Beef 2030—Pursuing technology, transparency and profitability

August 15, 2018
KSU Alumni Center Ballroom
Manhattan, KS
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Beef 2030—Pursuing technology, transparency and profitability

Agenda

8:30 AM  Registration
9:00 AM  Welcome, Goals
9:15 AM  Pursuing, adopting and leveraging technology
  Mr. Mark Gardiner, Gardiner Angus, Ashland, KS
10:00 AM  Managerial accounting: key numbers for ranch managers
  Mr. Tyson Johnson, Sooner Cattle Co., Pawhuska, OK
10:45 AM  Break Lunch (30 min)
11:15 AM  What can we learn from consumer trends
  Mr. Don Close, Rabo AgriFinance, St. Louis, MO
12:00 PM  Response to morning session followed by Q & A
  Mr. Matt Perrier, Dalebanks Angus, Eureka, KS
12:15 PM  Lunch
1:00 PM  Disruptive technologies and the Beef Industry
  Dr. Tom Field, University of Nebraska, Lincoln, NE
1:45 PM  A look at specific disruptive technologies
  Genome editing and the CRISPR revolution
  Dr. Megan Rolf, Kansas State University
  Data analytics in the dairy business-DRINK-Dairy Records Intelligence Network
  Dr. Luis Mendonca, Kansas State University
  UAVs bring precision ag to the beef business
  Dr. Ray Asebedo, Topcon-Digistar
2:30 PM  Break
3:00 PM  A vision of the Beef Industry in 2030
  Mr. John Butler, Beef Marketing Group, Manhattan, KS
3:45 PM  Response to afternoon session followed by Q & A
  Dr. Dale Blasi, Kansas State University, Manhattan, KS
4:00 PM  Adjourn


See www.KSUBEEF.org for online registration and additional details
Sponsors:

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Multimin

Ag Risk Solutions

Huvepharma

Suther Feeds, Inc

Boehringer Ingelheim

Rabo AgriFinance

Media Sponsor:

Drovers

Driving the Beef Market
Speaker Biographies:

Mr. Mark Gardiner, Gardiner Angus, Ashland, Kansas

Mark Gardiner is the president of Gardiner Angus Ranch, Inc. This family-owned, generational beef operation is located in Ashland, Kansas, near the Oklahoma Panhandle. Gardiner graduated with a B.S. in animal sciences and industry from Kansas State University in 1983.

In early 2000, Mark assumed management of the day to day ranch operations from his father, Henry Gardiner. Mark often remarks, “Dad created the playbook. We just have to be disciplined enough to continue to execute the playbook he left us.” Under Mark’s direction, the ranch has grown an embryo transfer program that makes over 3,500 transfers a year, making it one of the largest AI/ET beef operations in the world. By 2012, through land acquisition, Gardiner Angus Ranch doubled in size. In the last decade, Mark has overseen the modernization of the ranch’s infrastructure, enabling many cost effective and more efficient business practices. Bulls are now developed on the ranch and home raised and customer purchased cattle destined for commercial feed yards and retained ownership through U.S. Premium Beef are backgrounded at home on grass, wheat, or the Ranch Yard.

Gardiner is a founding board member and stockholder of U.S. Premium Beef; a fully integrated producer owned beef packing company. USPB has processed over 15 million head to date and returned over 600 million dollars in premiums to the beef producers that marketed these cattle. Gardiner still serves on the USPB board, currently serving as the Chairman. Mark is a former board member of the American Angus Association, former chairman of the NCBA Seedstock Council and former President of the Kansas Angus Association. Additionally, Gardiner is active in the Beef Improvement Federation.

Mark is continuing the Gardiner family legacy of community involvement, both at home and nationally. In 2012, under Mark’s guidance, the Henry C. Gardiner Scholarship and Lecture Series was created and endowed at Kansas State University. To date, twenty-two undergraduate students have received $100,000 in scholarships.

The Henry C. Gardiner Global Food Systems Lectures have hosted thought leaders to discuss such important issues as global food insecurity, depletion of water resources, sustainability and the social and environmental impact of food production. Mark is an active member of the selection committee at K-State charged with identifying world class intellectuals to present thought provoking and necessary conversations relative to sustainable agriculture. All lectures are free and the public is encouraged to attend.

Mark is active in the Ashland community, serving on the Ashland school board for many years. He and his family are active in the Ashland United Methodist Church. He is married to the former Eva Stumpff, DVM MS. Together they have twenty-five-year-old twin boys, Cole and Ransom, who joined GAR full time in 2016, they represent the 5th generation of the Gardiner family ranching in Clark County KS, and nineteen-year-old son, Quanah, who is a sophomore at Kansas University.

Mr. Tyson Johnson, Sooner Cattle Co., Pawhuska, Oklahoma

Tyson Johnson resides in Pawhuska Ok and is the General Manager of Sooner Cattle Company. The ranch is a large reputable stocker and cow/calf operation in Osage county.

Tyson learned many valuable life lessons growing up ranching on the Utah/Arizona boarder where business was the topic of discussion at the dinner table. This atmosphere fostered a love for both agriculture and business. After receiving a Bachelor of Science degree in Agribusiness from Arizona State University and working on several different types of operations he eventually went out on his own leasing 200,000 acers in the northern Arizona. After many successful years he sold out and went back to graduate school attending the King Ranch Institute for Ranch Management. Upon graduation he joined Deseret Ranches as part of the management team for Deseret Cattle and Citrus in St. Cloud, Florida. After a short time in Florida he moved to Paducah Texas to manage the companies Triangle Ranch and eventually ending up at Sooner Cattle Company.

During his time with Deseret Ranches he has been a part of many progressive changes, ranging from assisting with the development of an intensive early weaning program to implementing a high density low frequency grazing system. He has also spearheaded and assisted in several large acquisitions for the company. Tyson enjoys the challenges that ranching brings. Trying to balance science with business, while leading employees in personal and professional development, creates the “art of management” that excites and motivates him.

Tyson along with his wife Wenda and two beautiful little girls Tayla and Jenica enjoy the ranching way of life, recognizing the blessings it brings into their lives.
Mr. Don Close, Rabo AgriFinance, St. Louis, Missouri

Don Close is an animal protein analyst at Rabo AgriFinance in the RaboResearch Food & Agribusiness group. Close is responsible for analyzing all animal protein sectors, but specializes in beef. Prior to joining Rabo AgriFinance, Close served as market director for the Texas Cattle Feeders Association in Amarillo, Texas, representing cattle feeders in Texas, Oklahoma and New Mexico. He previously held roles with AzTX Cattle Co. in Hereford, Texas; Future Beef Operations in Parker, Colorado; and PHI Marketing Services at Pioneer Hi-Bred International Inc. in Des Moines, Iowa.

