



# **Sustainable Solutions for Animal Agriculture**

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Taking the Beef Supply Chain 360°



# Joe Swedberg

BOARD MEMBER & PAST CHAIR, FARM FOUNDATION | TRUSTEE, LEGGE-LOWDEN TRUST  
HORMEL FOODS CORPORATION, RETIRED



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Taking the Beef Supply Chain 360°





# **Kim Stackhouse-Lawson**

**MODERATOR | COLORADO STATE UNIVERSITY**

# CSU Ag Next

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Kim Stackhouse-Lawson, PhD

Farm Foundation Virtual Roundtable: [Agricultural and Climate Policy: What's on the Horizon?](#)

June 17, 2021



Colorado State University

**Vision:** Animal agriculture is a sustainable component of our global food system by providing economic, social and environmental benefits to Colorado, the Nation, and the world.

**Mission:** Identify and scale innovation that fosters the health of animals and ecosystems to promote profitable industries that support vibrant communities.

# 1. Advance the science of animal agriculture to ensure a continued safe, secure, and nutritious food supply

- *We lead scientific discovery by pushing the boundaries of what we know is possible to empower the supply chain with innovative and evolving tools and strategies to positively impact the sustainability and health of animal agriculture systems.*

# 2. Innovate and implement best practices

- *We facilitate the adoption of innovative solutions by providing credible and unbiased science-based knowledge, tools and resources to members of the supply chain.*

# 3. Convene critical conversations

- *We communicate complex science, respect alternate perspectives, encourage respectful debate and support policy discussions.*

## Purpose

*This is foundational*



# Pillars of Focus

## Resiliency



We advance human, animal and ecosystem health while improving food security and creating stronger more equitable communities.

## Regeneration



We create strategies focused on replenishing the natural resources that are critical to animal agriculture production through adaptive management that benefits the ecosystem.

## Efficiency



We enhance the health, performance, efficiency, and safety of the supply chain to optimize natural resource use.





# Areas of Emphasis

The following areas of emphasis describe priorities that we will focus on to advance the sustainability of livestock and dairy systems. Certain concepts such as the **economic tradeoffs** of proposed changes in practices and policies, and **market trends** of the livestock supply chain **will inform all areas of emphasis**.

**Identify and overcome environmental challenges:** Investigate solutions and tools to overcome critical environmental challenges including biodiversity, **water use** and quality, **climate change adaption and mitigation**, air emissions and **land use in extensive** (i.e. rangelands) and intensive livestock systems.

**Advance systems modeling capabilities:** Advance systems modeling and data platforms to **benchmark environmental impacts more accurately** (carbon, water, etc.), set forward-looking goals and **capture benefits of livestock systems related to** human nutrition and **ecosystems services**.

**Innovations in herd health:** Lead the development of new technologies and practices for **improved disease prevention, treatment and diagnostics**, biosecurity, **judicious antibiotic use**, **alternative novel strategies for antibiotics**, and **improved herd health**.

**Animal research and development:** Investigate innovative practices and technologies that **enhance animal performance, health and well-being** through animal genetics, reproduction, nutrition, etc. to **improve production efficiency and optimize resource use**.

**Improve communication:** Enhance external communication of complex topics and engage with influential stakeholders and policymakers in livestock systems sustainability and related fields.

# Phased Cluster Hires DRAFT

## **First Cluster Hire** – Clinical Sciences and Animal Sciences already Committed - 2021

- Population Health (2 position)
  - Disease Epidemiologist
- Systems Modeling (1 shared position)
- Feedlot Specialist (1 position)

## **Second Cluster Hire** – 2022

- Dairy Specialist (1 position)
- Rangeland Scientist (1 position)
- Cow Calf Population Health Management Specialist (1 position)
- Animal Agriculture Law and Policy Specialist (1 position)

## **Third Cluster Hire** – 2023

- Environmental Impact Scientist (1 position)
- Emerging Agriculture Technology Scientist (1 position)
- Grazing System Specialist (1 position)
- Nutritional Epidemiologist (1 position)
- Emerging Infectious Disease Specialist (1 position)

# Industry Innovation Group

*Fostering industry-academic partnership*

Strong external partnerships are a key component of CSU Ag Next, as such the Industry Innovation Group will meet at least bi-annually to provide input on strategic initiatives and programs, discuss new ideas and opportunities, promote the CSU Ag Next in the livestock community, help recruit talent and elevate the CSU Ag Next on a global scale.

