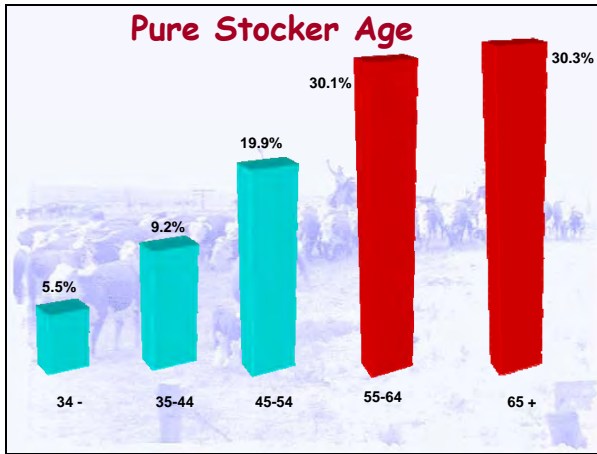
Cow-calf producers who stocker cattle, stocker lots more than their own cattle. They're a competitor for calves, but also represent partner potential.



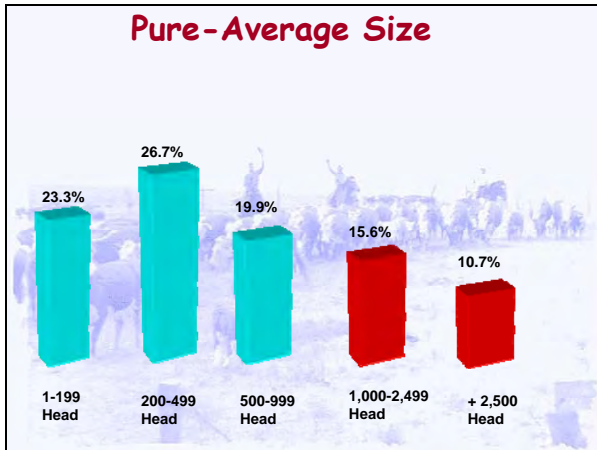
Key Finding...

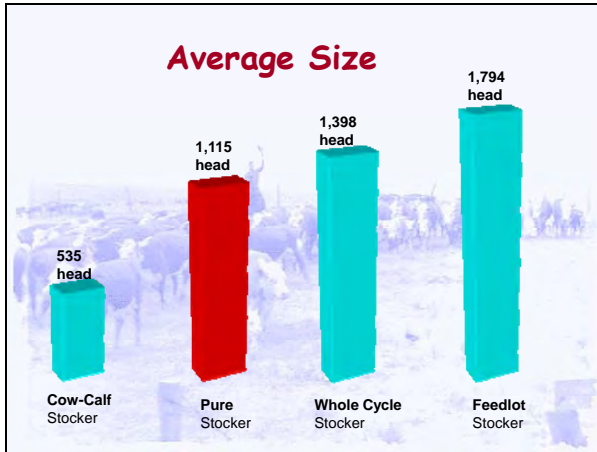
- 41.2% of stocker operators have purchased and managed stocker cattle for fewer than 20 years.
- Producers 35-44 years old own/manage more cattle on average (1,054 head) than other age groups.
- The highest percentage of operators running more than 2,500 head (43.2%) are at least 55 years old.

Pure Stocker Age



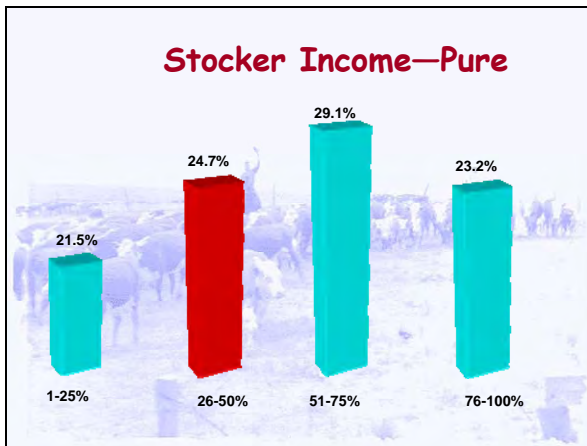
Pure-Average Size

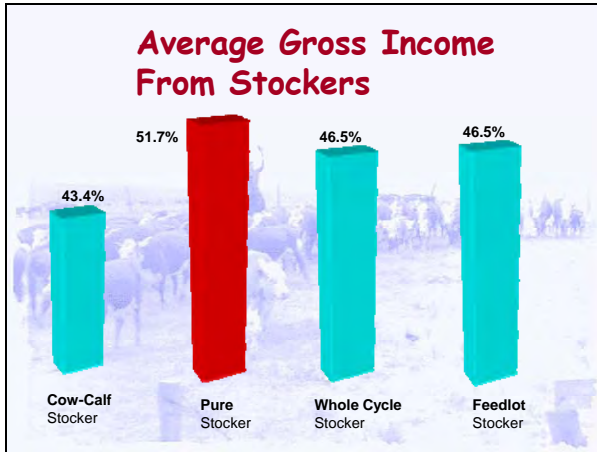


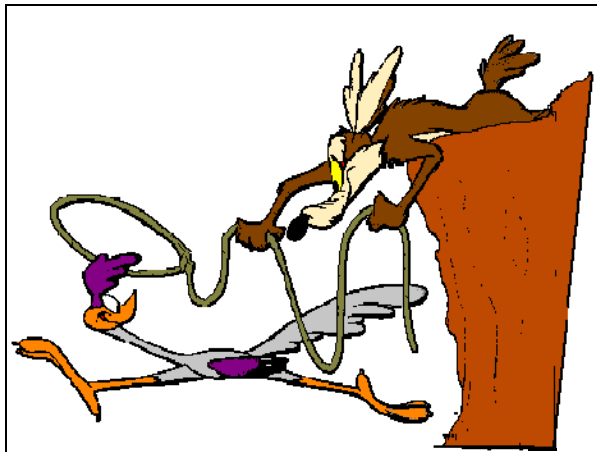


Key Finding...

Running stocker cattle is a full-time occupation for only a relative few, though right at half of Pure stockers rely on it for at least half their income.

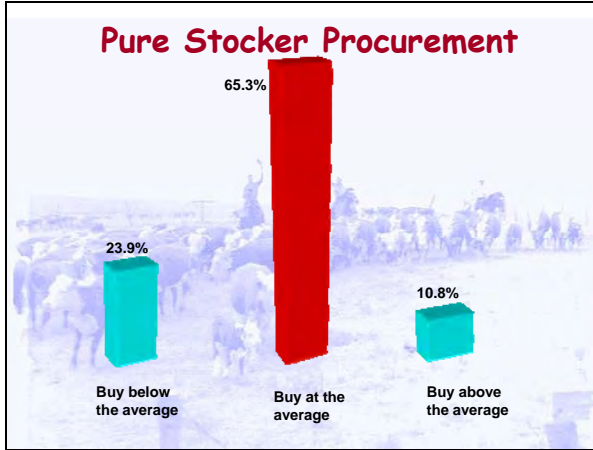


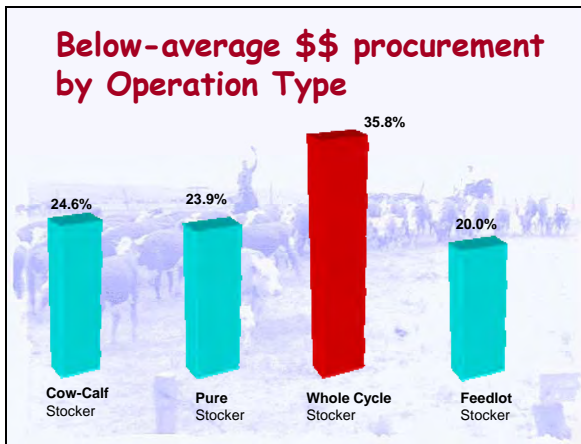




Key Finding...

It's about a whole lot more than sorting out, sorting up and fixing somebody else's mistakes.

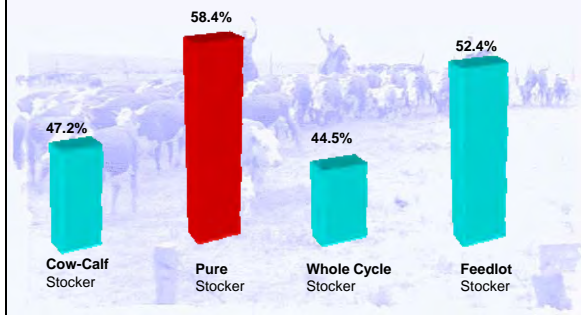


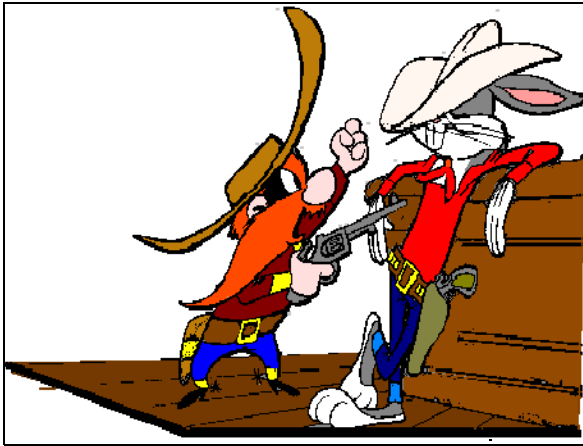


Key Finding...

More Pure Stocker operators (58.4%) than other categories cite buying quality calves as a way to manage market risk.

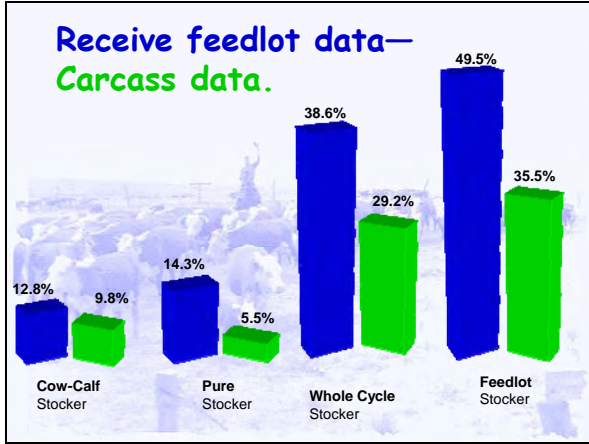
Managing Market Risk—Buying Quality Calves

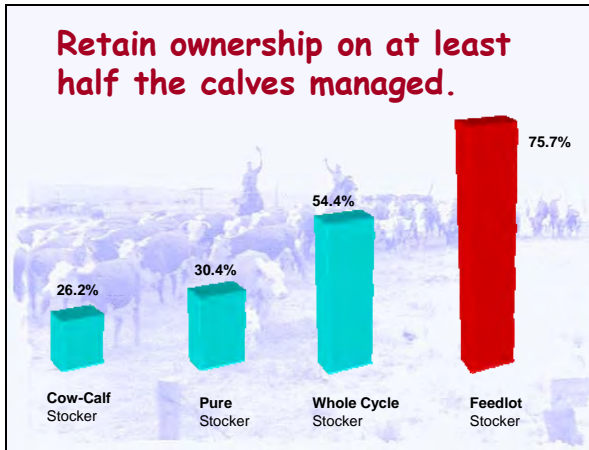




Key Finding...

Pure Stocker operators receive feedlot and carcass data on few of the calves they manage.





Key Finding...

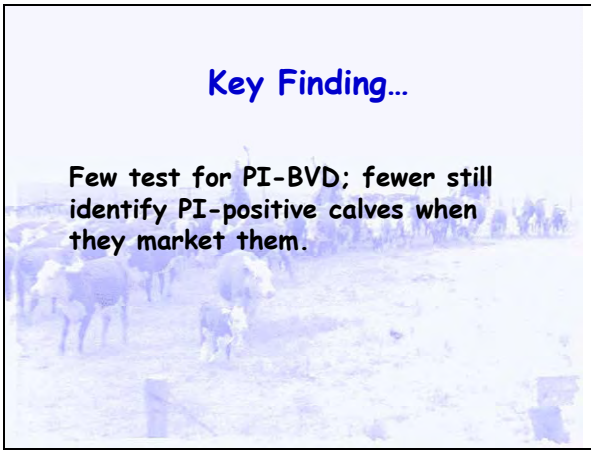
Unsurprisingly, few aim half or more of their cattle for value-added markets as a course of business.

- 6.7% of Pure stockers do; about 14-15% in other categories.
- 29.5% of producers younger than 44 do.

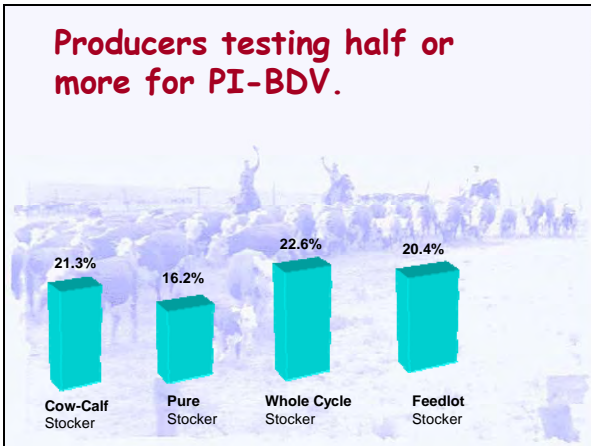


Key Finding...

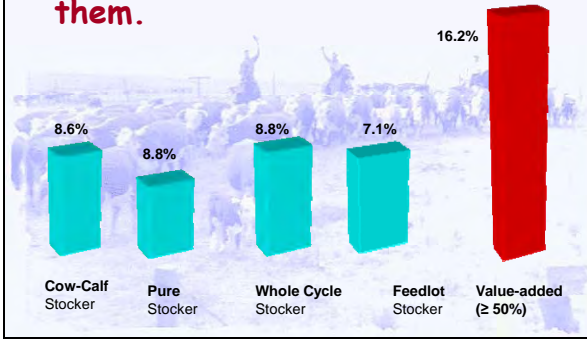
Few test for PI-BVD; fewer still identify PI-positive calves when they market them.