Close has conducted research on a wide-range of topics including confinement cow/calf operations, LFTB, ground beef and development in international trade. He is also a regular speaker for state, national and international livestock groups across North America, Australia and New Zealand. Currently, Close authors bi-monthly columns for the National Cattlemen’s publication, and is working on market issues at the intersection of marketing and ag policy. Close is a graduate of West Texas A & M. He has a bachelor’s agricultural economics.

Mr. Matt Perrier, Dalebanks Angus, Eureka, Kansas

Matt Perrier grew up on his family’s ranch, Dalebanks Angus, and graduated from Kansas State University in 1996. After graduation, he worked as Director of Retail and Foodservice Promotions with the Pennsylvania Beef Council. He then worked for the American Angus Association (AAA), where he was a Regional Manager in TX & NM, and later Director of Commercial Programs for the AAA. He and his wife, Amy, moved back to Eureka to work at Dalebanks in early 2004.

Dalebanks Angus was begun in 1904 by Matt’s great grandfather, whose family settled northwest of Eureka, KS, in 1867. The ranch lies in the southern Flint Hills, one of the last vestiges of native tallgrass prairie in America. For over 110 years, they have raised and marketed Angus bulls to commercial and registered producers nationwide. Roughly 200 bulls are sold annually through their fall auction and spring private treaty sales. Registered females are sold privately throughout the year. In addition to Angus cattle, the Perriers raise wheat, corn, soybeans, alfalfa and various cover crops for grazing.

Matt is a past president of the Kansas Livestock Association and has served on various local, state and national boards in the livestock industry. In addition, Matt & Amy serve on several community and church organizations.

Even more important than raising cattle, they raise kids. Ava (15), Lyle (12), Hannah (10) and Henry (7) are all hard-working ranch children who are also very active in school and 4-H. Amy is a registered Physical Therapist and works part-time at a clinic in Eureka.

Dr. Tom Field, University of Nebraska-Lincoln, Lincoln, Nebraska

Tom Field, PhD serves the people of Nebraska as the Director of the Engler Agribusiness Entrepreneurship Program and holder of the Engler Chair in Entrepreneurship at the University of Nebraska – Lincoln. An enthusiastic advocate for free enterprise, the potential of young people and opportunities in both agriculture and rural communities, Tom is an internationally recognized educator and innovator who has the ability to connect the dots between people, industries, and ideas. A fifth generation cattleman who is partnership in a family cow-calf business in western Colorado, he also authors the column “Out of the Box’, consults and advises a number of enterprises and organizations, and is a sought after speaker who challenges and inspires audiences to lead their organizations to excellence by asking the right questions, seeking solutions beyond conventional wisdom, and unleashing the power of focused creativity  He and his wife Laura and their family live near Raymond, NE. Tom is a native Coloradoan and earned his bachelors, masters and doctoral degrees at Colorado State University.

Dr. Ray Asebedo, Topcon, Manhattan, Kansas

Ray Asebedo is a Kansas native. He received his bachelor’s in agronomy and Ph.D. in soil fertility. Dr. Asebedo has focused his research program on developing agronomic algorithms for use in UAVs and machine platforms. Dr. Asebedo is currently working Topcon and
KSU for developing crop and cattle applications for UAVs to improve profitability.

Dr. Luís Mendonça, Kansas State University, Manhattan, Kansas

Dr. Luís Mendonça received a D.V.M degree in 2006 at Universidade Estadual de Maringá, Brazil. In 2007 he worked in a private practice that specialized in reproductive management and technologies (i.e. embryo transfer and in vitro embryo production), providing services to clients across various states of Brazil and in Bolivia. In 2008 he was hired as a postgraduate researcher at the Veterinary Medicine Teaching and Research Center in Tulare, CA, where he worked in large dairy operations and was involved in different aspects of dairy production research. He obtained his M.S. degree and completed his residency in Dairy Production Medicine (2012) at the College of Veterinary Medicine, University of Minnesota. Dr. Mendonça joined the Department of Animal Sciences and Industry at Kansas State University in 2013 as a State Dairy Extension Specialist where he now has a 30% research and 70% extension appointment. His current roles and responsibilities include development of an extension and research program addressing issues facing the Kansas and U.S. dairy industry. His goal is to continue carrying out research related to immune function, health, heat abatement, and reproductive management of dairy cattle.

Dr. Megan Rolf, Kansas State University, Manhattan, Kansas

Megan Rolf was raised on a cow/calf operation in east central Kansas and has been involved with livestock her entire life. She received a bachelor’s degree in animal science at Kansas State University and a M.S. degree in animal science at the University of Missouri-Columbia. She also earned her Ph.D. in Genetics at the University of Missouri, where her research focused on the implementation of genomic evaluations in crossbred beef cattle. After graduation, Megan was on faculty at Oklahoma State University for four years, where she served as a State Extension Beef Specialist. She joined the faculty at Kansas State University in 2016 as an Assistant Professor of Animal Breeding with a 60% research and 40% teaching appointment. She currently teaches Genetics and maintains an active research program in the use of genomics for genetic improvement in livestock.

Mr. John Bulte, Beef Marketing Group, Manhattan, Kansas

John Butler serves as the Chief Executive Officer of the Beef Marketing Group (BMG). BMG is a producer cooperative consisting of 19 cattle feeding and growing operations located in states of Kansas and Nebraska. The cooperative formed in 1987 harvests 600,000 cattle annually and with Butler’s guidance, has been focusing on consistently producing value added beef and beef products that meet customer demands. The group has developed a number of initiatives that have provided end-users with a constant supply of high quality specified beef products.

BMG has implemented across all of its operations Progressive Beef, a verified system of best management practices which include components of Food Safety, Animal Care and Sustainability.

Butler is a second generation cattle producer and has spent his career building and implementing beef programs with the end in mind from the beginning. John has served in a number of industry leadership roles including Chairman of the 2016-2020 Industry Long Range Plan, Chair of the United States Round Table for Sustainable Beef, and an Executive Committee member of the US Meat Export Federation. John also serves as a Non-Resident Fellow for the Noble Foundation. John and his wife Sandy have two children and live in Manhattan Kansas.

Dr. Dale Blasi, Kansas State University, Manhattan, Kansas

Dale A. Blasi received his B.S. in Animal Sciences at Colorado State in 1984. In 1986, he received his M.S. in Beef Systems Management at Colorado State and Ph.D. degree in 1989 from the University of Nebraska. Blasi is a Professor in the Department of Animal Sciences and Industry and a State Beef Extension Specialist. His responsibilities include providing statewide educational leadership in stocker cattle nutrition and management and utilization of grazed and harvested forages by beef cattle and other livestock. He is manager and director of the KSU Beef Stocker Unit and Animal Identification Knowledge Laboratory.
Mr. Mark Gardiner
Gardiner Angus Ranch

Pursuing, adopting and leveraging technology

MARK GARDINER
GARDINER ANGUS RANCH
Ashland, Kansas
U.S.A.
“Issues to cover are maintaining profitability through weather, market and the ongoing challenges for beef producers”

C’mon man!!
Does this look like a college campus??