## **Roles and responsibilities:**

- Provide input on short- and long-term strategic program and research planning
- Review communication plans and initiatives
- Review the program and accomplished work annually
- Provide input related to existing and evolving consumer expectations
- Guide engagement with industry initiatives
- Provide input on position descriptions and help recruit and identify talent



**711 Ranch**  
James Henderson  
*CEO*



**Beatty Canyon Ranch**  
Steve Wooten  
*President, CEO*



**Beef Marketing Group**  
John Butler  
*CEO*



**Brackett Ranches**  
Kim Brackett  
*CEO*



**Five Rivers**  
Mike Thoren  
*President, CEO*



**Veterinary Research & Consulting, LLC**  
Tom Portillo  
*Partner*



**Harper Livestock**  
Mike Harper  
*President, CEO*



**JBS USA**  
Cameron Bruett  
*Head of Corporate Affairs and Chief  
Sustainability Officer*



**LeValley Ranches**  
Robbie LeValley  
*CFO*



**Kraft Family Dairies**  
Mary Kraft  
*CFO*



**Safeway/Albertsons**  
Cathy East  
*Vice President Procurement  
Meat/Seafood/Deli*



**Veterinary Research & Consulting, LLC**  
Del Miles  
*Founder*

**What is sustainability?** Continuously improving social, economic and environmental stewardship of the system.

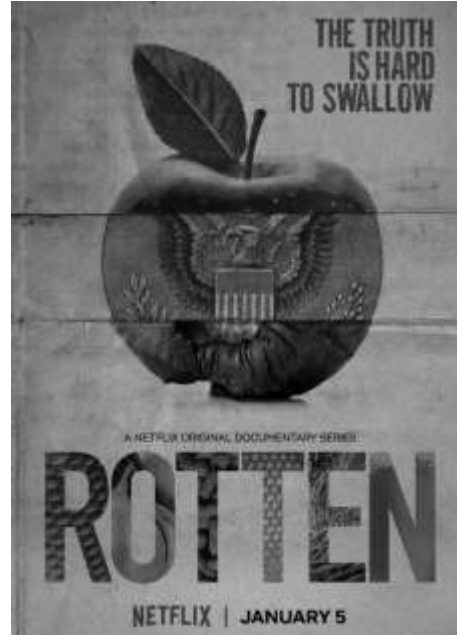




# PERCEPTION



livestock's long shadow  
environmental issues and options

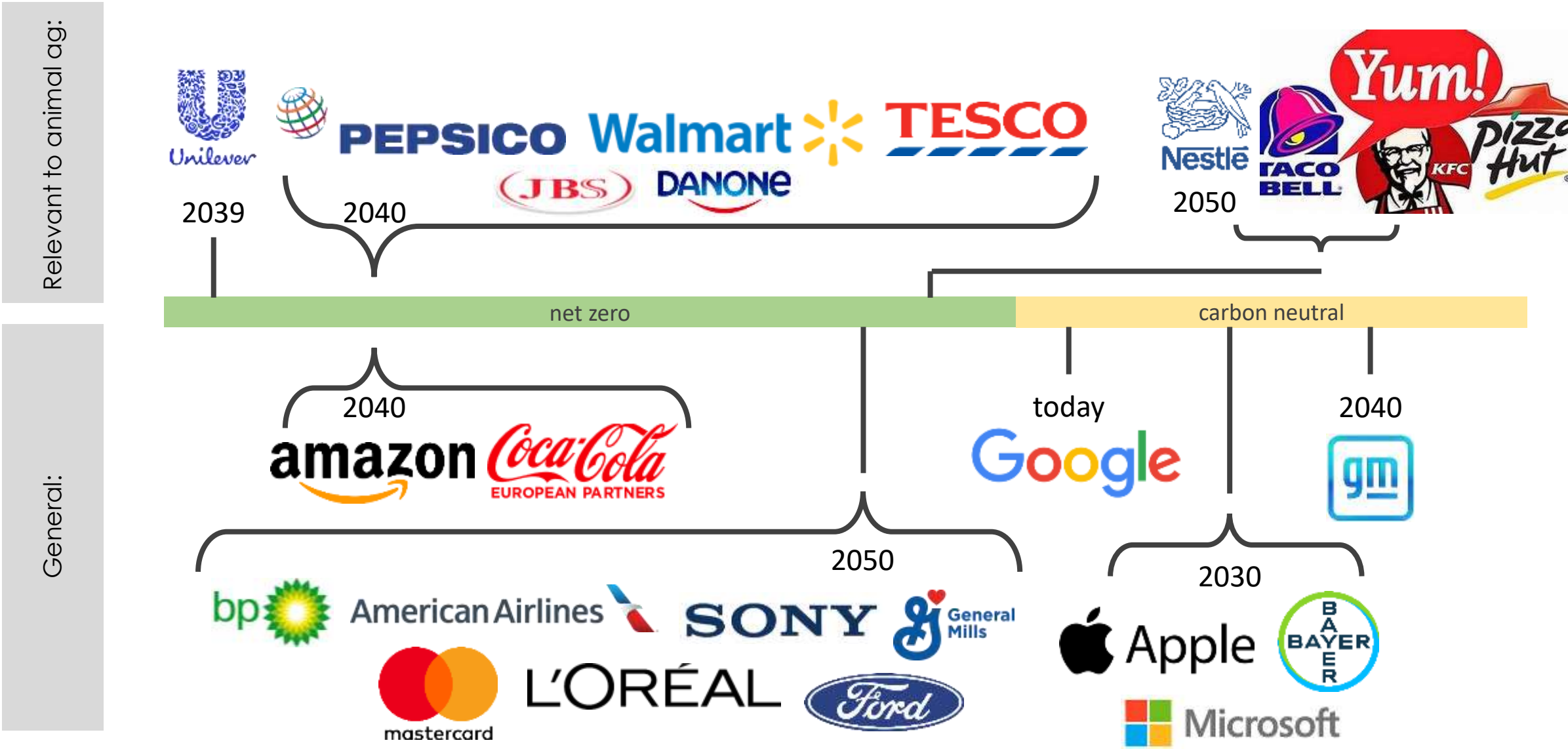