Producers testing half or more for PI-BDV.



Producers marketing PI-BDV calves without identifying them.



Church sign:

Don't let worries kill you...let the church help!

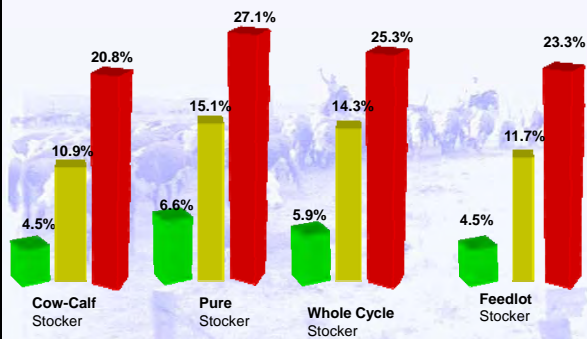
Typical pull rate for BRD during the first month.

	Pure	Cow-Calf	Cycle	Feedlot
<5%	43.1%	69.6%	57.8%	47.7%
5-10%	24.9%	17.6%	18.2%	29.1%
11-20%	18.8%	8.3%	10.4%	60.7%

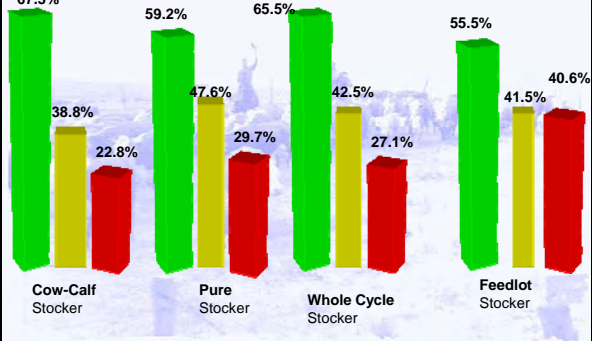
Death loss during the first 90 days—all causes...

	Pure	Cow-Calf	Cycle	Feedlot
<1%	43.5%	59.6%	52.7%	47.8%
1-3%	47.1%	36.4%	42.0%	41.3%
4-5%	8.6%	3.1%	6.5%	3.9%
>5%	0.8%	0.9%	4.3%	1.5%
Average Death 1st 90	1.6%	1.2%	1.4%	1.6%

BRD Risk Classification

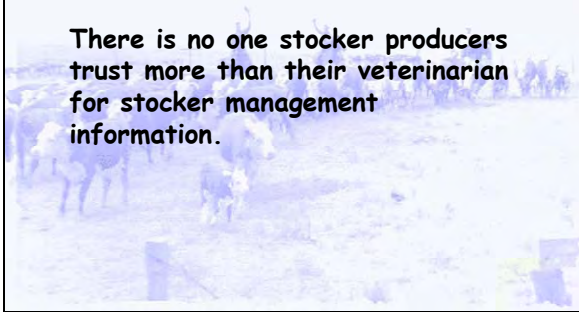


Incoming cattle that fit those risk classifications.



Key Finding...

There is no one stocker producers trust more than their veterinarian for stocker management information.





How often Pure stockers use a veterinarian

Never	3.8%
Only for Emergency	30.4%
1/year	3.0%
2/year	34.1%
1/month	14.6%
Every group	14.1%



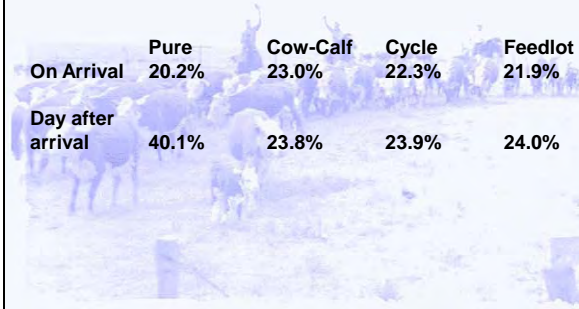
Key Finding...

Pure stockers are more likely than the other categories to process the day of arrival or the day after.



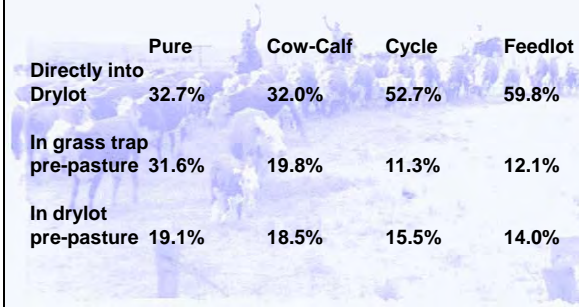
When new arrivals typically processed.

	Pure	Cow-Calf	Cycle	Feedlot
On Arrival	20.2%	23.0%	22.3%	21.9%
Day after arrival	40.1%	23.8%	23.9%	24.0%

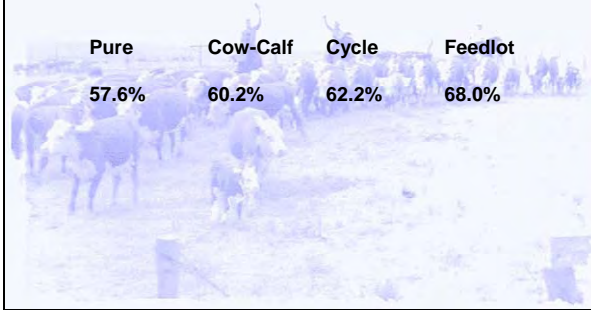


Within the first 48 hours, cattle are typically placed...

	Pure	Cow-Calf	Cycle	Feedlot
Directly into Drylot	32.7%	32.0%	52.7%	59.8%
In grass trap pre-pasture	31.6%	19.8%	11.3%	12.1%
In drylot pre-pasture	19.1%	18.5%	15.5%	14.0%

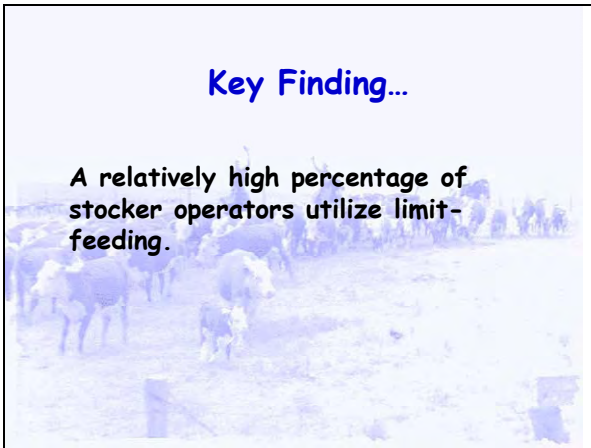


Those feeding complete receiving ration to new arrivals...

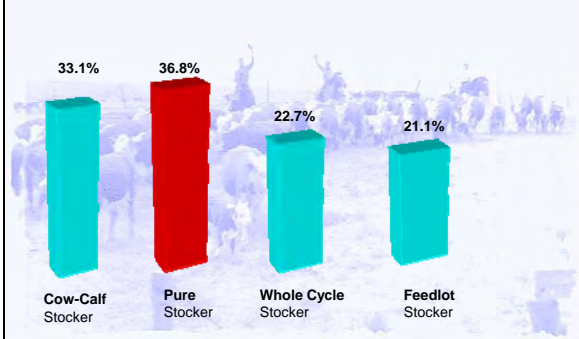


Key Finding...

A relatively high percentage of stocker operators utilize limit-feeding.



Limit-feeding 76-100% of cattle.



Key Finding...

Primary challenges to competitiveness for next five years:

- Feed input costs
- Other input costs
- Potential ROI
- Land purchase price
- Land lease price
- Land availability



NOTES - NOTES -- NOTES

NEW REALITIES OF CONDUCTING BUSINESS IN THE STOCKER SEGMENT

KEVIN DHUYVETTER
KANSAS STATE UNIVERSITY



New Realities of Conducting Business in the Stocker Segment

Kevin C. Dhuyvetter
Department of Agricultural Economics
Kansas State University
kcd@ksu.edu – 785-532-3527



Sources of Risk in Agriculture

1. Price risk
2. Production risk
3. Input cost risk
4. Casualty loss risk
5. Legal, regulatory, and policy risk
6. Personal well-being/health risk
7. Risk of dependent/partner business changes

Source: Modified from Miller et al., "Risk Management for Farmers", Purdue University, Sept 2004.
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Market Price Risk

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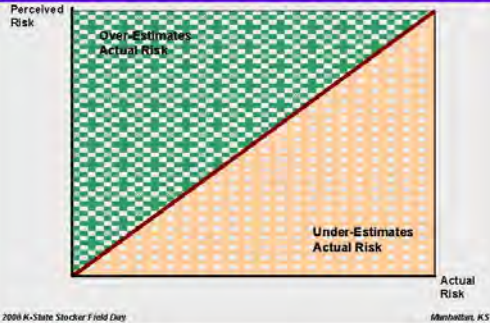
Two Manager Attributes Affect Risk Management Strategy Employed

1. RISK Perception
 2. RISK Attitude or Aversion Level
- Together determine how manager deals with risk

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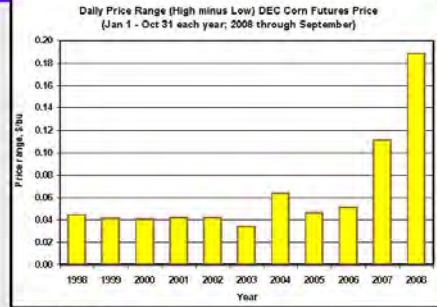
Perceived versus actual risk...



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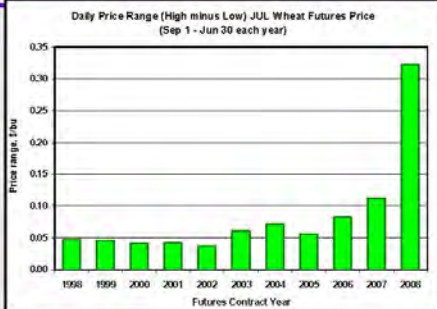
Daily corn price moves have increased significantly ...



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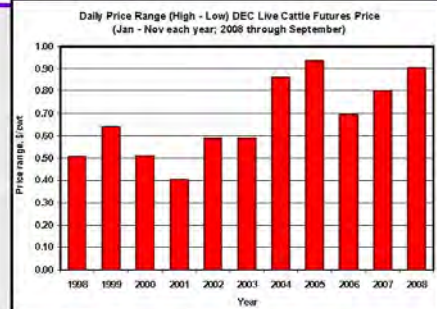
Daily wheat price moves have increased significantly ...



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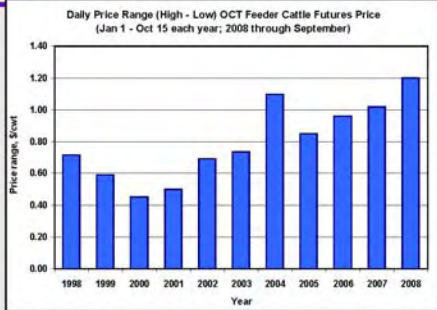
Daily fed cattle price fluctuations are high, but nothing we haven't seen them before ...



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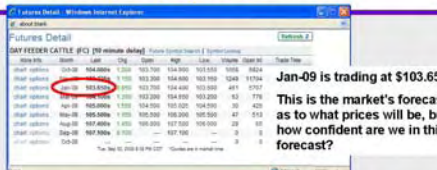
Little more price variability in feeder cattle market than fed cattle market ...



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CME feeder cattle futures prices (9-30-08) ...

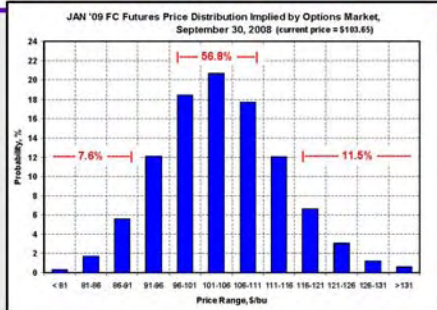


- What is the probability price will be between \$101 and \$106 (+/- ~\$2.5) in Jan?
- What is the probability price will be between \$96 and \$111 (+/- ~\$7.5) in Jan?
- What is the probability price will be less than \$91 (down ~\$12.5) in Jan?
- What is the probability price will be greater than \$116 (up ~\$12.5) in Jan?

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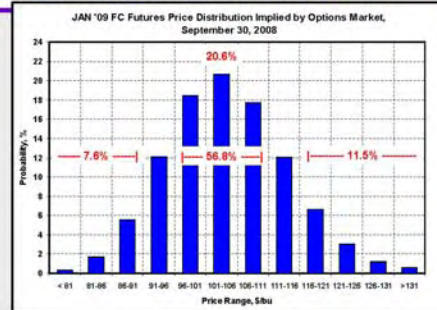
Distribution of market's expectation of prices in Jan...



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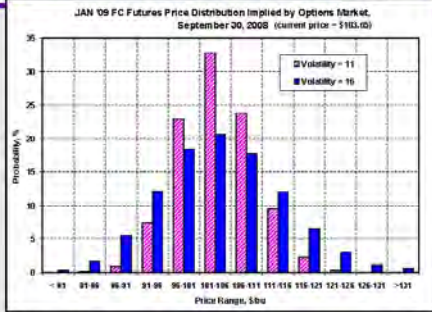
While \$103.65 might be our best guess, we don't have much confidence that prices will actually end up being \$103.65



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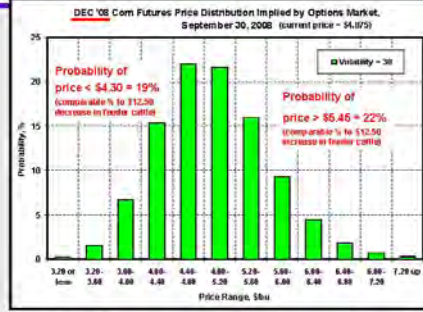
Manhattan, KS

At historical volatility levels, variability still exists, but we would have more confidence in price forecast...