THE RANCH
48,000 acres – Avg. annual rainfall - 18”
• Native range 42,000 acres
• Wheat 5,000 acres
• Alfalfa 1,000 acres

CATTLE: GARDINER ANGUS RANCH
• 2000 commercial cows
• 1500 registered cows & heifers

CATTLE: COOPERATOR HERDS
• 4 contract recipient herds (1500 calves/yr)
• 30 GAR Allied Producers (1000 calves/yr)

MARKETING: FOUR SALES ANNUALLY
Bulls
• 1500 – Fall, Spring, January, and May Sales
• 1000+ – Private treaty

Females
• 700 Registered – Spring and Fall Sales
• 1000+ Commercial – Spring and Fall Sales
Business Philosophy – produce the “right” product . . . .
to help our customers reach THEIR goals.

Breeding Philosophy

Goal: to produce “pounds in the right package.”
We expect to put our customers in position to capture the added value available in today’s beef market.
How do we **ADD VALUE**

to our customer’s cattle?

**GARDINER ANGUS RANCH**

Technology disruption is the process whereby a small company with few resources successfully challenges a larger established incumbent business or invents entirely new markets.

"Disruptive technologies and the Beef Industry"

Dr. Tom Field

**TECHNOLOGY DISRUPTION**

Technology disruption is the process whereby a small company with few resources successfully challenges a larger established incumbent business or invents entirely new markets.
U.S. Premium Beef

Founding member in 1996

- Shares tied to delivery rights (obligation)
- Delivery rights can be leased/ transferred
- Best value-based grid in industry

GARDINER ANGUS RANCH
Value-Based Grid

- **Prime**
  - **Prime/Choice Spread**

- **Certified Angus Beef**
  - **CAB Premium over Choice**

- **Black Canyon Angus Beef**
  - **$.50 Premium over Choice**

- **Choice or Higher (>60%)**
  - **Choice/Select Spread (add)**

- **Below Choice (>50%)**
  - **Choice/Select Spread (deduct)**
    - 1: +$4.00
    - 2: +$2.00
    - 3
    - 4: -$10.00
    - 5: -$20.00

- **Yield Grade**

- **Heavy Carcass**
  - 1050# and up -$20.00

GARDINER ANGUS RANCH

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GAR and U.S. Premium Beef

- **GAR and U.S. Premium Beef (USPB)**
  - Purchased shares
  - Delivery rights
  - Cattle
  - CUSTOMERS

GARDINER ANGUS RANCH
Feedyard: MCLEOD FARMS, INC.
Lot #: 326 USPB Lot #: 169920
Method: USPB Base Grid
Slaughter: 8/9/2017 Plant: Liberal
FY Lot #: 406 Pen #: 44

Lot Statistics
Avg Live Wt: 1,357 Net Live Price: $124.66 Net Live Prem/Disc: $111.13/Hd
Hot Yield: 63.61%

<table>
<thead>
<tr>
<th>Base Price</th>
<th>Prem Summary</th>
<th>Choice</th>
<th>Prime</th>
<th>CAB</th>
<th>BCPR</th>
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<td>USPB USDA KS Average</td>
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<td>116.47</td>
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<td>Formula Allowance</td>
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<td>Grid Allowance</td>
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</tr>
<tr>
<td>Base Live Price</td>
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<td>63.66%</td>
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<tr>
<td>Base Hot Price</td>
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<td>183.35</td>
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"Capture the Value"

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<th></th>
<th>Pounds</th>
<th>Percent</th>
<th>Head</th>
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<tr>
<td>Totals</td>
<td>321,025</td>
<td>99.82%</td>
<td>372</td>
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<tr>
<td>Choice &amp; Higher</td>
<td>320,435</td>
<td>99.82%</td>
<td>371</td>
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<tr>
<td>CAB</td>
<td>201,482</td>
<td>62.76%</td>
<td>234</td>
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<tr>
<td>BCPR</td>
<td>26,579</td>
<td>8.28%</td>
<td>31</td>
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<tr>
<td>Prime</td>
<td>83,831</td>
<td>26.11%</td>
<td>95</td>
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<tr>
<td>Choice</td>
<td>236,804</td>
<td>73.70%</td>
<td>276</td>
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<tr>
<td>Select</td>
<td>590</td>
<td>0.18%</td>
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<tr>
<td>Ungraded</td>
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<td>0%</td>
<td>0</td>
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<tr>
<td>Hard Bone</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Over 30 Month</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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<tr>
<td>Yield Grade 1</td>
<td>5,418</td>
<td>1.69%</td>
<td>7</td>
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<td>Yield Grade 2</td>
<td>5,418</td>
<td>1.69%</td>
<td>127</td>
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<td>Yield Grade 3</td>
<td>170,501</td>
<td>53.11%</td>
<td>196</td>
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<td>Yield Grade 4</td>
<td>37,375</td>
<td>11.64%</td>
<td>41</td>
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<td>Yield Grade 5</td>
<td>854</td>
<td>0.27%</td>
<td>1</td>
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<tr>
<td>575/Down</td>
<td>548</td>
<td>0.17%</td>
<td>1</td>
</tr>
<tr>
<td>1050/Up</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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</table>

GARDINER ANGUS RANCH

GARDINER ANGUS RANCH
"Capture the Value"

GARDINER ANGUS RANCH

Prime
Choice++
Choice 0
Choice –
Select

Prem Summary

Prime
Choice
CAB

+31.94/cwt
+10.78/cwt

PRIME
Choice Premium $10.78
Prime Premium $31.94
Total Premium $42.72/cwt
“Capture the Value”

**Prime**  
$+10.78/\text{cwt}$  

**Choice++**  
$+3.00/\text{cwt}$  

**Choice 0**  

**Choice –**  

**Select**  

---

Certified Angus Beef  
- Choice Premium: $10.78  
- CAB Premium: $3.00  
- Total Premium: $13.78/\text{cwt}$

---

THIS is added value
“Capture the Value”