# REALITY

With 2.2 billion more mouths to feed by 2050, experts estimate food production must grow by 70%



# Current Company Commitments





**A shift in strategy is needed from defensive to proactive where we come together to address the greatest challenge of our time.**

A cowboy wearing a dark jacket and a cowboy hat is riding a brown horse with a white blaze on its face. He is herding a group of black and white cattle across a green field. In the background, there are trees and snow-capped mountains under a blue sky with white clouds. The scene is captured in a cinematic style with warm lighting.

**We have to demonstrate credibility to connect emotionally.**

# Thank you

[Kim.Stackhouse-lawson@colostate.edu](mailto:Kim.Stackhouse-lawson@colostate.edu)



Colorado State University





**Kim Brackett**

**BRACKETT RANCHES**





Kim Brackett

Brackett Ranches, LP  
Three Creek, Idaho















• [www.idrange.org](http://www.idrange.org)





# Biodiversity





Mountain  
Quail



Pronghorn  
Antelope



Chukar



Sage  
Grouse



# Regenerative Grazing

“Harness the power of livestock to build soil health.”

Dr. Allen Williams  
Soil Health Academy

<https://pastureproject.org/about-us/regenerative-grazing-benefits/>





# Soil Health



<https://sustainablesoils.org/>

# Keys to Regenerative Grazing

## **1. Principle Driven**

Not prescriptive. Not one size fits all.