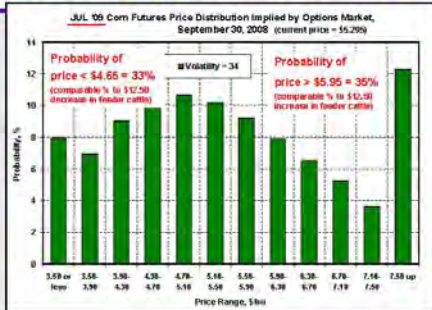
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Things are even worse (better?) in the corn market...



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Risk management very far out is tough in this environment!



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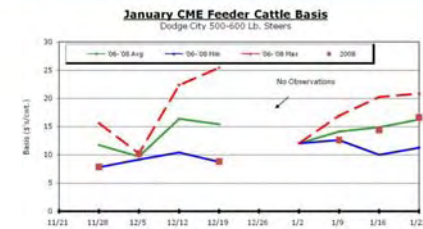
Managing price risk...

- Forward contracting locks in futures price and basis, but we need a forecast of basis to evaluate validity of forward contract bids.
- Futures and options can be used to hedge feeder cattle price risk, but basis risk still exists with these tools (is this good or bad?).
- What do we expect basis to be, and how does corn price variability impact basis risk?

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Fed and feeder cattle basis charts available on www.agmanager.info

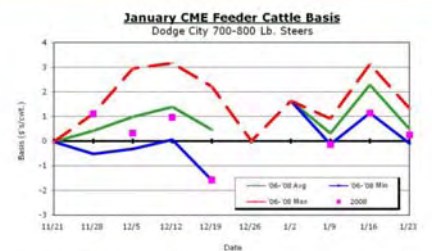
What's driving year-to-year variability? (corn price, data sample problems, etc...)



Source: USDA-AMS, CME, & James Heftart, K-State Ag Economics
Basis=Cash Price-Nearest Futures Price
K-State Dept. of Ag Econ
www.agmanager.info

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Less variability for heavier weight feeders...



Source: USDA-AMS, CME, & James Heftart, K-State Ag Economics
Basis=Cash Price-Nearest Futures Price
K-State Dept. of Ag Econ
www.agmanager.info

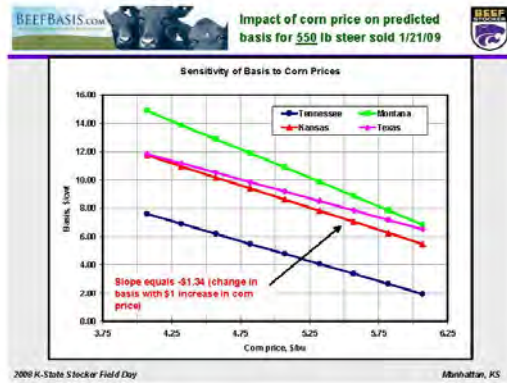
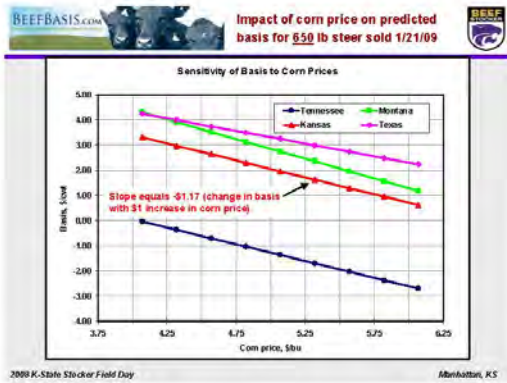
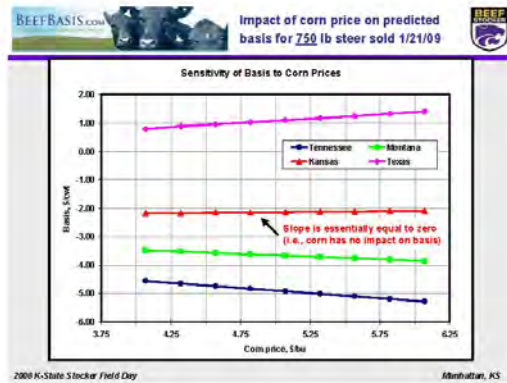
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BeefBasis.com – web-based tool for forecasting basis and examining historical prices and basis.

Feeder Cattle Basis Forecast

BeefBasis.com

- Explicitly considers corn price
- Can consider any weight for steers and heifers between 300-900 lbs
- Accounts for lot size
- 15 states with multiple locations per state

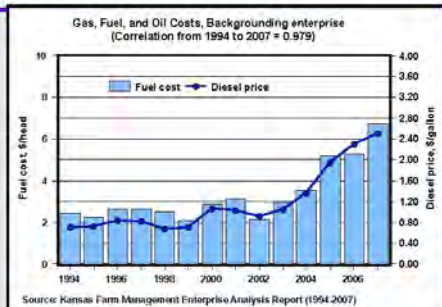


Managing price risk...

- Corn price variability will impact prices of all weights of feeder cattle, but it has a larger impact on lighter weight cattle
- Ability to manage price risk associated with corn price variability varies depending on calf weight

Production Costs

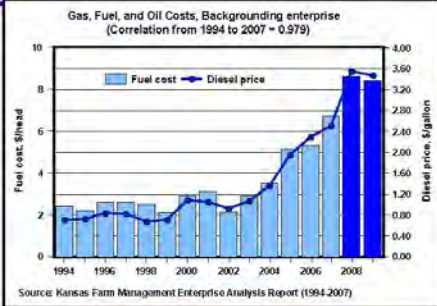
Fuel costs/head and price/gal are highly correlated...



Oil and diesel fuel prices are softening, but will still be high in 2009 by historical standards...



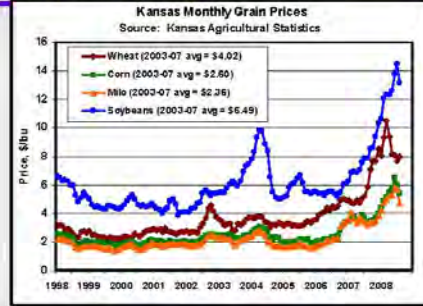
High fuel prices increase backgrounding costs...
(Oct 2008 - Dec 2008 diesel price forecasts based on 0/20/08 crude oil futures prices)



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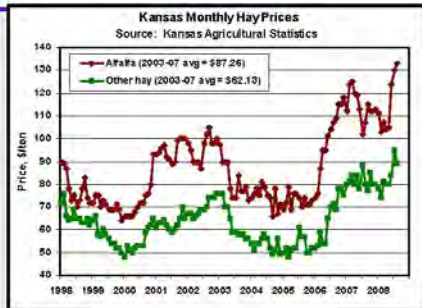
Grain prices have softened considerably, but still remain high by historical standards...



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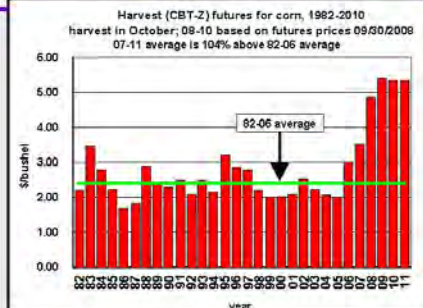
Strength in crop markets impacts hay prices...



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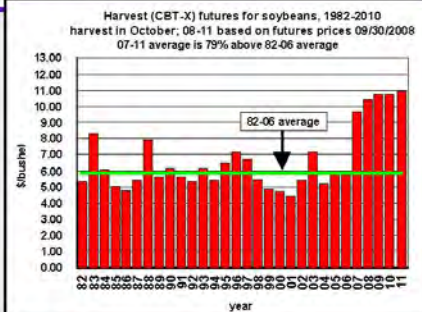
Markets look to remain high in the near future...



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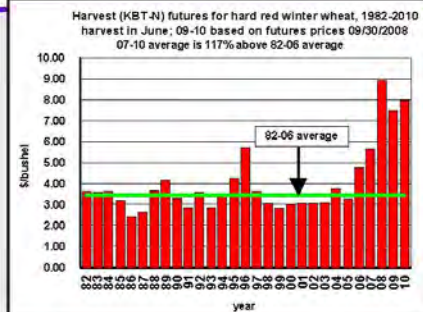
Markets look to remain high in the near future...



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Markets look to remain high in the near future...



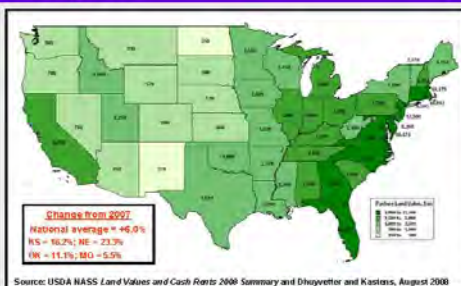
2008 K-State Stocker Field Day

Manhattan, KS



Pasture rental rates

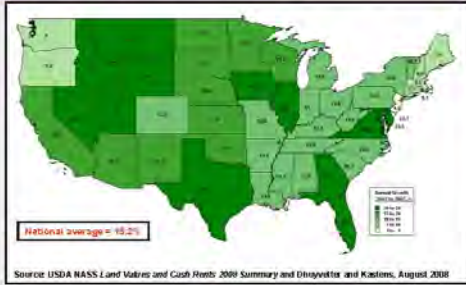
**Pasture Land Average Value per Acre
January 1, 2008**



Source: USDA NASS Land Values and Cash Rents 2008 Summary and Descriptive and Kansas, August 2008

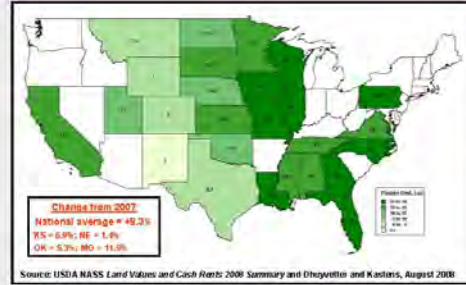
* Corresponding changes in crop land values were US=16.4%; KS=15.7%; NE=28.1%; W=11.4%; and MO=8.6%

Pasture Land Average Annual Growth Rate
Jan 1, 2003 to Jan 1, 2008, percent (geo mean)



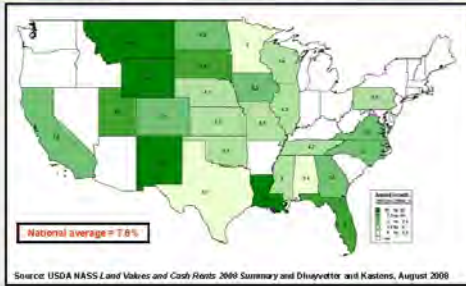
Source: USDA NASS Land Values and Cash Rents 2009 Summary and Digest/Veritto and Kastens, August 2008
2008 K-State Stocker Field Day Manhattan, KS

Pasture Land Average Rent per Acre
2008



Source: USDA NASS Land Values and Cash Rents 2009 Summary and Digest/Veritto and Kastens, August 2008
* Corresponding changes in crop land rents were US=12.0%; KS=9.8%; NE=20.3%; OK=7.4%; and MO=7.6%.
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Pasture Rent Average Annual Growth Rate
Jan 1, 2003 to Jan 1, 2008, percent (geo mean)



Source: USDA NASS Land Values and Cash Rents 2009 Summary and Digest/Veritto and Kastens, August 2008
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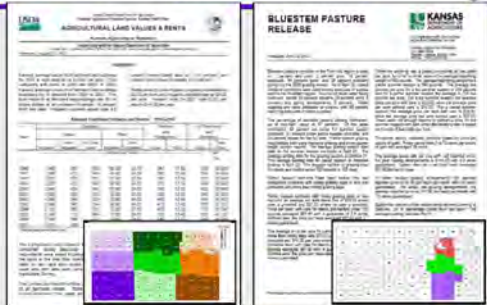
Pasture values versus rents...



- Pasture land values have been increasing at faster rates than pasture rents
- Buying pasture ties up a lot of equity that is not generating a cash return unless some other income stream exists (e.g., lease hunting)
- Is this about to change — are rents going to start increasing at faster rates?

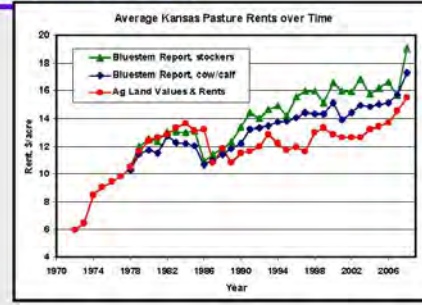
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Kansas Agricultural Statistics surveyed market rental rates
(available at http://www.nass.usda.gov/Statistics_by_State/Kansas/index.asp)



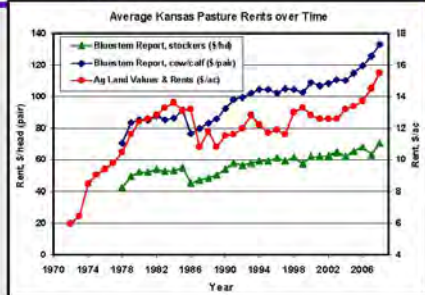
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Pasture rents per acre generally trend up over time
(they decrease 20-30% of the time)...



