

## A Roadmap to a Sustainable Beef System

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A collaborative approach to  
achieve economic and  
environmental benefits for  
people and nature



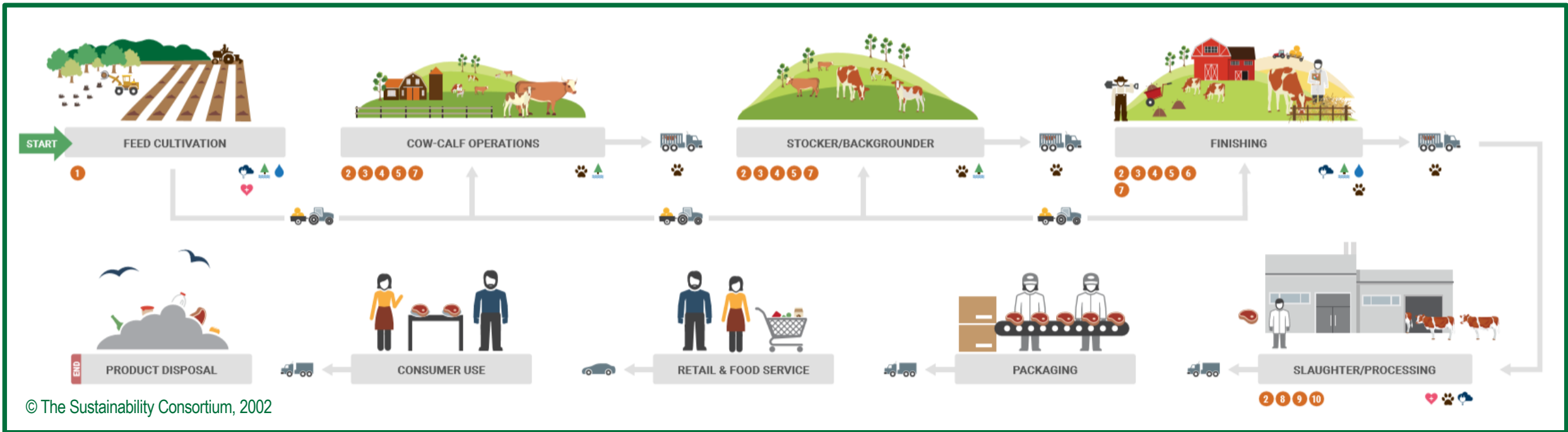
# Roadmap for a Sustainable Beef System

## Why?

The Nature Conservancy developed this document as a roadmap for corporate action to protect and regenerate nature and climate and to support economic well-being and healthy communities. The document was developed with a U.S. focus.

## Who?

Downstream companies in the beef supply chain who have set GHG emissions reduction goals, have customer and investor demands to reduce emissions, and are interested in tackling climate change and the impacts of agriculture.



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 Section 1 | The Role of U.S. Beef

# Pressures on the Global Food System Are Rising

## FOOD SYSTEMS

### An Uncertain Future

*Our global food system is facing growing demand, resource constraints, shifting consumer preferences and new challenges from climate change.*

60%

Increase needed in world food production to keep pace with demographic change

65m

Acres annually undergoing conversion or abandonment

40%

Gap in the amount of water available vs. demand in 2030

10-25%

Crop yield declines expected to be widespread by 2050 due to climate change

# Beef Can Be Part of the Solution

The Nature Conservancy (TNC) believes the US beef industry has a valuable role to play in protecting and restoring grazing lands, conserving biodiversity and water resources, providing food, and reducing and mitigating GHG emissions.

TNC seeks to work with and empower beef supply chain actors—the caretakers of the animals, the land, and the waters.

## TNC PRIORITIES

**Tackle  
Climate Change**



**Protect Land  
and Water**



**Provide Food and  
Water Sustainably**



**Build Healthy  
Cities**



# Role of U.S. Beef in a Sustainable Food System

**U.S. grazing lands and the families who care for them are the backbone of many rural economies.**

These biodiverse lands — some of which are under enormous conversion pressure or are degraded due to climatic changes or management challenges — deliver abundant ecosystem services, including providing food, clean water, wildlife habitat, recreational opportunities, and storing carbon in the soil, which helps mitigate climate change.

**Healthy grazing lands are important to the conservation of nature**  
(Sanderson et al., 2020).

However, production of beef also causes environmental challenges including climate change (due largely to enteric fermentation), water consumption and, in some places, water quality degradation (Rotz et al., 2019).

**Production of animal feed\* contributes significantly to the environmental footprint of beef.**

In the U.S., land use intensification and some farming practices can cause significant habitat loss and soil erosion. Additionally, nutrient pollution due to excess nitrogen and phosphorous lost from row crops is one of the United State's most widespread and costly environmental concerns.

(\*Animal feed like corn and soybeans).



 Section 2 | The Role of The Nature Conservancy



# About The Nature Conservancy

## Creating a World Where People and Nature Thrive

TNC is a leading global conservation organization with a mission to protect the lands and waters on which all life depends.



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Our strength starts with our team.