## **2. Be observant. Keep Records**

Monitor and collect data.

## **3. Optimize for the Whole**

Use data to guide decisions.



# Monitoring & Testing

Results For : BRACKETT RANCHES LP

Sample ID 1 : BIG MEADOW

Sample ID 2 :

Lab No. : 114

Sample ID 3 :

Sample ID 4 :

Soil Depth : 0 - 8 in

## Haney - Soil Health Analysis

|  |       |                                   |                      |
|--|-------|-----------------------------------|----------------------|
| 1:1 Soil pH                                | 6.8   | ICAP Sulfur, ppm S                | 16.1                 |
| 1:1 Soluble Salts, mmho/cm                 | 0.35  | ICAP Calcium, ppm Ca              | 569                  |
| Excess Lime Rating                         | NONE  | ICAP Magnesium, ppm Mg            | 161                  |
| Organic Matter, %LOI                       | 8.1   | ICAP Sodium, ppm Na               | 72                   |
|  |       | ICAP Aluminum, ppm Al             | 169                  |
| Soil Respiration CO <sub>2</sub> -C, ppm C | 198.0 | <b>Calculations</b>               |                      |
| <b>Water Extract:</b>                      |       | Microbially Active Carbon (%MAC)  | 45.5                 |
| Total Nitrogen, ppm N                      | 33.5  | Organic C : Organic N             | 13.9                 |
| Organic Nitrogen, ppm N                    | 31.3  | Organic N : Inorganic N           | 8.6                  |
| Total Organic Carbon, ppm C                | 435   | Organic Nitrogen Release, ppm N   | 31.3                 |
| <b>HSA Extract</b>                         |       | Organic Nitrogen Reserve, ppm N   | 0.0                  |
| Nitrate, ppm NO <sub>3</sub> -N            | 1.3   | Organic Phosphorus Release, ppm P | 7.1                  |
| Ammonium, ppm NH <sub>4</sub> -N           | 2.3   | Organic Phosphorus Reserve, ppm P | < 0.1                |
| Inorganic Nitrogen, ppm N                  | 3.7   | <b>Soil Health</b>                |                      |
| Total (ICAP) Phosphorus, ppm P             | 33    | Soil Health Calculation           | 28.32                |
| Inorganic (FIA) Phosphorus, ppm P          | 25.6  | Cover Crop Suggestion             | 20% Legume 80% Grass |
| Organic Phosphorus, ppm P                  | 7.1   |                                   |                      |
| ICAP Potassium, ppm K                      | 251   |                                   |                      |
| ICAP Zinc, ppm Zn                          | 0.49  |                                   |                      |
| ICAP Iron, ppm Fe                          | 165   |                                   |                      |
| ICAP Manganese, ppm Mn                     | 3.0   |                                   |                      |
| ICAP Copper, ppm Cu                        | 0.16  |                                   |                      |