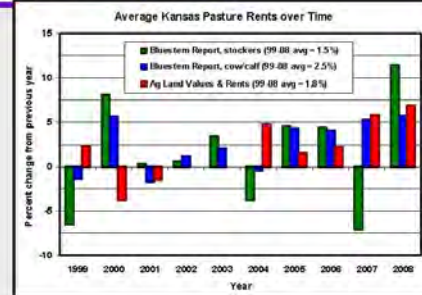
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Comparing pasture rents on a per acre basis is often not appropriate...



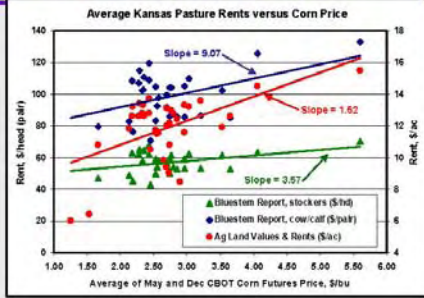
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Increase in rents from 2007 to 2008 was considerably higher than the 10-year average...



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Historical relationship between rent and corn price has been weak, this will likely change going forward...



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Beef budgets used to estimate feed costs...

Winter Wheat Grazing
Drylot Backgrounding of Beef
Summer Grazing of Steers in Western Kansas
Finishing Beef

Budgets were simply used to calculate feed cost of gain and how it is impacted under various price scenarios to examine relative changes...

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Budget feed price assumptions...

Feed prices	Unit	2003-07 FM guides	2008 FM guides	chg from 03-07, %
Corn	\$bu	\$2.67	\$3.05	44.2%
Grain sorghum	\$bu	\$2.34	\$3.55	51.5%
Supplement	\$ton	\$211.62	\$281.42	33.0%
Sorghum silage	\$ton	\$17.09	\$24.64	44.2%
Alfalfa	\$ton	\$83.47	\$111.33	33.4%
Crop residue	\$ton	\$10.00	\$16.00	60.0%
Prairie hay	\$ton	\$56.10	\$80.33	30.3%
Cane hay	\$ton	\$45.57	\$65.71	44.2%
Pasture charges				
ALUM	\$/ALUM	\$13.26	\$16.13	21.6%
Western KS - SL	\$/head	\$52.22	\$65.69	25.8%
Western KS - IES	\$/head	\$41.53	\$49.67	19.6%
Eastern KS - SL	\$/head	\$61.44	\$77.20	25.8%
Eastern KS - IES	\$/head	\$48.06	\$58.44	19.6%
Wheat grazing	\$/cwt/mo	\$1.80	\$3.00	66.7%
Wheat graze-out	\$/cwt/mo	\$2.03	\$3.00	47.8%

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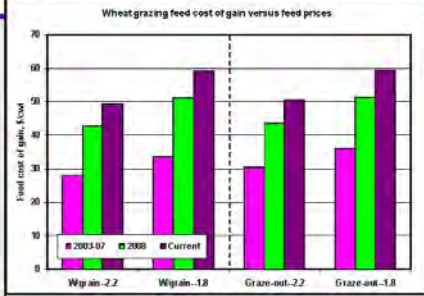
Budget feed price assumptions...

Feed prices	Unit	2003-07 FM guides	2008 FM guides	chg from 03-07, %	Current	chg from 2008, %
Corn	\$bu	\$2.67	\$3.05	44.2%	\$5.04	30.9%
Grain sorghum	\$bu	\$2.34	\$3.55	51.5%	\$4.65	36.5%
Supplement	\$ton	\$211.62	\$281.42	33.0%	\$329.31	17.0%
Sorghum silage	\$ton	\$17.09	\$24.64	44.2%	\$32.26	30.9%
Alfalfa	\$ton	\$83.47	\$111.33	33.4%	\$116.59	4.7%
Crop residue	\$ton	\$10.00	\$16.00	60.0%	\$20.00	25.0%
Prairie hay	\$ton	\$56.10	\$80.33	30.3%	\$82.64	2.9%
Cane hay	\$ton	\$45.57	\$65.71	44.2%	\$86.02	30.9%
Pasture charges						
ALUM	\$/ALUM	\$13.26	\$16.13	21.6%	\$18.55	15.0%
Western KS - SL	\$/head	\$52.22	\$65.69	25.8%	\$75.54	15.0%
Western KS - IES	\$/head	\$41.53	\$49.67	19.6%	\$57.13	15.0%
Eastern KS - SL	\$/head	\$61.44	\$77.20	25.8%	\$88.07	15.0%
Eastern KS - IES	\$/head	\$48.06	\$58.44	19.6%	\$67.21	15.0%
Wheat grazing	\$/cwt/mo	\$1.80	\$3.00	66.7%	\$3.45	15.0%
Wheat graze-out	\$/cwt/mo	\$2.03	\$3.00	47.8%	\$3.45	15.0%

Kevin's guess

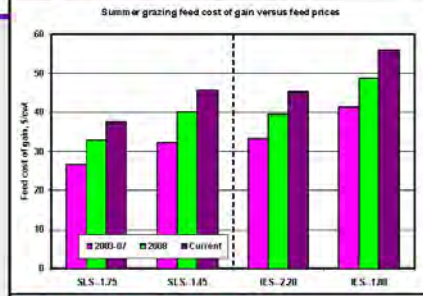
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Wheat grazing enterprises...



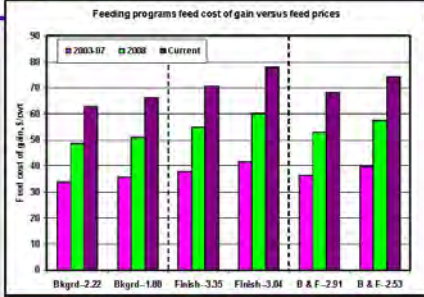
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Summer grazing enterprises...



2008 K-State Stocker Field Day Manhattan, KS

Feeding enterprises...



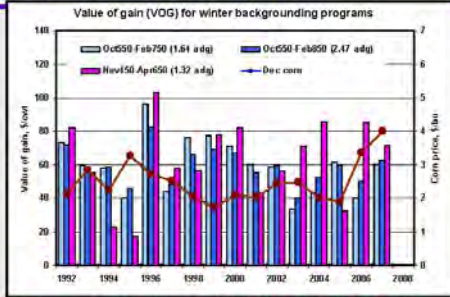
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What does all this mean?

- Feed COG in feeding programs currently over 85% compared to historical time period
- This compares to ~36-41% for grass grazing programs and ~70-80% for wheat grazing (based on +115% assumption)
- What do you do about this?
 - Pay less for cattle (i.e., increase value of gain)

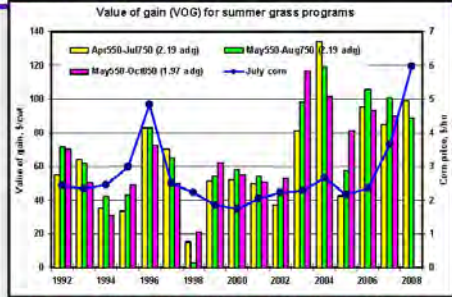
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Historical value of gain (VOG) levels don't support much of an increase in winter backgrounding COG...



1988-2007 average: Oct59-Feb750 (\$6.26), Oct59-Feb850 (\$6.26), Nov58-Apr650 (\$6.26), Corn \$2.32
2008 K-State Stocker Field Day Manhattan, KS

Historical summer value of gain (VOG) levels suggest pasture rents might increase...



1988-2007 average: Apr59-Jul750 (\$6.31), May58-Aug750 (\$6.66), May58-Oct850 (\$7.42), Corn \$2.37
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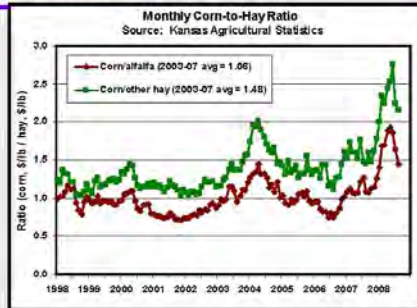
What does all this mean?



- Feed COG in feeding programs currently over 85% compared to historical time period
- This compares to ~36-41% for grass grazing programs and ~70-80% for wheat grazing (based on +115% assumption)
- What do you do about this?
 - Pay less for cattle (i.e., increase value of gain)
 - Find ways of putting on gain at lower cost
 - Find alternative feedstuffs
 - Leave cattle on grass longer
 - Background to heavier weights

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Market appears to be signaling producers to feed hay rather than silage...



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Find ways of putting on gain at lower cost...



- How high might grazing rates (summer grass and wheat programs) increase?
- Calculated pasture rates such that relationship between future drylot backgrounding cog and grazing programs are similar to historical values
- Increases to 2008 budgeted rates that result in cog for grazing programs, relative to drylot backgrounding, that are proportional to what they were with 2003-07 prices – summer grass +57% and wheat pasture +30%
- Rents will increase, question is – how much?

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Summary...

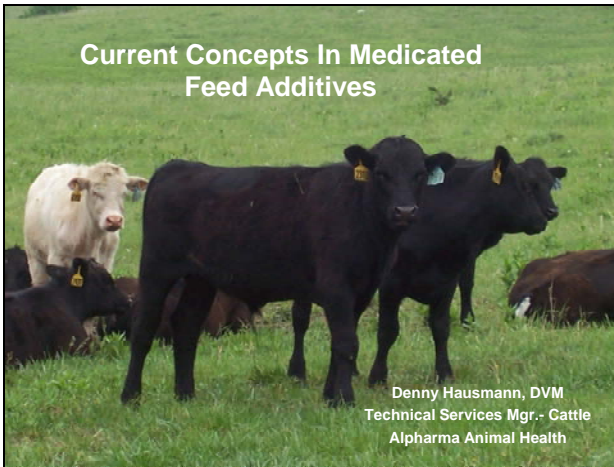


- Market price risk (as well as other risks) has increased significantly in recent years
- No easy answers as to how to best manage that risk (being "better than average" with regard to costs and production/health will be critical)
- High price for corn ripples through to other crops, including hay (currently hay hasn't quite kept up though)
- Historically, little relationship between corn price and pasture rents. This will likely change...
- Pasture land values have been increasing rapidly in recent years, but rents have not increased at same rate. Things could be different going forward...

2008 K-State Stocker Field Day Manhattan, KS

CURRENT CONCEPTS IN MEDICATED FEED ADDITIVES

DENNY HAUSMANN
ALPHARMA ANIMAL HEALTH



Agenda

- Sick vs. Healthy: Our perception
- Using Medicated Feed Additives in backgrounding and stocker operations (specifically Bovatec and Aureomycin)
- The importance of health on performance economics

Goals of Medicated Feed Additives (MFA) in Stocker Programs

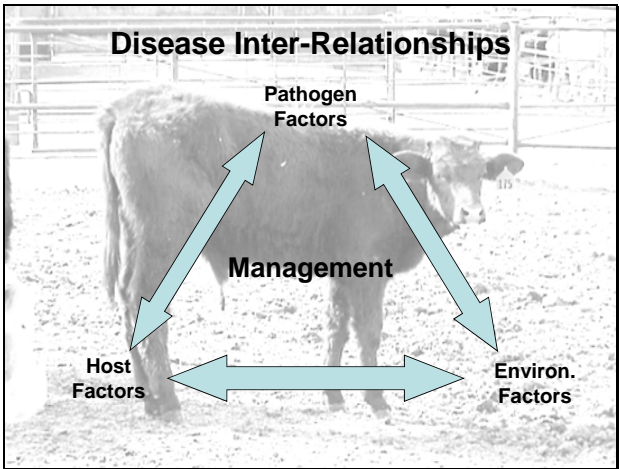
- Different..., but inter-related
 - Improve health
 - Improve performance
- The impact of subclinical disease, as well as clinical disease, on performance is well recognized
- Trend is to utilize MFA to:
 - Provide performance benefits
 - Address health on a more timely basis
 - Utilizing a broad spectrum antibiotic with activity beyond the rumen

Utilizing MFA to Control Disease in Receiving/Backgrounding Programs

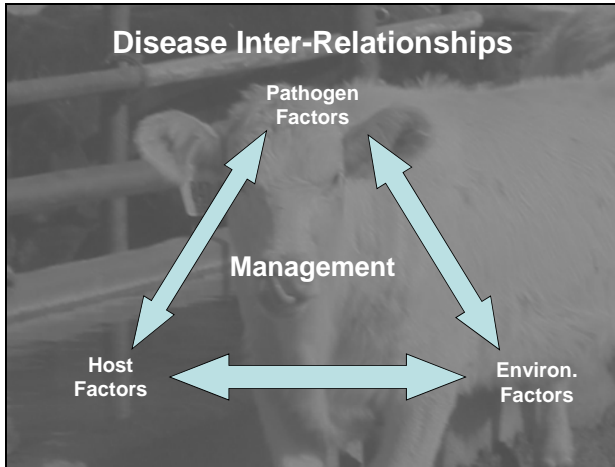


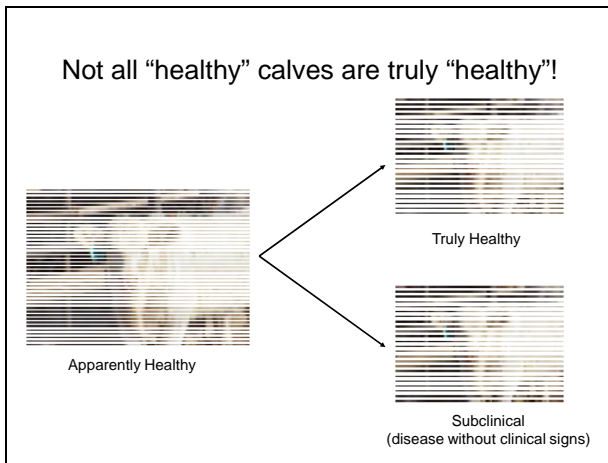


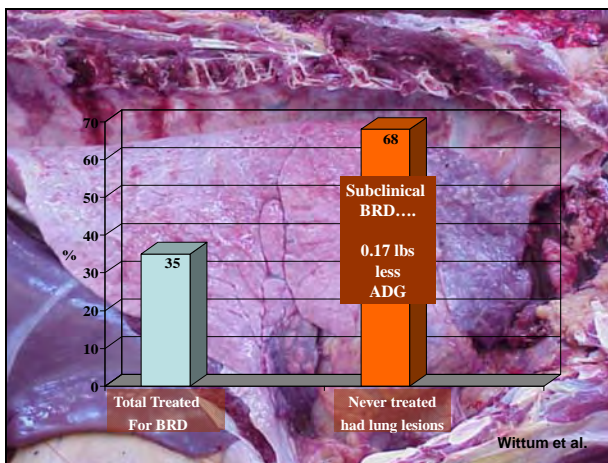


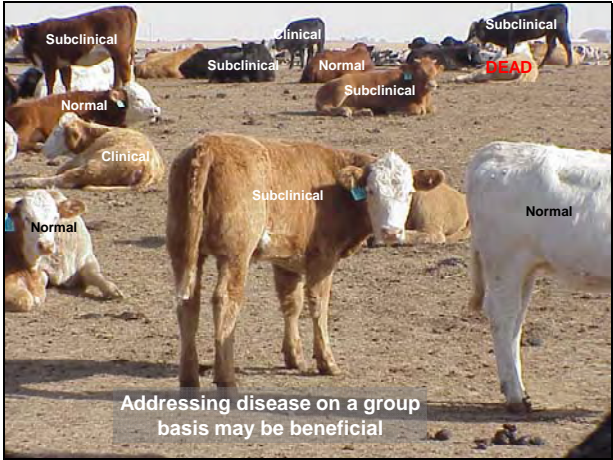















Effects of an Aureomycin Program on Cattle Health and Performance During a 30 Day Receiving Period