Cattle Settlement Worksheet

<table>
<thead>
<tr>
<th>Feedyard:</th>
<th>MCELLOD FARMS, INC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot #:</td>
<td>322 USPB Lot #: 169920</td>
</tr>
<tr>
<td>Method:</td>
<td>USPB Base Grid</td>
</tr>
<tr>
<td>Slaughter:</td>
<td>8/9/2017 Plant: Liberal</td>
</tr>
<tr>
<td>FY Lot #:</td>
<td>406 Pen #: 44</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Price</th>
<th>Prem Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>USPB USDA KS Average</td>
<td>Choice 10.78</td>
</tr>
<tr>
<td>Formula Allowance</td>
<td>Prime 31.94</td>
</tr>
<tr>
<td>Grid Allowance</td>
<td>CAB 3.00</td>
</tr>
<tr>
<td>Base Live Price</td>
<td></td>
</tr>
<tr>
<td>Hot Yield Threshold</td>
<td></td>
</tr>
<tr>
<td>Base Hot Price</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity to sell @ 810 lbs x $140.00/cwt = $1,134.00</td>
<td></td>
</tr>
<tr>
<td>Feedlot Gain 547 lbs @ $0.67/lb = $366.49</td>
<td></td>
</tr>
<tr>
<td>BREAKEVEN Live Cash Market Value $1,500.49</td>
<td></td>
</tr>
</tbody>
</table>

GARDINER ANGUS RANCH
“Capture the Value”

BREAKEVEN
Live Cash Market Value
$1,500.49

$202.32 profit over the breakeven value

Sell on Live Cash Market
@ 1,357 lbs x $116.47/cwt
$1,580.50
$80.01 profit

GARDINER ANGUS RANCH

BREAKEVEN
Live Cash Market Value
$1,500.49

$452.07 profit over the breakeven value

Sell on Live Cash Market
@ 1,357 lbs x $116.47/cwt
$1,952.56
$80.01 profit

GARDINER ANGUS RANCH
### "Capture the Value"

- **Use GARDINER GENETICS**
  - SELL as feeder calf
  - $80 - $452

- **Use GARDINER GENETICS**
  - FEED/SELL on live market
  - $122 - $372

- **Use GARDINER GENETICS**
  - FEED/SELL on USPB grid
  - NO money left on table
  - $0

**GARDINER ANGUS RANCH**

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**GAR/GAR Customers’ Carcass Results – May 2017-July 2018**

<table>
<thead>
<tr>
<th>QUALITY GRADE</th>
<th>LIVE HEAD</th>
<th>WT</th>
<th>%CH OR HIGHER</th>
<th>%PRIME</th>
<th>WEEK'S MARKET</th>
<th>GRIDS /HD</th>
<th>MARKET +/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>GARDINER ANGUS CUSTOMERS</td>
<td>848</td>
<td>4104</td>
<td>23.0</td>
<td>$119.16</td>
<td>$126.08</td>
<td>$6.92</td>
<td></td>
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<tr>
<td>WEIGHTED AVERAGE/SUM</td>
<td>4952</td>
<td></td>
<td>23.0</td>
<td>$119.16</td>
<td>$126.08</td>
<td>$6.92</td>
<td></td>
</tr>
</tbody>
</table>

*GAR customer names withheld due to privacy concerns

**$474,953 above base price**

**GARDINER ANGUS RANCH**
From 1998 through 2018
GAR customers marketed 92,000 head through
U.S. Premium Beef, receiving an average
premium of $94 per head, totaling...

$8,676,420
ABOVE CASH MARKET.

“Capture the Value”

Shareholder/Unitholder Benefits 1997-2018

- Cattle Delivered 15 million
- Grid Premiums $ 500 million
- Patronage Payments $ 84 million
- Distributions $ 993 million

Total Benefits - $1.58 Billion

GARDINER ANGUS RANCH
1964: GAR becomes TOTAL AI

Artificial insemination was new (disruptive) technology!

Because of technology, a bull hasn’t bred a cow at GAR in 54 years!

Technology • Relationships • Progress

RISK MANAGEMENT!
CRISIS MANAGEMENT!
RELATIONSHIPS!
CONNECTING THE DOTS!
SKIN IN THE GAME!
RISK MANAGEMENT
Kendal Kay • Stockgrowers State Bank

CRISIS MANAGEMENT
Randall Spare • Ashland Veterinary Center
Technology • Relationships • Progress

PROGRESS
Bill Bowman & Sally Northcutt • Method Genetics
GARDINER ANGUS RANCH

Technology • Relationships • Progress

SKIN IN THE GAME
Steve Hunt • CEO, U.S. Premium Beef (retired)
GARDINER ANGUS RANCH
RELATIONSHIPS and TECHNOLOGY enabled Gardiner Angus Ranch to recover from the worst wildfire in Kansas history.
Mr. Tyson Johnson
Sooner Cattle Co.

Managerial Accounting: Key Numbers for Ranch Managers

Managerial Accounting: Key Performance Indicators

Tyson Johnson
What is Managerial Accounting
– process of preparing management reports and accounts that provide financial and statistical information required to make day-to-day decisions.
– generates reports for an organization's internal audiences
Managerial Accounting

A guy walks into the store and steals $100 bill from the register without the owner’s knowledge. He then buys $70 worth of goods with the $100 bill. The owner gives him back $30 in change. How much money did the owner Lose?

A) $100  
B) $170  
C) $200
Managerial Accounting

• A guy walks into the store and steals $100 bill from the register without the owner’s knowledge. He then buys $70 worth of goods with the $100 bill. The owner gives him back $30 in change. How much money did the owner Lose?

A) $100
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C) $200
D) It depends

Managerial Accounting

• A guy walks into the store and steals $100 bill from the register without the owner’s knowledge. He then buys $70 worth of goods with the $100 bill. The owner gives him back $30 in change. How much money did the owner Lose?

A) $100
B) $170
C) $200
D) It depends

• Profit Margin
• Profit Margin / product
• Inventory System
• Opportunity Cost
• Time value of Money
Transparency & Empowerment

- Strategic Plan
  - Ranches overall direction
- Resource Management Plan
  - Three year plan
    - Facilities
    - Pasture
    - Equipment
- Budget

Monthly Report (52 page)

- Inventory
- Detailed financials
- Mortality Rate
- Morbidity Rate: Treatments, temp, case fatality,
- Feed report: lbs. fed/hd./day & total lbs. fed/hd.
Understanding Cost

• Fixed Cost:

• Variable Cost:

Understanding Costs

• Direct Cost:
  – A cost that can be computed and identified directly with a product, function, or activity.