Photo Point



Photo Plot

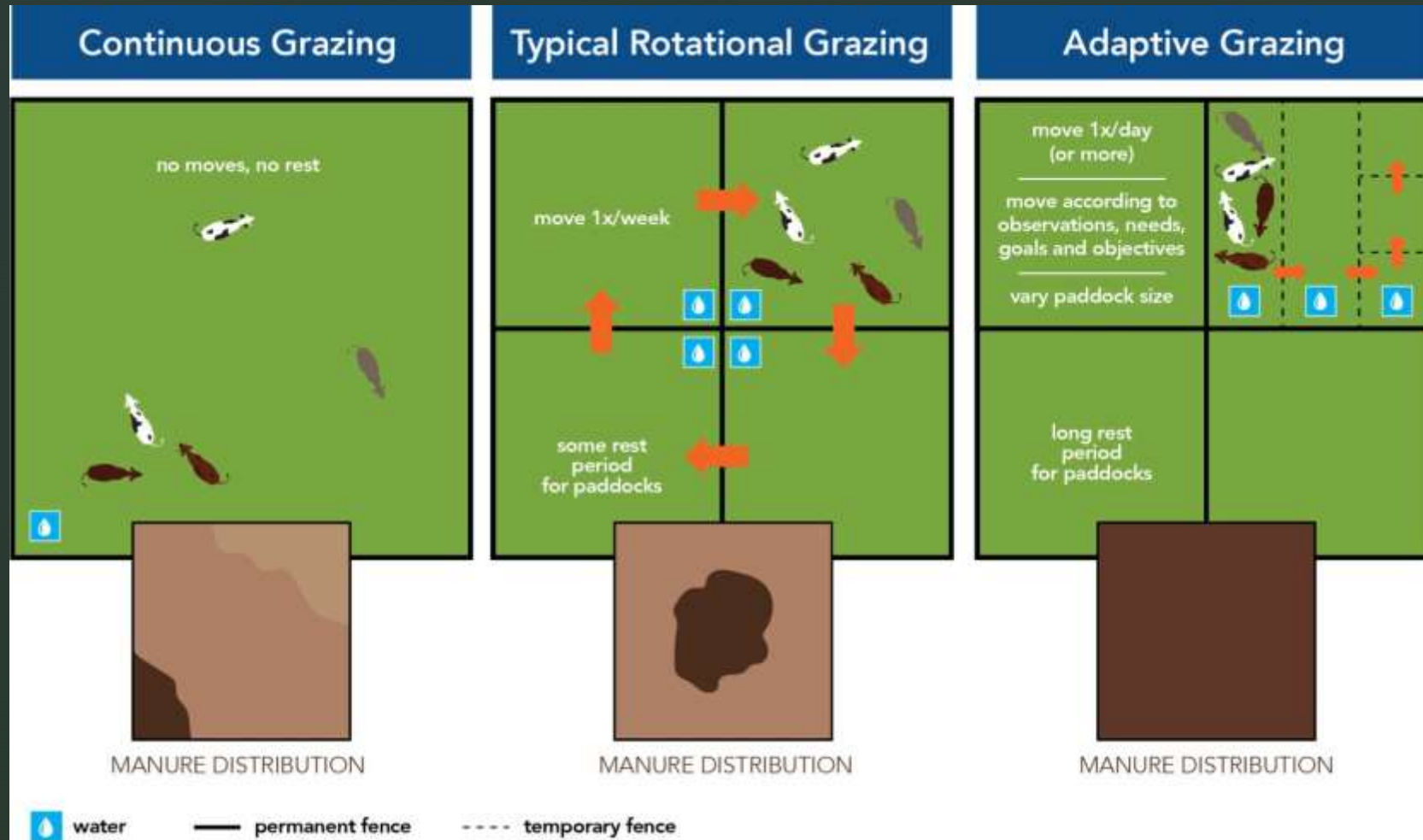


<https://extensionpublications.unl.edu/assets/html/g2212/build/g2212.htm>



[www.idrange.org](http://www.idrange.org)