Alpharma CD0553

Health

Item	Non-Med	Aureo Program	R/T
Initial Head Count, n	100	100	100
Initial Body Weight, lbs	711	707	714
Respiratory Morbidity, n	21	14	28

Sale barn-sourced calves

Aureomycin Program: 5, 5-day pulses at 10 mg/lb BW daily. One day separated the 5-day pulses.

R/T: Rumensin 30 g/ton start to finish

Alpharma CD0553

Growth Performance and DMI Data

(Deads and Rejects In)

Item	Non-Med	Aureo Program	R/T
Daily gain, lb	3.88	4.25	3.10
Daily DM Intake, lb	18.56	18.69	16.86
Gain: DM Feed	0.21	0.23	0.18

Alpharma CD0553

Utilizing Aureomycin to Improve Performance in Stocker Cattle



Aureomycin for Stocker Cattle Performance

	Control Mineral	Aureomycin Mineral
Number of Animals	49	50
Initial Weights (lbs)	555	536
Final Weights (lbs)	825	836
Total Gain (lbs)	270	300
Average Daily Gain (lbs)	1.79	1.99
Aureomycin Advantage		11.2%

Kansas State University - 443 mg of Aureomycin per head/day
150 day study

Utilizing Bovatec to Improve Performance of Stocker Cattle



Bovatec vs. Rumensin fed in free choice mineral/grain mixtures on early intensively grazed native grass

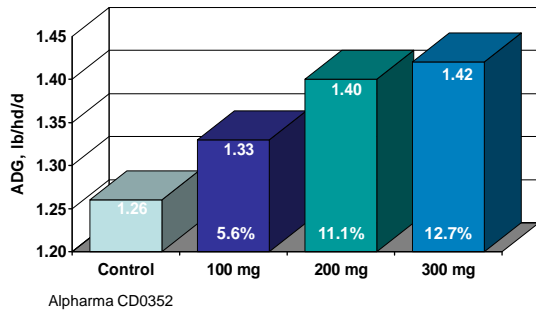
Item	Control (mineral)	Bovatec (mineral/grain)	Rumensin (mineral/grain)
No. heifers	80	80	80
Initial wt. Lbs	452	455	443
Daily supplement, lbs	0.072 ^a	.267 ^b	.172 ^c
Daily drug intake, mg	-----	160.2	102.9
ADG, lbs	2.28 ^d	2.48 ^e	2.30 ^d

^{a-c} Means in row with different superscripts differ (P<.05)
^{d-e} Means in rows with different superscripts differ (P<.10)

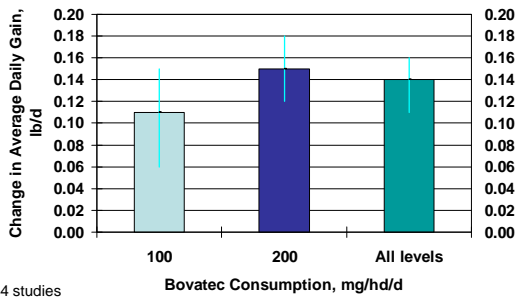
Brazle and Kuhl, 1986, KSU Cattlemen's Day Progress Report

Effects of Bovatec Dose and Grass Type on Grazing Cattle Performance and Profitability

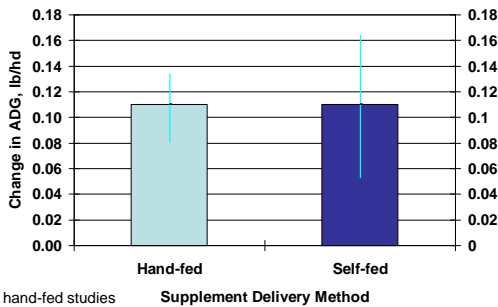
Bovatec 15-Trial Pasture Summary (100 - 300 mg/hd/day vs non-med. control)



Cattle Response to Bovatec Averaged across Pasture Types



Effect of Supplement Delivery Method on Response to Bovatec

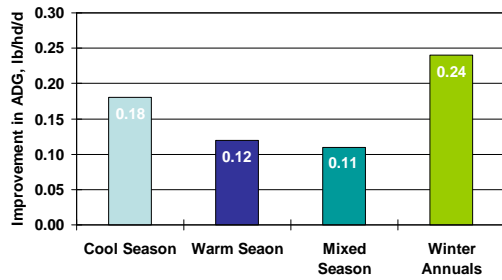


Effect of Pasture Type on Cattle Response to 200 mg of Bovatec /hd/d

- 13 cool season observations
- 9 warm season observations
- 19 mixed season observations
- 12 winter annual observations

Alpharma CD0384

Effect of Pasture Type on Cattle Response to Bovatec Supplemented at 200 mg/hd/d

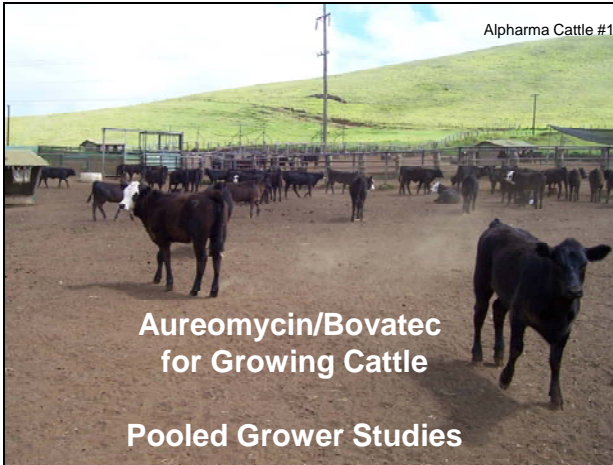


Alpharma CD0384





Utilizing Aureomycin and Bovatec in Combination to Improve Health and Performance of Stocker Cattle



Procedures / Materials

- Time Frame: Mid to late 1980's
- Number of Trials: 6
- Locations:
 - Idaho, Kansas (2), Colorado, Texas (2)
- Processed according to standard site protocol
- Cattle randomized to treatment groups
 - Negative Control
 - Bovatec 30 g/ton
 - Aureomycin 350 mg/hd/day
 - Aureomycin 350 mg /Bovatec 30 g/ton

Alpha Cattle Data #1

Procedures / Materials

- Cattle:
 - Predominantly British breeds
- All but one study implanted
- Diet:
 - Corn, milo, and corn silage based

Alpharma Cattle Data #1

Materials

Parameter	Control	Bovatec 33 g/ton	Aureo 350 mg	Aureo + Bov
Head In, n	226	226	218	210
Pens, n	26	26	25	26
In Weight, lbs	453	448	450	454
Days on Feed	98	98	98	98

Alpharma Cattle Data #1

Health

Parameter	Control	Bovatec 33 g/ton	Aureo 350 mg	Aureo + Bov
Head In, n	226	226	218	210
Head Out, n	216	221	216	205
Deads and Removals, %	4.4	2.2	0.92	2.4

Alpharma Cattle Data #1

Results: Deads/Rejects In

Parameter	Control	Bovatec 33 g/ton	Aureo 350 mg	Aureo + Bov
Initial Wt, lbs	453	448	450	454
Final Wt, lbs	651	673	684	694
ADG, lbs	2.04	2.33	2.40	2.47
DMI, lbs	12.82	12.71	13.50	13.12
FE	8.01	5.52	6.00	5.46

Alpha Cattle Data #1

"The Effect of Antibiotics and Ionophores on the Gain of Stocker Cattle Grazing Native Grass Pasture" (Trial #3)

Brazle et al., 1990. Prof. Anim. Sci. 6:19.
Contribution No. 90-377-J from KS Agric. Exp. Station

The Effect of Antibiotics and Ionophores on the Gain of Stocker Cattle Grazing Native Grass Pasture^a (Trial #3)

- Mixed breed steers
 - 224 hd total
 - 620 lb avg wt
- Steers weighed unshrunk and randomly allotted to treatment group
- Treatment Groups:
 - Control (47 hd)
 - Bovatec (59 hd)
 - Aureomycin (59 hd)
 - Combination (59 hd)

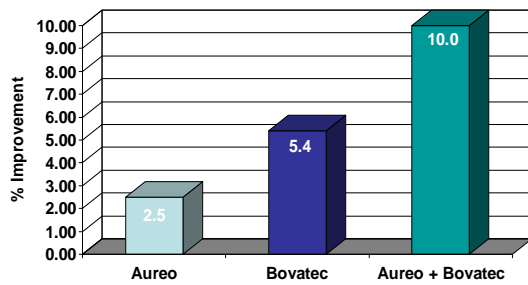
^aBrazle et al., 1990. Prof. Anim. Sci. 6:19.
Trial #3

The Effect of Antibiotics and Ionophores on the Gain of Stocker Cattle Grazing Native Grass Pasture^a (Trial #3)

- Bovatec and Aureomycin provided in mineral
- Pasture Type:
 - Big and Little Bluestem
 - Indian
 - Switchgrass
- Pastures rotated every 10 days to reduce pasture effect
- Study length 82 days (April 23 to July 13)

^aBrazle et al., 1990. Prof. Anim. Sci. 6:19. Trial #3

% ADG Improvement Over Control



Brazle et al., 1990. Prof. Anim. Sci. 6:19. Trial #3

Aureomycin Beef Cow Mineral Study



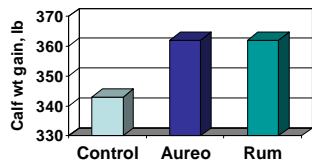
Experimental Methods

- Treatments consisted of:
 - Non-medicated control mineral
 - Aureomycin at 0.5 mg of Aureo/lb of cow BW for Anaplasmosis control
 - Rumensin at 200 mg /hd/d
- Treatment reps:
 - 2 pastures (62 cows total) for control
 - 3 pastures (91 and 93 cows each) for Aureomycin and Rumensin, respectively

Alpharma CD0515

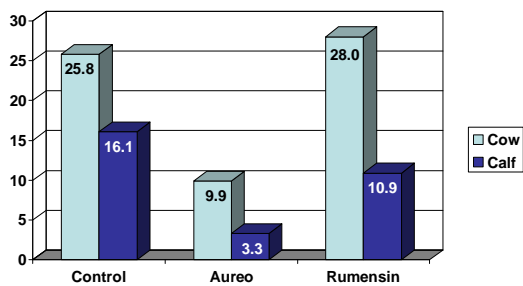
Calf Performance Measures

- Aureomycin and Rumensin increased ($P < 0.0001$) calf weight gain by 19 lb when compared to controls



Alpharma CD0515

Impact of Aureomycin or Rumensin on Foot Rot in Cows and Calves



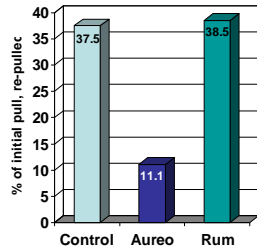
Aureomycin is not approved for footrot control or treatment

Alpharma CD0515

Cow Foot Rot: Re-pull

(KSU Broodcow Mineral Study)

- Fewer cows needed re-treatment in the Aureo group
- Repulls result in increased medicine and labor costs!



Alpha CD0515

Aureomycin is not approved for footrot control or treatment

The Effect of Foot rot on Calf Weaning Weight

(KSU Broodcow Mineral Study)

Treatment Group	Difference in Wt. (lbs)
Advantage of Non-Treated Cows to Treated Cows	5.6 (P=0.30)
Advantage of Non-Treated Calves to Treated Calves	18.3 (P=.02)

Aureomycin is not approved for footrot control or treatment

Alpha CD0515

Cost of Foot Rot =

Antibiotic + Lost Gain + Labor + Fuel
Significant!



Summary

- Both health and performance are important economic aspects of stocker production
- Health and performance are inter-related
- Disease challenges are on-going; subclinical disease is real and costly
- Incidence and impact of disease of some diseases can be unpredictable, but costly
- For stocker cattle that are being fed a supplement on pasture, the inclusion of Aureomycin plus Bovatec is beneficial in helping to promote both health status and daily growth rate.