• Indirect Cost:
  – A cost that is not identifiable with a specific product, function, or activity. (All other Costs)
Understanding Cost

• Generally
  – 30 to 40% Direct Cost
    • Managed by marginal cost/marginal gain

Understanding Cost

• Generally
  – 60 to 70% Indirect Cost
    • Managed by:
      – Increased volume produced
      – Improvement in existing processes
      – Innovation, a better way
      – Reduce overall cost, wage war on cost
The Big Three  
(SPA Database in 2008 to 2012)

- Labor 12%
- Depreciation 24%
- Purchased Feed 16%

Analyzing the Numbers

- Which Variables Count?
  - Sensitivity Analysis

<table>
<thead>
<tr>
<th>% Change</th>
<th>Purchase Price</th>
<th>Land Value</th>
<th>NPV</th>
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<tbody>
<tr>
<td>30%</td>
<td>2,367</td>
<td>($2,500,000)</td>
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<tr>
<td>20%</td>
<td>2,185</td>
<td>($1,000,000)</td>
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<tr>
<td>10%</td>
<td>2,003</td>
<td>$250,000</td>
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<tr>
<td>0%</td>
<td>1,821</td>
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<tr>
<td>-10%</td>
<td>1,639</td>
<td>$2,200,000</td>
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<td>-20%</td>
<td>1,457</td>
<td>$3,500,000</td>
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<tr>
<td>-30%</td>
<td>1,275</td>
<td>$4,900,000</td>
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</table>

<table>
<thead>
<tr>
<th>% Change</th>
<th>Weaning Weights</th>
<th>Net Profit</th>
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<tbody>
<tr>
<td>30%</td>
<td>632</td>
<td>$920,000</td>
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<tr>
<td>20%</td>
<td>575</td>
<td>$780,000</td>
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<tr>
<td>10%</td>
<td>523</td>
<td>$650,000</td>
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<tr>
<td>0%</td>
<td>475</td>
<td>$500,000</td>
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<tr>
<td>-10%</td>
<td>428</td>
<td>$300,000</td>
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<tr>
<td>-20%</td>
<td>385</td>
<td>$175,000</td>
</tr>
<tr>
<td>-30%</td>
<td>346</td>
<td>($90,000)</td>
</tr>
</tbody>
</table>
Project Analysis

• Net Present Value
  – Internal Rate of Return
  – Hurdle Rate
  – Time Value of Money
  – Cash flow statement

Accurate and Correct Numbers

• What System Works for you?

Know Your Numbers!
Key Performance Indicators

• Key performance indicators help managers gauge the effectiveness of various functions and processes important to achieving organizational goals.

Big Picture KPI’s

– Stocking Rate
– Margin per acre: cattle margin/acre & non-cattle margin/acre
– Inventory: Pregnant & Open Cows
– % System Yield (throughput)
– Weaning %
– Pounds weaned: lbs./acre - Avg. lbs./calf - lbs./exposed female
– Safety: DART rate, WC cost, Incidents
Key Performance Indicators

Ranch Level

– Pasture Management
  • Stocking Rate - Days rest - Chemical treatment – Burn – Soil sample
    – Forage sample

– Cost
  • Cost per head – Cost per pound produced/gain

– Animal Performance
  • lbs. gain/acre - lbs. produced/acre

Application of Accounting
**Conclusion**

Knowledge without practical use is a lot like a glass eye, It’s all for show!

**Wrap-up**

- Accurate Numbers
  - Trash in = Trash out
- Understanding Cost
  - Know how to manage your costs
- KPI’s
  - What are your objectives
- Application of Accounting
  - It’s a Mindset
Welcome to the Real World!!!
Mr. Don Close
Rabo AgriFinance

What Can We Learn From Consumer Trends

Food Fight!
Online and Brick & Mortar Battle for Business. How Can Beef Ensure a Seat at the Table?
US National Debt

$21,344,744,890,576.05
Since the Last Recession:

- Beef Herd Expansion
- The Premium Burger Craze
- Demand for High End and Ultra High End Middle Meats
- Meal Kits
- Restaurant Delivery
- Click and Pic
- Restaurant App Reservations and Ordering
- Restaurant Meals Delivered to Your Airline Gate Before Take Off
Transition to Online Groceries:

- Convenience, Convenience, Convenience has Replaced Location, Location, Location as Determinant of Success.

- Perception of Transparency.

- Time Savings for Online Shoppers.

- Better Positioned to Offer Food with a Story.

Source: Quartz
Growth in On Line Shopping:

**Store Closings 2017**

<table>
<thead>
<tr>
<th>Store</th>
<th>Closures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payless</td>
<td>552</td>
</tr>
<tr>
<td>Radio Shack</td>
<td>250</td>
</tr>
<tr>
<td>The Limited</td>
<td>240</td>
</tr>
<tr>
<td>Family Christain</td>
<td>171</td>
</tr>
<tr>
<td>Wet Seal</td>
<td>170</td>
</tr>
<tr>
<td>Bebe</td>
<td>160</td>
</tr>
<tr>
<td>Crocs</td>
<td>138</td>
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<tr>
<td>JC Penney</td>
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<td>American Apparel</td>
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<td>Kmart</td>
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<td>hhgregg</td>
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<td>Staples</td>
<td>70</td>
</tr>
<tr>
<td>CVS</td>
<td>70</td>
</tr>
<tr>
<td>Macy’s</td>
<td>68</td>
</tr>
<tr>
<td>Abercrombie &amp; Fitch</td>
<td>60</td>
</tr>
<tr>
<td>Guess</td>
<td>60</td>
</tr>
<tr>
<td>Sears</td>
<td>42</td>
</tr>
<tr>
<td>Gander Mountain</td>
<td>30</td>
</tr>
</tbody>
</table>

Business Insider, Based on News Reports
Sales of Conventional are Flat:

![Graphs showing Walmart's and Whole Foods' net sales over years](image)

Changing Consumer Behavior:

- 1.5 Trillion Spent on Food with Just Over Half Going to Meals Away from Home.
- 25% of U.S. Shopping Malls are Expected to Close Within 5 Years.
- Meal Deliveries from Conventional Restaurants is the Fastest Growing Segment.
- As Online Shopping and Streaming Entertainment Grows Consumers are Electing to Spend More Time at Home.
- Expenditures for Meals at Home is Expected to Regain the Majority Over Meals Away From Home.
The growing food fight among meal-kit companies

![Image of various meal-kit company logos]

Figure 2: U.S. Population by Generation (Millions), 2015

<table>
<thead>
<tr>
<th>Generation</th>
<th>2015 Population (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millennials</td>
<td>83.5</td>
</tr>
<tr>
<td>Generation X</td>
<td>66.1</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>76</td>
</tr>
<tr>
<td>Silent</td>
<td>28.1</td>
</tr>
<tr>
<td>Other</td>
<td>77.1</td>
</tr>
</tbody>
</table>

Source: United States Census Bureau 2015
On Line Groceries:

- In June 2017 Amazon Purchased Whole Foods Market for 13.7 Billion
- Viewed by many as the Launch of Online Groceries. Acceleration

- Current estimates are online groceries in the US from 2% to 4%
- Estimated to be on top of 20% to 25% by 2025.