# Stock Density vs. Stocking Rate



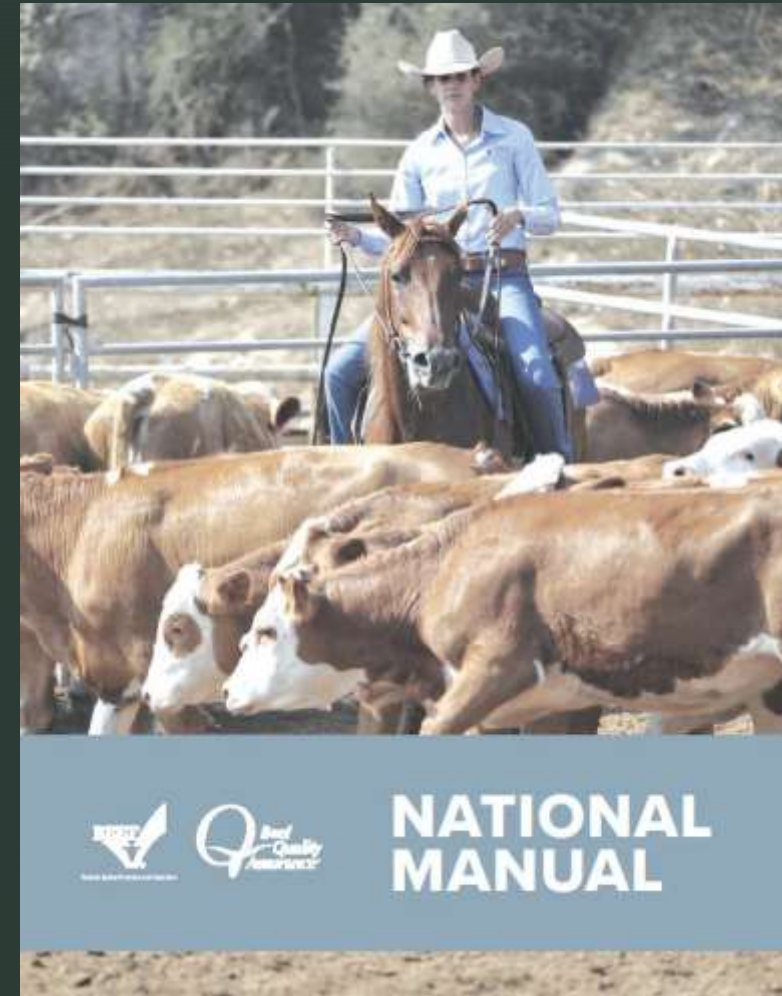
# Drought Resiliency





# Beef Quality Assurance Program Overview

- Cattle Care
- Biosecurity
- Herd Health
- Transportation
- Record Keeping
- Nutrition
- Environmental Stewardship
- Worker Safety
- Emergency Action Planning



# The Climate Battle Needs Cattle









**Mike Thoren**

**FIVE RIVERS CATTLE FEEDING**



Our Operation and what sustainability  
means to us!

# Five Rivers Cattle Feeding



## 11 FACILITIES – 6 STATES

- DALHART, TX (2)
- HARTLEY, TX
- KERSEY, CO
- LAMAR, CO
- LA SALLE, CO
- MALTA, ID
- TEXHOMA, OK
- ULYSSES, KS
- WELLTON, AZ
- YUMA, CO

# Five Rivers Cattle Feeding

ONE-TIME FEEDING  
**CAPACITY**  
**900,000**  
HEAD

LARGEST  
**CATTLE**  
**FEEDER**  
IN THE WORLD



**600+**  
**Team**  
**Members**



# Corporate Farming vs. Family Farms



Five Rivers is a Farm of Many Families

# Beef Value Chain





# Feedyard Processes

- Mill
- Feed
- Cattle
- Yard
- Office

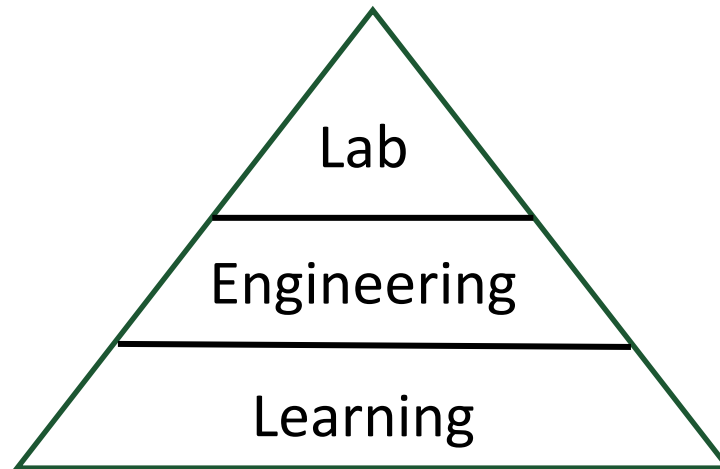




# Sustainability

“Sustainability at Five Rivers is environmental excellence, social responsibility and economic prosperity. No one pillar is more important than the other and all three pillars are essential for sustaining a heritage for future generations.”