For more information on
Alpharma products and uses in
cattle, go to:
<http://alpharmacattle.com>



NOTES - NOTES -- NOTES

WHAT IS THE IMPORTANCE OF TEMPERATURE WHEN DIAGNOSING SICKNESS?

**JASON NICKELL
KANSAS STATE UNIVERSITY**

Cattle, along with other farm animals, possess the ability to maintain core body temperature during periods of external temperature fluctuation. This is achieved by multiple physiological and behavioral mechanisms that are present in cattle. Body temperature is a direct reflection of the animal's ability to balance heat gain and heat loss; however, a high rectal temperature alone typically cannot discern between conditions resulting in elevated temperature. Therefore, rectal temperatures must be interpreted in conjunction with other clinical signs in order to effectively determine a diagnosis and course of treatment.

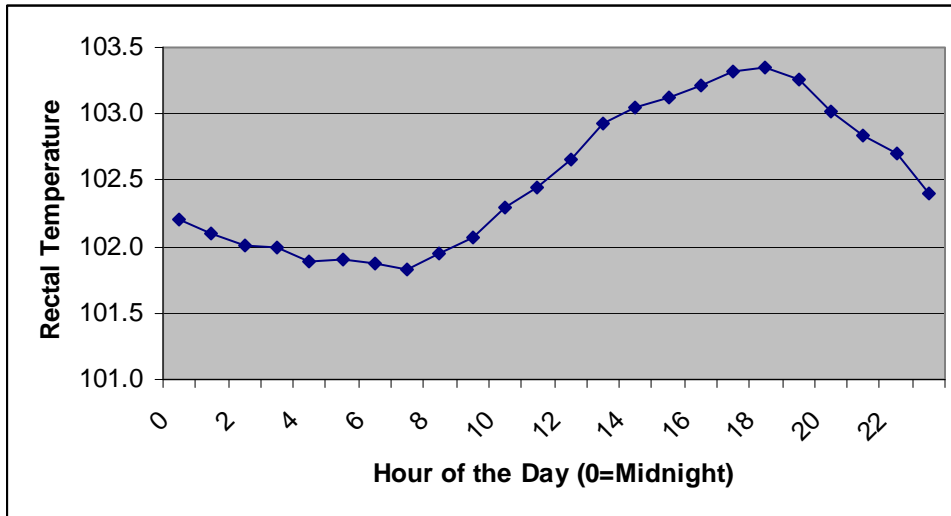
Hyperthermia

Hyperthermia is the elevation of body temperature due to excessive heat production or a lack of heat loss. One common cause of hyperthermia in cattle is attributed to extreme external temperatures. Cattle find relief from the heat by locating a source of shade, a water source, or congregating on hilltops to cool themselves in the wind. If an animal cannot find relief from the environmental heat or is unable to cool down, a multitude of physiological changes take place that can lead to heat stroke and death. Rectal temperatures can be found to climb as high as 108°-110° F and may be amplified during periods of extreme humidity.

Another common cause of hyperthermia in cattle, especially in some portions of the country, is exposure to certain kinds of fescue pasture. One important way that animals dissipate excess heat is through their skin. Fescue harbors a fungus that produces a toxin which inhibits the ability of the skin vessels to dilate. This prevents efficient heat exchange compromising the animal's ability to shed excess heat. For this reason, cattle on fescue pastures typically require shade in order to find relief from the environmental heat.

As stated above, rectal temperatures will be extremely elevated during times of heat stress regardless of any concurrent disease process. Normal body temperatures for stocker cattle typically range from 100.5°-102.5°F. However, during the summer months, body temperatures may be found to climb above 103°F during the heat of the day in the absence of disease for cattle on feed (Graph 1).

Graph 1: Average temperature of healthy stocker cattle over a 24 hour period. Notice the amount of time spent above 103°F during the afternoon hours. Body temperatures were acquired through ear temperature measurements. Measurements obtained from rectal temperatures likely follow the same pattern.



One may also notice normal cattle (on feed) breathing somewhat faster and displaying a marked degree of lethargy that was not witnessed during the cooler hours of the day. For these reasons, it is a common recommendation to evaluate stocker and feeder cattle for disease conditions, such as bovine respiratory disease (BRD), during the early morning hours.

Fever

Like hyperthermia, fever is also an elevation of core body temperature above that normally maintained by the animal. However, it is important to realize that this rise in body temperature is secondary to an inflammatory or infectious process; not environmental temperature. The rise in body temperature, attributed to a fever, is essential to fight infection as it increases the efficiency and potency of the immune system. In addition, a higher body temperature is also thought to decrease the growth of pathogen populations (bacteria, virus, fungus) and may increase the effectiveness of antimicrobial therapy. However, the presence of a fever typically leads to the animal going off feed and displaying a variable degree of lethargy (weakness, decreased activity, lowered head and ears) signaling to the owner that it does not feel well.

Interpretation of Elevated Rectal Temperature

Understanding that there are a multitude of conditions (due to environment and disease) that may lead to a rise of body temperature gives some indication that an elevated rectal temperature may not be a highly accurate means of identifying if a disease condition is present. Of equal significance, the balance between health and disease cannot be viewed as a sudden acute event such that the animal experiences a certain state of excellent health and then suddenly becomes sick. Rather, the transition from health to disease occurs on a continuum while the severity of clinical signs is based on several factors such as the ability of the pathogen to cause disease and the animal's

immune status at the point of infection. Once the disease progresses to a point that a calf displays clinical signs of illness, a rectal temperature should be obtained. Interpretation of the subsequent thermometer reading depends upon many factors such as the time of day (body temperatures will typically be higher later in the day), how far the animal had to walk (run) to the working facilities, and at what point of the disease process the calf is experiencing when examined. This last point is interesting as we tend to lend a large amount of credence to a one time rectal temperature measurement. In reality, a rectal temperature is essentially nothing more than a “snap-shot” of body temperature at any one particular point in time.

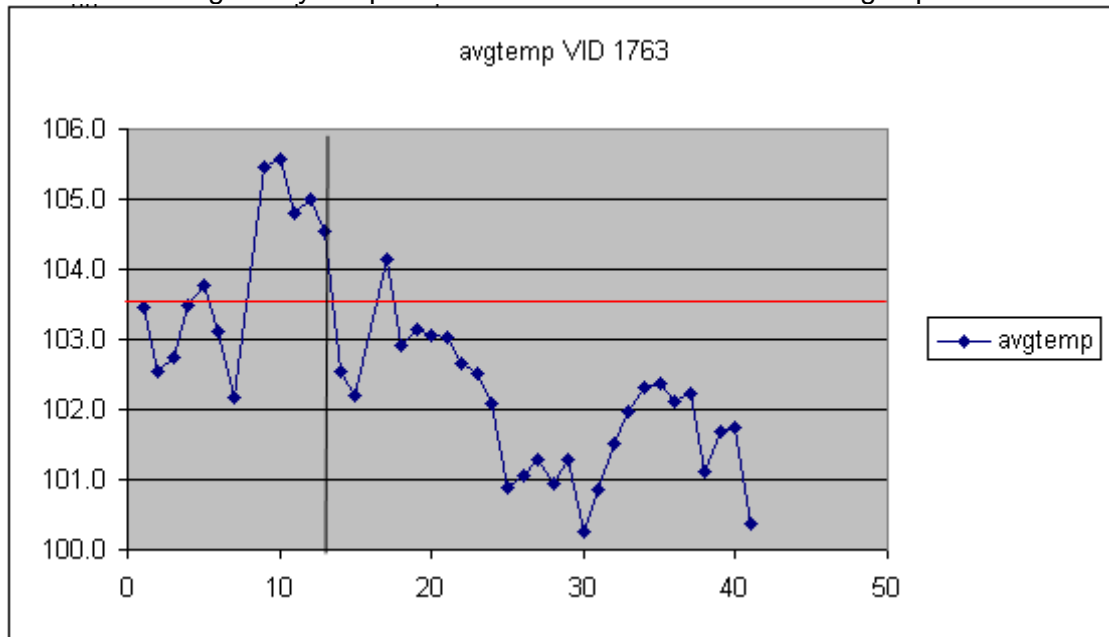
For example, a calf pulled for a first-time episode of BRD may likely possess a rectal temperature of 104°F or greater. Conversely, a calf with chronic BRD may display many of the same clinical signs as the first calf but possess a normal rectal temperature. The difference between these two calves is that they are at different stages of the BRD process. The first calf appears to be suffering from a relatively acute case of BRD and will likely respond favorably to antibiotic therapy. The second calf has endured a long bout of BRD with a high likelihood of permanent lung damage and performance loss. In fact, the second calf may not be experiencing any active BRD at all but may be physically struggling due to lung damage left behind by the disease.

Rectal temperature readings vary throughout the day in healthy cattle due to variability within the animal and variation in environmental temperature. Both contribute to a change in body temperature that could easily be misclassified as a “fever”. For example, a high rectal temperature reading may mean very little at 3:00 p.m. in July compared to that same reading in December. Conversely, a calf stricken with BRD may very likely possess a rectal temperature exceeding 104°F at 8:00 a.m. while healthy cattle will typically be found to possess rectal temperatures within the normal range. These two examples exemplify the fact that rectal temperature is not necessarily associated with illness and should not be used as the sole determinant of disease status. On the contrary, rectal temperature should be interpreted in conjunction with other clinical signs and in the context of current environmental temperature.

A new aspect of evaluating body temperature when identifying sick cattle

The instinctive nature of cattle, being animals of prey, is to conceal any evidence of sickness or debilitation from a source deemed to be a threat (such as a human). Therefore, it is likely that cattle may be experiencing disease (such as BRD) several days prior to showing clinical signs indicative of sickness. This increases the amount of time cattle are off feed and may negatively impact the efficacy of antibiotic therapy, subsequent recovery, and future feed performance. Recent clinical trials performed at Kansas State University (KSU) have utilized a novel device that measures the body temperature of cattle on an hourly basis. This technology is housed within an ear tag equipped with a thermometer that rests within the calf’s external ear canal. Recent data from KSU (Graph 2) suggests that body temperature is elevated, likely of a fever, 2-3 days prior to being pulled for BRD. Upon BRD treatment, body temperature falls dramatically over the following days. This suggests that measurements of body temperature preceding the day that clinical signs are witnessed may serve as a means of identifying cattle with BRD earlier in the disease process. In theory, this would increase the likelihood of treatment success, restore cattle to normal feed intake in a shorter amount of time, and minimize repull rates. Future studies will confirm if there is a practical application to this device.

Graph 2: Daily average temperature of calf #1763 over a 42 day stocker period. The vertical line, within the graph, corresponds to the day that antibiotic treatment was administered. Notice the number of days prior to treatment the calf spent above 103.5°F. Average body temperature declined to within normal ranges post-treatment.



Conclusion

Body temperature can rise and fall due to normal occurrences (such as external heat) or by the induction of a fever from a source of inflammation. Either situation will lead to an elevation of rectal temperature. Therefore, the measurement of rectal temperatures should not be the sole means of identifying sick cattle but should be incorporated into a list of clinical signs that indicate illness. One rectal temperature measurement indicates body temperature at a single moment in time-potentially misclassifying sick animals as healthy taken before or after a fever spike or diseased when body temperature is elevated due to other causes (i.e. environmental heat). Recent data suggests that continuously measuring body temperature over a period of time may identify sick cattle earlier in the disease process. Further research is needed to determine if there is a practical application to the new technology.

MAKING RATIONAL CHOICES FOR STOCKER THERAPY

MIKE APLEY
KANSAS STATE UNIVERSITY

There are several practices commonly used in therapy of stocker cattle that I think have either very little data to support them or are just a flat out myth. There are also some components of treating cattle for respiratory disease which, in my opinion, define some truths of how respiratory outbreaks work. These two sections have appeared in similar formats in the BEEF magazine Vets Opinion Column. These comments primarily apply to respiratory disease but can also be used as a guide for other diseases we treat in stocker cattle. Together, this presentation addresses practices many of us accept as the best ways to address disease in cattle, but are they?

Myth 1. “Two antibiotics work twice as well as one.” This is a derivative of the “more is better” theory. What is hoped for here is a synergistic interaction between the two, or sometimes 3, antibiotics given at the same time. There are data showing one of the newer antibiotics outperforming a variety of combination antimicrobial therapies. If there are data out there showing superior efficacy for multiple antibiotics against diseases such as respiratory disease or footrot, then I am guilty of missing it.

We do know we add cost, time, and possibly injection sites by using more than one antibiotic at a time. It is also possible to select combinations where I believe we impeded the activity of at least one of the antibiotics.

Myth 2. “You must give something IV at the same time as a long-acting antibiotic to get a quick response.” Another derivative of the “more is better” theory, this errant concept must be based on the assumption that it takes a very long time for long-acting antibiotics to hit therapeutic concentrations. Most of these antibiotics will be at or near peak concentrations in the serum and tissue within 4-6 hours of injection, with significant concentrations often reached in 1-2 hours. If the disease process is advanced enough that these time frames are critical to survival, then there is probably a more important issue concerning early disease recognition.

Myth 3. “If they haven’t responded to the first antibiotic for respiratory disease, always switch to another drug.” Somehow we have gotten locked into an expectation of a uniform return to normal in 3-5 days. Some cattle might respond this quickly. Some cattle will take more time. A critical illusion to overcome is that all of the cattle responding to the first treatment actually relied on the antibiotic to recover.

I ascribe to the theory that, if you are using a reasonably effective antimicrobial and are getting good response in most of the cattle, the cattle still in need of therapy at the conclusion of the first regimen are in need of continued therapy, not necessarily different therapy.

Myth 4. “Aggressive is good. If they don’t look better in 24 hours, add the next drug in the treatment rotation on to the first treatment.” In environments where the cattle get only a set number of regimens before treatment is discontinued, moving to the next treatment ahead of schedule shortens the overall time of therapy. Pick effective antibiotics and stick with the treatment schedules. Remember it may be duration of therapy that they need.