- Driven by Escalating Competition the Number of Conventional Grocery Stores are Expected to Decline.

What is the Impact to the Cattle & Beef Industry?
Meal Kits:

Pro:
Can Introduce Beef Offerings to Non and Low Beef Eating Consumers.

Can Use Value Cuts that Many Consumers Pass When Shopping on Their Own, that Will Increase Overall Cutout Value.

Con:
Because of Price Competition Success of Meal Kits Could be Detrimental to Per Capita Beef Consumption

Online Groceries:

- Conventional Supper Markets of 30,000 to 50,000 Sq Feet
- Offer Between 250,000 and 300,000 SKU’s of 3 Million Offered:
  - Fresh Beef Offering Bottom Third Choice, Branded, Select.


- Small Specialty Producers Have Fewer Barriers to Entry.
Opposition:

• Major Packers:
  • Starts and Stops to Kill Floor
  • Increased Accounting of Multiple SKU’s
  • Increased Requirements of Cooler Space and Boxed Beef Storage

Market Specialization:

• Price Spreads Widen and Premium and Discount Schedule Increases

Price Spread Between Classes & Quality

Premium & Discount Schedule
Consumers Want to Know Where Their Food Comes From:

- Food With a Story
- Traceability
- Sustainability
- Antibiotic Free
- Hormone Free
- Humanely Raised
- Convenient

- Affordable

Industry Choices:

- Use Current Momentum
  - Five Years of Herd Rebuilding
  - Growing Beef Demand
  - Expanding Exports
  - Renewed Acceptance of Increased Protein in Diets

- Wait, Stay in the Existing Comfort Zone Until the Changing Market Mandates Changes or Risk a Return to a Contracting Market Share.
Thank You,

- Don Close
- VP, Food and Agribusiness Research, Animal Protein
- Phone: 314 317 8205
- don.close@rabcag.com
Dr. Tom Field
University of Nebraska

Disruptive Technologies And The Beef Industry

Tom Field, PhD
Engler Entrepreneurship
University of Nebraska, Lincoln
Engler.UNL.EDU
**Disruption = Big Opportunities**

- Undervalued assets
- Disrupt the existing model
- Re-imagine the model
- Existing technology applied in a new way
- Recurring revenue not dependent on founder’s direct involvement
Hello my name is CHANGE
By 2050...... 65%
From Industry 1.0 to Industry 4.0

- Mechanization
- Access to Electricity
- Repetitive Processes
- Data – usually lagging indicators
- Lean Manufacturing
- Process Control to Reduce Waste
- Genetic Evaluation

Source: DPKI (2011)
“We know exactly how consumers will spend $ on food and consumer goods.”

Chief Economist, VISA
• Construction & real estate imagery and monitoring
• Infrastructure monitoring and security
• Oil and gas exploration
• Weather forecasting
• Wildlife/ecosystem monitoring
• Precision agriculture
OCTOPUS ROBOTS

- Turns and ventilates litter to prevent onset of aspergilliosis, pododermatitis, hock and breast injuries that may kill birds or cause downgrading.

- Regular aeration of the litter inhibits fermentation in soil and dramatically reduces ammonia in the barns.

- Facilitates penetration of disinfectant into the litter.

The floor-egg problem
Floor eggs represent thousands of euros in turnover losses, not to mention the human-resources cost of moving hens flocks around and picking up the floor eggs, nor the frequent health problems this work entails!

The Spoutnic animation robot was born precisely to offer a solution to this problem. Well-trained hens means fewer eggs on the floor and more in the nest.

TIBOT TECHNOLOGIES
PIONEER IN POULTRY ROBOTICS
Machine Learning

Prove you're not a robot

Mills,

Type the two pieces of text:

Verify  Cancel

Machine Learning – Artificial Intelligence

Supply Chain Logistics

Health Diagnostics

Biosecurity, Geospatial Security, Data Security

Employee Training

Pasture Mgmt.

Breeding Stock Selection
What Machines Do VERY Poorly

- Empathy
- Large-scale creativity
- Large Scale Planning Across Complex Systems
- Storytelling

Supply chain via blockchain

- Producer
- Product info
- Processor
- Pickup details
- Delivery details
- Retailer
- Order details

Consortium blockchain replicated to all participants, storing event data

SOURCE: DATA61, CSIRO
Traceability

- one step back, one step up
- what, where, & when
- disparate methods

Transparency

- entire, interconnected view
- what, where, & when
- how it’s produced
- other attributes
Integration

Monitoring
–
 arial &
 ground

Automation

Analysis &
 Decisions

Capability
 creation

Innovate
 process &
 product &
 markets

Resource
 Utilization

Integration

Sincerity

Consistency

Competence

Reliability

Commitment

Integrity

Adapted from Leu, et al. Stanford Univ.
“In the age of advancing Artificial Intelligence, humans’ advantage is diversity—twists and turns and acts of customer love and amazement that the algorithms can’t match!”

Tom Peters
PEOPLE first
More like?

A

B

32
No silver bullets – no one size fits all solutions
Dr. Megan Rolf
Kansas State University

Genome Editing And The CRISPR Revolution
GENETIC MODIFICATIONS

- Genetic selection (Natural and Artificial
  we all do/see this)

- Transgenesis
  - Gene from one
    species into another

- Cisgenesis
  - Genes/alleles from same species into other
    animals

WHY NOT DO IT NATURALLY?

- Only works for cisgenesis
- Dairy cow as an example:
  - Horned
    - Can introgress polled allele from Angus or polled dairy cattle
      - Polled Holsteins $252/lactation cycle less than horned
      - >20 yrs of breeding to get 50% polled animals (Carlson et al., 2016, Nature Biotechnology)
      - Can also lose favorable alleles from the parental strains that are subsequently lost
    - Enter genetic modification...
OLDER METHODOLOGIES

Knock out a gene or Insert foreign DNA

Must be placed where it can be expressed without disrupting the cell itself!

Gene/mutation inserted randomly into the genome
Can take thousands of tries to get it in the right spot (expensive)
Leaves traces of recombinant DNA

HOW GENOME EDITING WORKS

- We can direct the insertions to knockout genes or to insert specific desired sequences to specific locations in the genome!
- No traces of recombinant DNA
- Typically think of as genes from the same species (Cisgenesis), but doesn’t have to be
- Often called precision breeding
Could be foreign DNA
HOW “PRECISION BREEDING” HAS BEEN USED IN LIVESTOCK

- Proof of Concept
- Consumer Acceptance?
  - Natural Variation
  - Welfare-related Traits Focus

OBVIOUS TARGETS IN THE BEEF INDUSTRY

- Can accelerate conventional breeding:
  - Polled
  - Myostatin
  - Recessive genetic abnormalities
  - Tenderness (CAPN and CAST)
  - Growth Hormone/Receptor
  - Maybe Stearoyl-CoA desaturase (fatty acid composition)
  - Maybe DGAT
  - “Suck” mutation (PRL/Receptor)
  - Any other large-effect mutations or Mendelian traits

Accelerated rate of gain when promoting 1-20 genome large effect genome edits in genomic selection

THE FUTURE?