The answer to the challenges of a growing population,  
resource constraints and climate change is:  
“Technology”



In the US, 90% of the feed consumed throughout the lifetime of grain-fed cattle is human-inedible. *(National academies of Science, Engineering and Medicine, 2016)*

Cows and other bovines upcycle crop residues that would be unavailable to humans



Wheat Stubble



Brewery Waste



# The US Beef industry is a family business

Generational learning – Not likely to be replicated if lost



Photo by Vincent Ricardel



Photo by Vincent Ricardel



I fear what the  
American West  
would be like without  
Cows and Ranchers

“Graze it, log it or  
watch it burn!”

*Ferry County Cattlemen's  
Association*





# Mary Kraft

KRAFT FAMILY DAIRIES LLC



The background of the entire image is a complex, repeating pattern of blue and black wavy lines. These lines form a series of interlocking, petal-like or leaf-like shapes that create a sense of movement and depth. The pattern is dense and covers the entire frame.

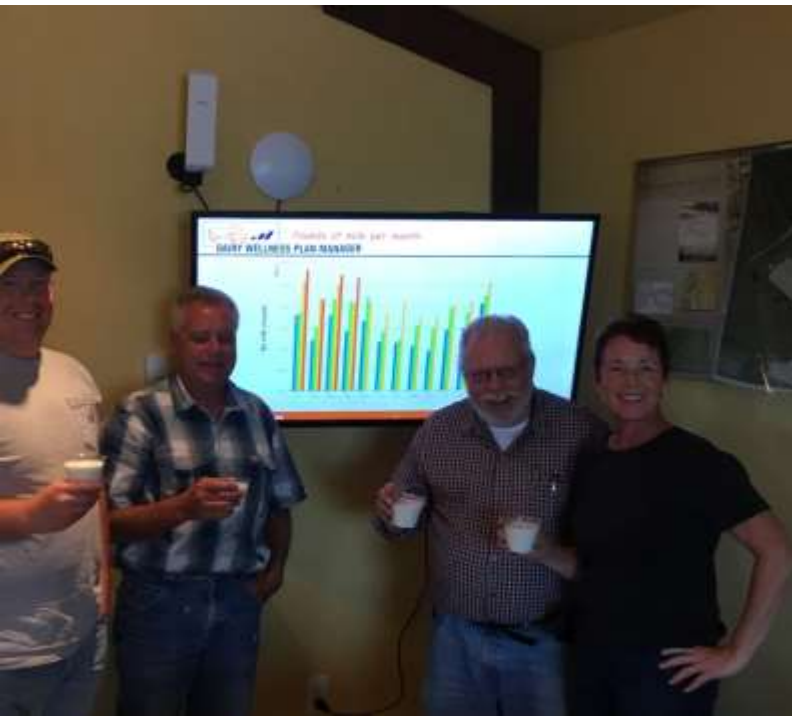
# MARY KRAFT

Kraft Family Dairies LLC  
Fort Morgan CO





# 85 FAMILY - FAMILY FARM





# ECONOMIES OF SCALE

- \* 20-30 Calves per day
- \* 8 Semi loads to market





# RECYCLING TECHNOLOGIES

WATER \* FEED \* BEDDING \* CROP NUTRIENTS

# Recycling Technologies

- Cool Milk
- Clean Parlor
- Water Cows
- Grow Crops







# RECYCLING TECHNOLOGIES

\* FEED



# Recycling Technologies

- Cow Comfort
- Compost
- Crop Nutrients







# Protein Making Technologies

- \* Genetics
- \* Advanced Nutrition
- \* Cow Comfort
- \* Intensive Management



# Crop Growing Technologies

- GPS- Reduce trips across field
- Cover Crops - Manage erosion
- Microbiomes- Feeds microbes for soil health
- Rapid Harvest - crop quality, water management, reduce compaction
- Organic matter-dense farms - hold nutrients and water





# Supporting Nature

Augmentation Sites

Wildlife habitat

# Hands-on Technology