Myth 5. “The hotter they are, the sicker they are. Therefore, make drug choices based on rectal temperature for respiratory disease.” There are data sets that confirm case fatality (the number that die divided by the number treated) rises with rectal temperature at the time of initial treatment. Some interpret these data to mean that the hotter cattle are more severely ill. I interpret this results as meaning our accuracy of diagnosis increases as the rectal temperature rises at the time of initial therapy. In other words, the proportion of cattle with a 106^o F rectal temperature that are truly sick is greater than the proportion of cattle with a 104^o F temperature. It’s not a case of how sick they are. Rather it relates to how many of the cattle we are treating actually are sick and an antibiotic will make a difference in response.

The difference in efficacy between a lower and higher efficacy drug will be diluted in the lower temperature populations due to more cattle responding on their own or not actually being sick in the first place. Maybe we need to re-evaluate the temperature at which we consider therapy?

Myth 6. “Adding an ancillary drug to the antibiotic regimen for bovine respiratory disease will improve response.” Data exist to support the contention that steroids and non-steroidal anti-inflammatory drugs either make no difference or are harmful to clinical response. They make the cattle look better for a short period, but we should be concerned with what happens in the long run. Fevers should disappear when the body is ready for them to disappear, not when we want to make the cattle appear to have responded to therapy.

There are some pretty elaborate treatment regimens out there. The only data I have seen to convince me a treatment makes a difference are data related to antibiotics.

Myth 7. “Vaccination at the time of treatment for respiratory disease improves response.” Two studies have been presented at the Academy of Veterinary Consultants showing that adding modified-live IBR vaccination to the therapy of yearling cattle diagnosed with respiratory disease resulted in no difference in treatment response. Does this also apply to calves? I don’t know, but there are no data to suggest that it does.

So, finished with the myths, now for some basic truths (at least in my opinion) about treating respiratory disease.

(1) The number of sick cattle per group (morbidity) will vary even within the same source of cattle. Ok, so maybe I am insulting your intelligence with this one. But, how many times do we attribute decreased morbidity in the latest group of cattle to some management change we have made (especially something new through a needle or the feed)? Our biggest downfall is making a change this year and then attributing differences from last year to this change. This is why you should challenge suppliers of new technology for randomized, controlled clinical trial data.

(2) Vets can't necessarily tell you what was (or is) going on by performing necropsies late in the outbreak, especially when the subjects are chronic cases. Necropsies can help us evaluate the specific disease challenge if done early enough in an outbreak; we then have time to plan some interventions such as group medication, revised vaccination protocols, or biosecurity measures. This is especially true when we are receiving multiple groups and the indications from the first few groups are that our problem is contagious. Give your veterinarian a chance to perform necropsies on early mortalities.

(3) The first pathogen isolated isn't necessarily the root of the problem, especially if from chronic cases. Many wrecks are due to a combination of factors. However, if a given pathogen is repeatedly isolated from acute mortalities (those that die quickly after the disease is detected), then it should be addressed in a comprehensive plan. Concluding that a pathogen isolate from a single case was the cause of all the problems may leave us unprepared for the next round of the real cause.

(4) Just because you can isolate a pathogen and get it made into a vaccine doesn't mean that this vaccine will prevent or decrease severity of disease. Ask the people wanting to sell you an autogenous vaccine for their data (from a controlled, randomized trial) showing a beneficial effect in your type of production setting. Here's one I can't figure out; is an autogenous vaccine made from an isolate from one load of cattle still autogenous for the next load?

(5) Switch your antibiotic 5-7 days into a wreck and the second antibiotic will look like a real savior. The time from initial treatment to death will often be shorter (just a few days), and the number of treated cattle that die (case fatality rate) will often be higher in the first few days worth of sick cattle in a stale group. This is because those cattle were well along in the disease process when they came in. If you give up on the first drug and switch a few days into the wreck, then the second drug will appear to be better due to the type of cattle being treated.

(6) Without records, we are at a complete loss to actually characterize the outbreak. Even a basic set of records listing the animal and when they were treated for what (with what) will allow you and your vet to reconstruct what has happened.

(7) Nutrition is a major management component in avoiding wrecks. The battle to balance feed conversion and health performance in calves continues. I am convinced that starting calves on feed too aggressively can contribute to outbreak problems. Likewise, delivering an inadequate ration will hamper the immune competency of the cattle. Other feed management factors, such as widely varying feeding times and erratic bunk management, can also contribute (see #8 below).

(8) Distractions contribute to wrecks. It applies to driving and it applies to receiving cattle. We have to give a balanced ration at consistent times, get them hooked up with the water source ASAP, and provide the cattle with a dry place to lie down and rest. When morbidity starts, have a sound plan for more routine morbidity rates and get your vet involved early when things start to get out of hand.

(9) The secret elixir just isn't out there for treatment of BRD. Pick an appropriate antibiotic for individual animal treatment. Pick one for prevention and control of respiratory disease if this is appropriate for the group of cattle. Use them according to a sound treatment protocol including when you will treat and when you will administer additional treatment. These approaches have been proven to have an effect. If you want to add something else along with the antibiotic for treatment of respiratory disease, or if someone has the secret off-label mix to sell you, please call me first as I would like to get first shot at your money with some land and a used pickup I have.

(10) Think about where you get your information. Your best bet is an ongoing relationship with a veterinarian and nutritionist that are constantly looking for evidence to accept or reject management practices, and that are talking to each other. One of my biggest puzzlements is a producer that wants to eliminate the cost of a veterinarian yet will pump countless gallons of wonder potions into cattle as recommended by a distributor or sales representative. The advice was free!

(11) The definition of insanity is expecting different results while doing the same thing over and over. Sometimes we just get what we pay for. There isn't enough management available through the feed and a needle to add value to some cattle. Are you attributing your real economic risk to high-risk cattle?

(12) Health is a combination of the hand you were dealt and how you played it. Be smart about who's dealing, then add solid programs for vaccination, environment management, treatment, and nutrition to push the odds in your favor.

WHAT ARE THE IMPLICATIONS OF HEAVIER CATTLE BEING FED FOR SHORTER DAYS?

MICHAEL DIKEMAN
KANSAS STATE UNIVERSITY

Implications of Heavier Cattle Being Fed Fewer Days



Michael E. Dikeman, Professor
Meat Science





U. S. Consumer Expectations of Beef

- Americans and most export customers are accustomed to the taste and tenderness of 'grain-fed beef'
- Feeders feed cattle high grain diets to attain maximum performance and near maximum marbling
 - But, genetics and backgrounding can have significant affects on marbling

Effects of Early Nutrition on Marbling Deposition

- In recent years, several research studies show advantages to early weaning and accelerated finishing for reducing cow feed costs and attaining near maximum carcass marbling
 - Marbling can be negatively affected with energy restriction early in an animal's life and/or with aggressive implanting at the time that cattle are started on a finishing diet

Early Weaning and High Feed Costs??

- Greatly escalated feed costs in the past 1½ years is contradictory to early weaning and accelerated finishing
 - It is logical to consider 'growing cattle' to heavier weights and feeding them for fewer days than in the past
- But, there are some concerns of feeding cattle for short periods

'Traditional' Cattle Feeding and Marketing

- Feedlots have fed cattle high grain diets for 120 to 180 days to attain:
 - Maximum performance
 - Maximum dressing percent
 - Near maximum marbling
 - Carcasses with white fat and bright meat color
 - Minimal discounts for YG 4's and out-weights
- Feedlots have been in the business of selling management and feed

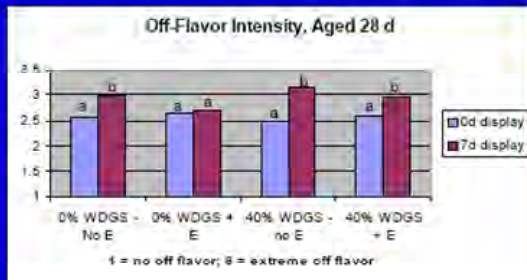
Given or Possible Consequences of Feeding Cattle < 100 days

- Higher fixed costs/unit weight gained
- Lower dressing percent
- Reduced marbling
- Yellow fat
- Less attractive meat color
- Altered taste and tenderness
- Less total output per animal

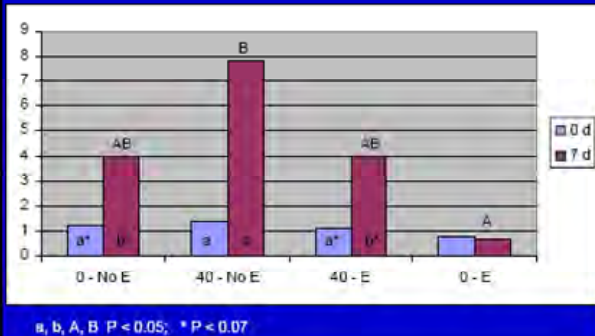
Given or Possible Consequences of Feeding Wet Distillers Grains (DSG) + Dry Corn

- 40-50% increase in polyunsaturated fatty acids in meat from feeding higher levels of WetDSG from corn
- More rapid lipid oxidation during retail display
- Color stability is compromised and shelf life is reduced 10 to 50%
- Increase in off-flavor intensity ratings and off-flavors
 - From 3 university of Nebraska studies
 - High dietary vitamin E neutralized these negatives

Off-Flavor Intensity Ratings



Liver Flavor (Trt by Retail Display)





Feeding Cattle Steam Flaked Corn + Dry DSG

- A large study at K-State did not find any negative affects on meat quality of including 25% dry DSG in a steam - flaked corn diet



Potential Advantages of Feeding Cattle < 100 Days

- More economical weight gain from cattle 'harvesting' forage, or fed forages!!
 - Harvested forage prices have not exactly followed corn prices



Preventing Yellow Fat and Lipid Oxidation

- Literature shows that a minimum of 60 days on a high energy diet is necessary to avoid yellow fat and to optimize meat color
- But, feeding only 60 days is not long enough for a high level of vitamin E to be effective
 - Without high vitamin E for > 100 days, meat quality problems could result



Pre-Planning

- Have a market for cattle before making the decision to feed only 60-70 days
- Know what possible negative consequences there might be for reduced marbling, reduced dressing percent, less than white fat, reduced color shelf-life of meat, and off-flavors
- Meat processing companies may be biased against short-fed cattle



Iron versus Stainless Steel Mufflers (Analogy)

- Selling vehicles with a low cost iron muffler allows more profit for dealers
 - At some point, consumers will be upset with replacing low cost mufflers and not be repeat buyers
- Selling vehicles with a 'stainless steel' muffler can result in satisfied, repeat consumers



Research Reports on Feeding Heavy Cattle Only 60-70 Days



Feeding/Management Options for Heavy Feeder Cattle

- Feeding DGS and/or grain to cattle for > 60 days while they are still on grass
 - Marginal meat quality and limited markets
- Feeding DGS and/or grain to cattle for > 60 days while they are still on grass followed by 40-50 days in the feedlot
- Grazing cattle to heavier weights on grass or forage and then feeding DGS and/or grain for > 100 days


Cattlemen are in the "Food Business"

- Goals are to make a profit and to produce cattle and beef that processors, retailers, purveyors and consumers will continue to buy

NOTES - NOTES -- NOTES


A VISUAL TOUR OF THE PREGRESSION OF PNEUMONIA

GARY ANDERSON AND GREGG HANZLICEK
KANSAS STATE UNIVERSITY

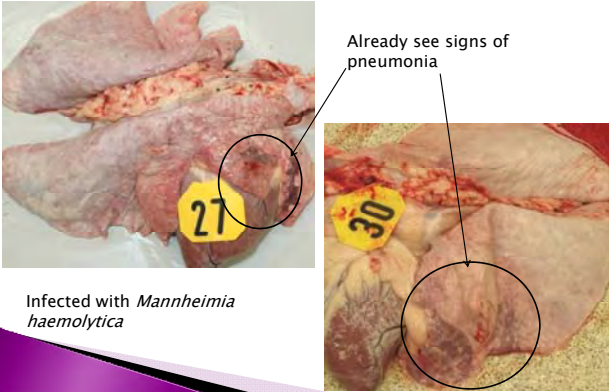


A Visual Tour of the Progression of Pneumonia

Gary Anderson, DVM, PhD
George Kennedy, DVM, PhD
Gregg Hanzlicek, DVM



1 Day After Infection



Already see signs of pneumonia

Infected with *Mannheimia haemolytica*

1 Day After Infection

2 Days After Infection

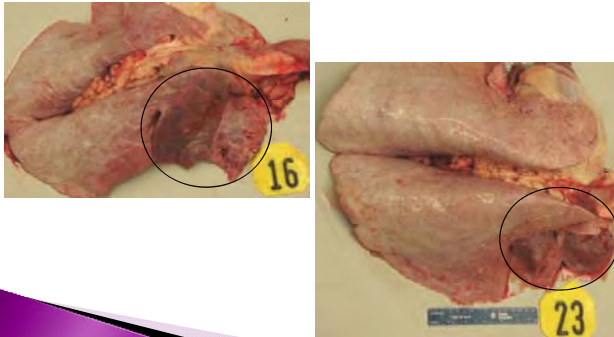
Very extensive pneumonia present



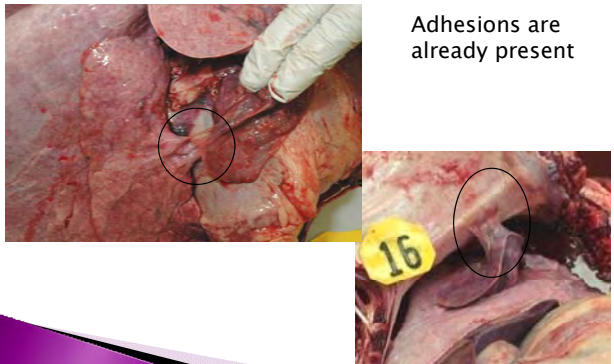
2 Days After Infection



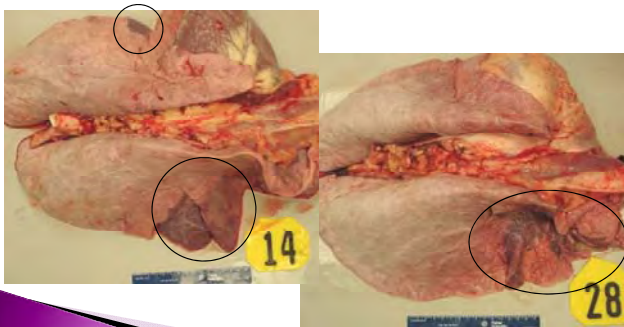
3 Days After Infection



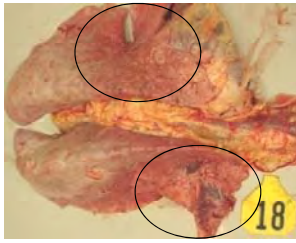
3 Days After



5 Days After Infection



7 Days After Infection



7 Days After



9 Days After Infection



9 Days After



Conclusion



- ▶ Lung damage occurs early in the disease process.
- ▶ Early recognition and treatment are important for recovery.