Genomic Selection of Superior Animals

IVF (can be young animals)

Hundreds of embryos

Derive gametes from ESCs

Genotype, identify superior male and female ESCs

Clone

ET

Establish Embryonic Stem Cell lines

Can use ART and genome editing techniques together...

Talk about short generation intervals!!!
2 MAIN CHALLENGES

- Consumer acceptance
  - Clever approach!
- FDA approval guidelines
  - Draft guidelines state modification = drug
  - Will this stay the same in the future?

QUESTIONS?
WHAT IS A REGULATED GMO?

- FDA says (Bashshur, Feb 2013) that "Genetically Engineered or Genetically Modified Organisms ("GMO"s, or "GM Foods") are defined as those in which "the genetic material ("DNA") has been altered in such a way that does not occur naturally," and should be regulated
  - Conventional breeding-No
  - Naturally-occurring horizontal gene transfer-???
  - Naturally-occurring mutations-No
  - Insertion of DNA from another organism (transgenesis)-Yes
  - Insertion of DNA from the same species or relative (cisgenesis)-Yes (at least for applications like Salmon)
- Plant and animal regulation different
  - Animal: FDA
  - Plant: USDA and then EPA (FDA assessment optional)

WHAT'S THE PROBLEM WITH IMPLEMENTATION OF GMO TECHNOLOGY

- Random incorporation of genes into the genome
  - Very very inefficient
    - Not as big a problem in plants, but bad in animals
  - Can you just incorporate a gene anywhere and expect it to make a protein?
    - Disrupt other genes
    - Disrupt regulation of other genes
    - Get silenced by cell machinery
OVERVIEW OF GENOME EDITING

- **Double-stranded break and engage natural repair processes to make an edit we want**
- **Molecular scissors**
  - Specific and targeted insertions, deletions, and small modifications
  - Small percentage of off-target effects
- Doesn’t work 100% of the time, but the efficiency is dramatically improved
- Often produces mosaics (need germline edits)

Source: https://vimeo.com/124545344
Data Analytics in the Dairy Business

Dairy Records Intelligence Network

Luís Mendonça, DVM, MS

Associate Professor, Dairy Extension Specialist
Department of Animal Sciences and Industry

Dr. Luis Mendonca
Kansas State University

Data Analytics In The Dairy Business-DRINK-
Dairy Records Intelligence Network

K-State Ranching Summit
Automation in the Dairy Industry

Automation in the Dairy Industry – Pen-Level
Automation in the Dairy Industry – Herd-Level

Full robotic rotary parlors gain U.S. momentum

GEA's DairyProQ is available in configurations from 28-80 robotic stalls and can milk up to 400 cows per hour with just one operator. The four new DairyProQ robotic rotary parlors under construction in the U.S. this year include:

- Minnesota, 60-stalls for 2,000 cows starting up in June
- Colorado, 60-stalls for 2,200 cows starting up in July
- Texas, 80-stalls for 3,300 cows starting up in August
- California, 72-stalls for 2,800 cows starting up in December

Automation in the Dairy Industry – Herd-Level

DRINK – K-State Benchmarking Tool
drinkdairy.com
Fertility of Mature Cows from Dairy Herds during Summer Months (KS, NE, OK, CO, and TX)

Total of inseminations: 217,689
DRINK program

Upcoming Years...

Shortage of data-savvy workforce
Thank you!

Luís Mendonça
mendonca@k-state.edu
651-600-1532
drinkdairy.com
UAVS BRING PRECISION AG TO THE BEEF INDUSTRY

RAY ASEBEDO, PH.D.
TOPCON AGRICULTURE
ADDRESSING LIVESTOCK

• Majority of farms are diverse operations
• They have the expectation that drones can help
• We need to develop the foundational knowledge and methods to kick start the artificial intelligence of the drone for livestock

UAV USES IN CATTLE PRODUCTION

• Finding and counting cattle
• Identifying animal health and welfare problems
• Weight estimation
LOCATING, COUNTING AND IDENTIFYING CATTLE

Why important?

• Monitor cattle location
• Identify problem animals
• Monitor investments
• Time and financial savings
• Herd management

LOCATING AND COUNTING CATTLE

Previous systems:

RFID tags with drone based reader

• High power requirements
• Low height flights
• Long flight times
• Added expense in tags

http://rfid24-7.com
LOCATING AND COUNTING CATTLE
KSU system based on imagery and computer learning

- Higher faster flights
- Cover more ground per flight
- No added per animal expense

LOCATING AND COUNTING CATTLE
Methods being explored

- High resolution RGB
- Multispectral
- Thermal
ANIMAL HEALTH AND WELFARE

- Looking for abnormal behavior
  - Cattle alone
  - Not coming to feed bunk
- Looking for illness
  - Fevers
  - Abnormal hide quality
    - Infectious diseases
    - Parasites
    - Mineral deficiencies
    - Malnutrition
    - Heat Stress

Limitations of in thermography in production setting

- Dirt and Debris
- Temperature and humidity
- Wind
- Target distance
- Hair color and thickness

Current models have S.D. of + or – 0.46 Degrees Celsius

- Normal temperature to Febrile is 0.75 Degrees Celsius
ANIMAL HEALTH AND WELFARE

• Overcoming limitations
  • Identifying anatomical features with high correlation to body temperature
    • Dorsal
    • Pastern (feet)
    • Forehead
    • Muzzle
    • Ocular region
    • Lacrimal region (tear duct)

ANIMAL HEALTH AND WELFARE

• Overcoming limitations
Algorithm development
  • Automatic target acquisition
  • Accounting for:
    • Weather conditions
    • Range
    • Animal color
ESTIMATING CATTLE WEIGHTS

3d models of cattle
- Management decisions
  - Feeding rates
  - Market timing
  - Breeding selection
- How
  - Stereoscopic
  - Lidar
  - Radar

UAV REGULATIONS

Part 107
- Operate UAV less 55 pounds
- Operation is visual line of sight with out aid
- Day light hours 30 min before SR and 30min after SS with anti-collision lighting
- Max height 400’ agl max
- Speed 100mph
- Can operate in class G airspace B,C,D and E with ATC approval
- No operations over non-involved pedestrians
SUAS REGULATIONS

Part 107 – Pilot certification
Each operation must have a pilot that has a remote pilot airman certificate
• At least 16 years old
• Pass a FAA test

SUAS REGULATIONS

Part 107
• UAS certification
  • UAS from 0.5 pounds to 55lbs must be registered
  • RPIC must certify that aircraft is airworthy
• Refer to FAA Website
SELECTING A PLATFORM

• Fixed Wing
  • Longer Endurance
    • > 45 minutes
  • Cover large areas
    • > 160 acre fields
  • Requires clear landing area
  • Risk of damage during landing

• MultiRotor
  • Shorter Endurance
    • 20 – 40 minutes
  • Vertical take off and landing (VTOL)
  • Shorter setup time
  • Typically fine for fields < 160 acre
  • Easy to have multisensor integration
TYPE OF MULTIROTOR?

• Quad
  - More efficient, > Endurance
  - No Redundancy
    - Motor goes out…Hope your camera survives
  - Easy to setup and operate
  - Maintenance is cheap
  - Smaller form factor

• Hex
  - Motor Redundancy
    - A motor or ESC goes out, you may stay airborne
  - Typically less endurance than a quad
  - Greater payload capacity

TYPE OF MULTIROTOR?

• OctoCopter
  - Excellent Motor Redundancy
    - Loose a motor or two and you are still ok
  - High Payload capacity
  - Lower Efficiency
  - Typically used for very heavy cameras
  - High maintenance costs
  - Get very large, transport more difficult

• X8 – CoAxial
  - Form factor similar to Quad
  - Greater payload than quad or hex but less than octo arrangement
  - Coaxial arrangement results in efficiency reductions
  - Lower endurance
  - Motor redundancy
TOPCON DRONE SOLUTIONS

QUESTIONS
Mr. John Butler
Beef Marketing Group

A Vision of the Beef Industry in 2030

K-State Ranching Summit
“A vision of the beef industry in 2030”

John Butler, Beef Marketing Group
BMG Feedyard Locations

- 6 operations in Nebraska
- 13 operations in Kansas

Beef Marketing Group Model

- BMG Feedyard
- Packer/Processor
- Retailer/Food Service
- Consumer
- PFG
- Distributor
- Kansas Ethanol LLC
- Crop farming
- Grain & Forage
- Manure & Water
- WDGS
Beef Marketing Group Model

SKATE TO WHERE THE PUCK IS GOING TO BE

Plant Based Protein  "Clean Meat"
Blockchain
Robotics
Traceability
Alignment  Transparency  Sustainability
BEEF INDUSTRY LONG RANGE PLAN

Vision
To responsibly produce the most trusted and preferred protein in the world.

Mission
A beef community dedicated to growing beef demand by producing and marketing the safest, healthiest, most delicious beef that satisfies the desires of an increasing global population while responsibly managing our livestock and natural resources.

- Drive Growth in Beef Exports
- Protect and Enhance the Business & Political Climate for Beef
- Grow Consumer Trust in Beef & Beef Production
- Promote and Strengthen Beef’s Value Proposition

2020 STRATEGIC OBJECTIVE
Increase the BEEF DEMAND Index measure by 1 percent annually over the next five years.

Value Chain Alignment
A Vision of the Beef Industry 2030

A Changing Market, a Changing Consumer, A Changing Society

More People, More Money

- 7.6 Billion people today….9.6 people in 2050
- US  326 million 2017.....400 million 2050  (20-25% increase!)
- Middle class will increase from 3.2 billion to 5.2 billion by 2030 Globally
Who are they and what will they expect?

- Millennials (1981-1996) 2.3 billion. They are moving into their prime spending years.

How do farmers and ranchers raise our food?

- Everything on computer devices. Information readily available on line Facebook, Pinterest, twitter.

- They are looking online for what their fellow consumers are saying then look elsewhere to see if the information is scientifically sound.
A gap continues to grow...
What the beef industry knows and what the consumer perceives.

• In 2017 55% believe farm animals are treated humanely

• Down from 61% a year earlier...

We must increase “trust”

Transparency

• Will take on a whole new meaning as we move ahead. “A brand is no longer what you tell the customer, it is what the customers tell each other”

• Society is increasingly skeptical..... A story will not be enough. We are going to be required to provide proof it is real.....a step beyond transparency.
Value Opportunity

• Midan marketing research tells us that 86% of Millennial moms will pay more for food with full Transparency.

• Expectations include,
  – Minimally processed
  – GMO free
  – Was the worker treated fairly?
  – Was the animal treated humanely?
  – Environmental sensitivity?
  – Is it ethically sourced?
The Alliance - Agents of Change

Our members have helped lead the modern evolution of beef production that has resulted in increased productivity, quality and improved animal welfare, while decreasing our environmental impact and making American beef the protein of choice around the world.

The next evolution of our industry involves enhanced animal stewardship through the responsible use of technologies, including antibiotics and more transparent communication with consumers.

Modern Beef Production vs. 30 Years Ago

13% More Beef
30% Less Land
20% Less Feed
13% Fewer Animals

Alliance Members Represent 25-30% U.S. Cattle On Feed

Our Five Commitment Pillars

- Refine
- Reduce
- Replace

- Documented Animal Welfare Program
- 100% 3rd Party Verification

- 25 Therapy Tracking & Animal Traceability
- Enhanced Veterinary Oversight & Training
- Judicious Use, Continuous Improvement & Research

Responsibly
Our Approach to Responsible Abx Use in Beef

1. Leverage Our Scale for Good
   As one of the world's largest food companies, we will use our scale for good, partnering with industry to adopt practices which help address ABx resistance.

2. Vision for Antibiotic Stewardship
   Builds on our 2015 commitments aligned with responsible use.

3. Pilot Tests
   Geographically diverse, establishing benchmarks, best practices, and informing future decision making.

4. A Commitment to Refine-Reduce-Replace
   Promotes the 3R's framework for ABx stewardship.

5. A Focused Approach
   HPCIA and Critically Important High Priority to Human Medicine.

6. Alignment With Progressive Producers
   Preference for raw materials supplied through progressive farming practices.
At Wendy’s, we have an opportunity and a desire to care for our customers and employees while also promoting the health and welfare of the animals that provide our food.

Our goal is to work with our supply partners to refine, reduce, and replace antibiotic therapy through their judicious use and by exploring animal management practices that do not rely on medically important antibiotics to increase production yields.

SKATE TO WHERE THE PUCK IS GOING TO BE

Plant Based Protein
“Clean Meat”

Blockchain

Robotics

Traceability

Alignment

Transparency

Sustainability
Thank you Questions?