But

There are challenges



- ▶ Our ability to recognize illness may be limited
 - Calves can mask disease—herd survival instinct
- ▶ Easy for calves to “get lost” in large populations or pens
 - Difficult to observe all animals
- ▶ Labor force less skilled at disease recognition?
 - Fewer rural youngsters interested in livestock careers?

Ongoing investigations into early disease recognition



- ▶ Remotely monitoring for activity
 - Accelerometers and pedometers
 - Measuring % time spent lying down, standing & walking
 - And total steps taken per day
 - Ongoing study at KSU Beef Stocker Unit
- ▶ Remotely monitoring core temperature
 - Ear thermocouples with remote sensing
 - Ongoing study at KSU Beef Stocker Unit
- ▶ Remotely monitoring feeding & drinking behavior
 - Time/frequency spent at the bunk or water source
 - Other researchers

Thank you!



PROPER INJECTION CONSIDERATIONS FOR THE ASSURANCE OF QUALITY BEEF

LARRY HOLLIS
KANSAS STATE UNIVERSITY

SEROLOGICAL RESPONSES TO IBR VIRAL VACCINE AND MANNHEIMIA HAEMOLYTICA BACTERIN/LEUKOTOXOID ADMINISTERED WITH NEEDLE-FREE INJECTION TECHNOLOGY

L. C. Hollis, J. F. Smith, B. J. Johnson, S. Kapil¹, and D. A. Moser¹

Summary

Yearling steers were randomized to treatment and vaccinated with 5-way modified live viral vaccine and *Mannheimia haemolytica* bacterin/toxoid utilizing either needle-free or standard needle injection. Blood samples were collected from all animals at the time of vaccination and 21 days later and the serum analyzed for antibody titers to Infectious Bovine Rhinotracheitis (IBR) virus and *Mannheimia haemolytica* leukotoxoid. Serological responses to the IBR viral fraction of the 5-way viral vaccine were significantly higher on Day 21 following administration with the needle-free injection system. Serological responses to the MH leukotoxoid tended to be significantly higher on Day 21 following administration with the needle-free injection system.

Introduction

Beef Quality Assurance guidelines recommend that the most tissue-friendly route of administration of injectable products be utilized whenever possible. One new technology that offers potential to meet that objective is the use of a needle-free injection device (Felton 250 Pulse Injector), a pneumatically-powered device that utilizes air pressure to drives the vaccine through the skin and into the underlying subcutaneous or muscle tissue. However, the question arises, "do the cattle respond to the vaccines the same way as when vaccinated with conventional needle and syringe?" The purpose of this study was to compare efficacy, as measured by seroconversion, when a viral vaccine and a bacterin/leukotoxoid were injected with either needle-free injection or traditional needle injection methods.

Experimental Procedures

One hundred and eleven uniform, 806 lb, yearling steers from a single ranch origin were utilized for the study. Animals were individually identified and blood samples collected. All animals were vaccinated with a 5-way modified live respiratory viral vaccine (Bovi-Shield Gold 5) and a *Mannheimia haemolytica* bacterin/leukotoxoid (One Shot). Needle-free and standard needle routes of administration were randomized between animals of each pair as animals came into the squeeze chute. Those animals selected to receive the viral vaccine by needle-free injection received the bacterin/

leukotoxoid by standard needle injection. Conversely, the other animal of each pair received the viral vaccine by needle injection and the bacterin/leukotoxoid by needle-free injection. The Felton needle-free injector was set to 85 psi to ensure intramuscular injection of the viral vaccine. The needle-free injector was set at 75 psi to ensure subcutaneous injection of the bacterin/leukotoxoid. Serum was harvested from blood samples and frozen. On Day 21 of the study, blood samples were collected from all animals and the serum harvested. All serum samples were forwarded to the Kansas State University Veterinary Diagnostic Laboratory and analyzed for antibody titers to IBR virus and *Mannheimia haemolytica* leukotoxoid. Antibody titers from Day 0 and Day 21 were compared and statistically analyzed (Table 1).

Results and Discussion

Serological responses to the Infectious Bovine Rhinotracheitis fraction of the 5-way viral vaccine were significantly higher on Day 21 following administration with the needle-free injection system when compared to the standard syringe-and-needle route of administration. Serological responses to the *Mannheimia haemolytica* bacterin/toxoid tended to be higher on Day 21 following administration with the needle-free injection system.

Table 1. Serological Responses to IBR vaccine and *Mannheimia haemolytica* bacterin/toxoid

Treatment	Day 0	SEM	Day 21	SEM
IBR				
T1 Needle-free	2.50 ^a	0.47	70.14 ^a	10.80
T2 Needle	1.96 ^b	0.67	41.75 ^b	5.91
^{ab} P value	0.95		0.0014	
<i>Mannheimia haemolytica</i>				
T1 Needle	0.240 ^a	0.009	0.299 ^a	0.011
T2 Needle-free	0.259 ^b	0.011	0.326 ^b	0.011
^{ab} P value	0.20		0.06	

¹Diagnostic Medicine/Pathobiology

COMPARISON OF TRANSMISSION OF *ANAPLASMA MARGINALE* INFECTION USING NEEDLE-FREE AND STANDARD NEEDLE INJECTION.

James B Reinbold, Johann Coetzee, Larry Hollis, Roman R Ganta

INTRODUCTION:

Iatrogenic transmission of *Anaplasma marginale* associated with livestock management procedures is a concern for veterinarians and producers worldwide. The purpose of this study was to compare transmission of *A. marginale* infection from an infected steer to uninfected steers following needle-free versus conventional needle injection.

MATERIALS AND METHODS:

Twenty-six Holstein steers were purchased and confirmed negative for *A. marginale* infection by cELISA and a new ribosomal RNA RT-PCR. One animal was splenectomized and inoculated with a Virginia isolate of *A. marginale* to serve as a parasitemic carrier animal. The remaining twenty-five steers were blocked by bodyweight and randomly assigned to one of 3 groups: Group A (needle-free injection, n=10), Group B (needle injection, n=10), and Group C (no injection, n=5).

A 2ml intramuscular injection of sterile saline was alternated between the parasitemic calf and respective non-parasitemic calves in Group A utilizing the Felton Needle-free Injection System (Intervet Inc. of Intervet International). Similarly, calves in Group B were injected following the parasitemic calf using a conventional 16 gauge, 1" needle. The remaining five calves in Group C served as non-injected controls.

RESULTS:

Final results at 61 days post-injection indicate that 6/10 calves in Group B tested positive for *A. marginale* by both cELISA and PCR assays, while all animals in Groups A and C tested negative on one or both diagnostic assays.

SIGNIFICANCE:

Findings indicate needle-free injection has a lower likelihood of iatrogenic transmission of *A. marginale* than conventional needle injection. These results have important implications for implementing biosecurity programs in production systems.

NOTES - NOTES -- NOTES

HOW MUCH DO CUTTING BULLS REALLY COST?

FRANK BRAZLE
KANSAS STATE UNIVERSITY

For years, stocker operators have purchased bull calves and added value to them by making them into yearling steers. The decision to purchase bull calves vs steer calves should be based on which provides the most profit potential. However, in some parts of the United States the decision is made for stocker operators because of a limited availability of steers under 600 lb. In Tennessee, 39% of all male calves and yearlings are sold as bulls. When a choice is available, many factors should be weighed to determine price differences.

Gain

As a bull calf develops, he increases muscle mass in the neck and over the jump muscle of the hip. He also develops behavior problems. When the animal is castrated, it reduces testosterone production, and starts losing this muscle mass. Over 60 to 90 days, the animal will become thinner necked and take on the look of a steer. This is not a real efficient time in the growth of this animal. The extra weight gain that a 500 to 600 lb bull calf has over a steer calf is normally lost in the first 90 days after castration.

Labor

A 600 lb bull calf that is purchased as a bull, then castrated, normally causes more gathering and handling problems than a steer calf. Health problems are great in purchased bulls and require more labor to handle cutting bulls instead of steers.

Health

The stress of banding or surgically castrating a bull will add to health problems. In both cases, the result is more sickness in castrated or banded bulls than steers. The level of sickness among groups of bulls; however, may be a function of many other things. Have the bulls been weaned? Have they had their virus vaccinations? What is the nutrition status (Cu and Zn levels) of the animal. The breed makeup of the cutting bulls can result in more problems. The weather conditions at the time of castration and the degree of co-mingling all can result in more problems for bulls compared to steers. Calves raised on a ranch that has a good mineral nutrition program and two rounds of the virus vaccinations are better able to handle stress. If they are weaned, so much the better. Angus cattle appear to have some advantage over some other breeds in terms of immunity that resists sickness.

However, cattle producers who do not castrate their bull calves are not likely to have a good nutrition program, weaned calves, or have given the desired vaccinations. The bull calf that is purchased in an auction and co-mingled may have a lower price/lb but be at a higher risk in terms of health performance and maybe profit. The older and heavier a bull becomes before castration the more problems in determining predictable performance.

Late cut bulls of heavier weights normally have very unsatisfactory performance on the rail. The age that a bull is castrated may be very important in how it affects quality grade.

Shown in the following tables are data from the Kansas State University Beef Stocker Unit and data appearing in Cattlemen's Day reports from 1986 through 1992.

Table 1. Effect of Gender Status upon Arrival on Calf Performance

Item	Steers	Bulls
No. Head	967	1,795
Starting wt, lb	468	464
60 d wt, lb	599	581
60 d, ADG	2.23	1.95
Morbidity, %	18.7	25.1
Mortality, %	.72	2.28

Dale Blasi, 27 loads of calves received at KSU Beef Stocker Unit

Table 2. Effect of Season upon Percentage Morbidity and Mortality of Cutting Bulls

	Spring	Late Spring	Late Summer	Fall
----- Percentage Morbidity -----				
Steers	7.1	26.7	50.5	9.3
Bulls	11.0	33.8	52.8	21.0
----- Percentage Mortality -----				
Steers	0	0.7	4.4	0
Bulls	.8	1.7	12.8	1.1

Dale Blasi, KSU

Table 3. Performance of Calves Purchased as Steers or Bulls

	Steers	Bulls
Starting wt, lb	550	549
Wt, 96 d, lb	687	653
ADG, 96 d, lb	1.43	1.08
Morbidity, %	15	36
Mortality, %	1.1	2.4
Treatment/hd purchased	.65	1.66

Cattlemen's Day Report

Table 4. Performance of Calves Purchased as Steers or Bulls

	Steers	Bulls
Starting wt, lb	592	591
Weight, 100 d, lb	750	728
ADG, 100 d, lb	1.58	1.37

Cattlemen's Day Report

Table 5. Performance of Yearlings Purchased as Steers or Bulls

	Steers	Bulls
Starting wt, lb	659	662
Weight, 110 d, lb	885	847
ADG, 110 d, lb	2.05	1.68
Treatment/animal purchased	.35	1.83

Cattlemen's Day Report

Table 6. Estimate Table — Difference Between Steers and Bulls

	----- 100 days -----				
	466 lb	522 lb	550 lb	592 lb	660 lb
Gain, lb	28	31	35	21	37
Sickness - times steer	1.34		2.4		
Death loss - times steer	3.2		2.2		

The difference in gain in lb is running at 21 to 37 lb for 100 days as shown by starting weight. Bulls have 1.34 to 2.4 more sickness and 2 to 3 times more death loss. The data indicates that each bull will be treated about twice as many times as a steer before he is well.

Table 7. Estimate of Value Difference — 550 lb Bulls

Item	Dollars
Gain, 35 lb	\$35.00
Drugs	8.33
Cost/labor at \$20/hr	1.05
Death loss	7.80
Quality grade	?
Handling	?
Difference	\$52.18/hd

On a 550 lb calf, a \$52.18 difference is \$9.48 difference per cwt. This would calculate out to be about \$1.72 per cwt for each 100 lb of weight. I would estimate the difference in cwt between steers and bulls to be somewhere between \$1.50 and \$2.00 cwt for each 100 lb of weight. As we get to 700 to 900 lb bulls, this may be greater without good data on grade effect. As economic conditions change in terms of feed costs, etc., then these difference could change as well.

The data in Table 2 showing that time of year has a big effect on sickness, may impact a producers decision on whether to buy steers or bulls. Bull calves purchased for a slow gain period, then a fast gain as in a summer grazing program, may be able to reduce the magnitude effect of a bull calf vs a steer providing a more economic outcome for that program. Regardless of the type of cattle operation, each producer needs to evaluate all costs in determining the best buy in the market place.

References:

Dale Blasi unpublished data.

Cattlemen's Day reports from 1986 to 1992 by F. Brazle.

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:**

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