400  
scientists

79  
countries & territories

4,000  
conservationists

50  
U.S. states

1 Million  
dedicated  
members

1,300  
prominent volunteer  
leaders

A Far Reaching Network  
of leaders in the conservation community

# Our Global Agriculture Priorities

## PROTECT HABITAT

Develop supply chain commitments to prevent deforestation and incentives to redirect agriculture expansion



## RESTORE DEGRADED LAND

Soil health and grazing practices to optimize productivity and conservation of agriculture landscapes



## SECURE FRESHWATER

Apply science, policy, and new business models to solve water quality and quantity issues at the basin level



## CLIMATE SMART

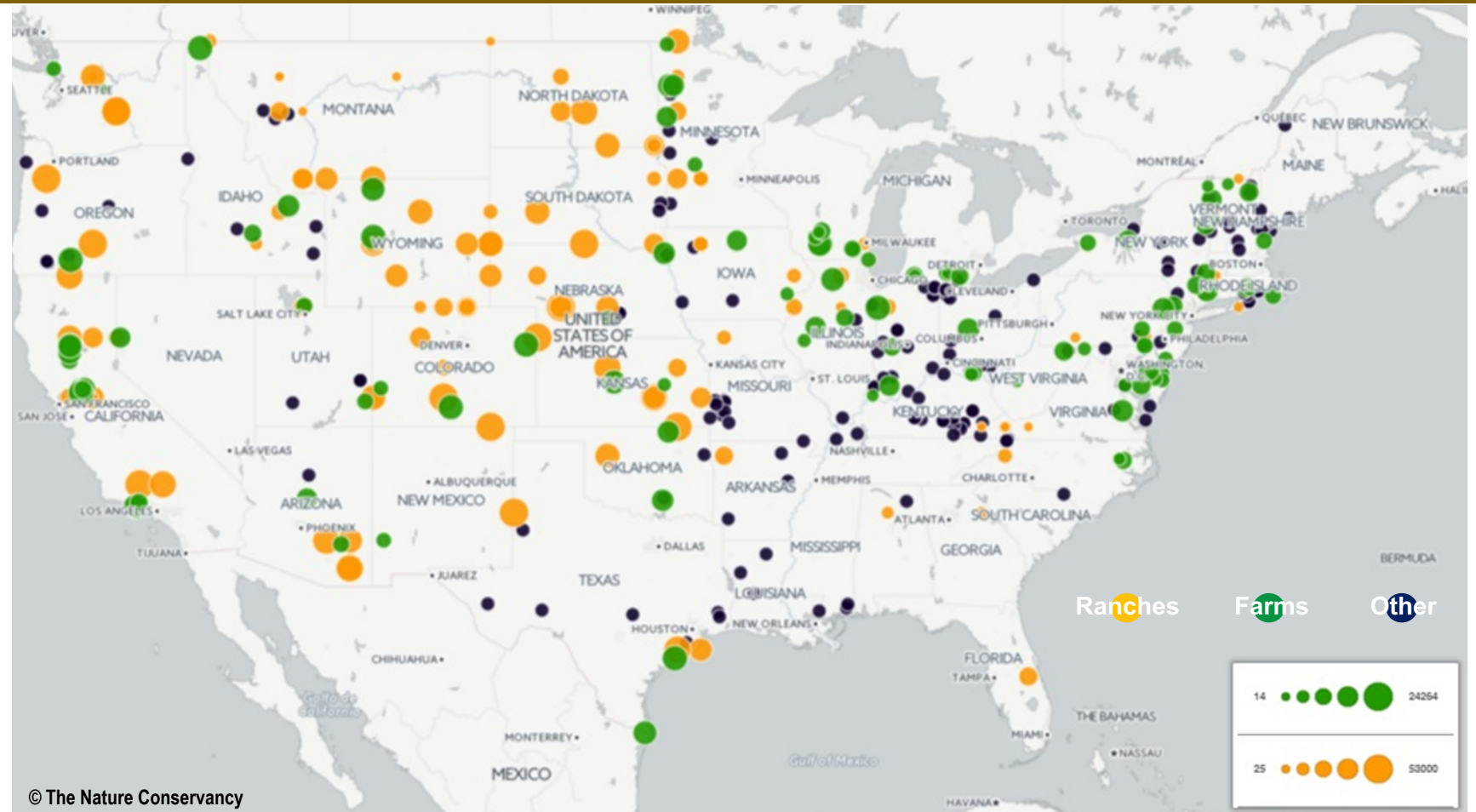
Farm and ranch management practices which reduce or sequester GHGs, increase productivity and resilience to climate change



# We Understand Farming & Ranching

## TNC's North America Farm & Ranch Holdings

- 378 properties
- >500,000 acres total
- 24,000 cropland acres
- >480,000 acres grazing



The Nature Conservancy—which owns more than 500,000 acres of U.S. grazing lands and has helped to conserve millions more through easements and collaborative management—has worked for years to develop strong, trusting relationships within the ranching community and the beef supply chain. We use our lands to work with and support neighboring ranchers and to develop and test cutting-edge, science-based management practices.



**Section 3 | Vision and Definition**

# TNC's Vision for Sustainable Beef

Nature. People. Water. Land. Livestock.

## Sustainable beef production:

1. Helps prevent land conversion
2. Supports or restores native vegetation and wildlife habitat
3. Supports clean and abundant water resources
4. Emits the fewest possible GHGs
5. Protects or enhances soil health
6. Efficiently uses resources along the value chain
7. Prioritizes animal health and well-being
8. Uses antibiotics judiciously
9. Supports economic livelihoods and helps communities thrive
10. Provides unprocessed source of protein to consumers

**NOTE:** This document focuses on dedicated beef production systems. A significant portion of the U.S. beef supply comes from dairy systems, which are not addressed in this document and have a different profile of environmental impacts and opportunities than dedicated beef production systems (Tichenor et al., 2017; Rotz et al., 2019).

# Detailed Definition of Sustainable Beef Production

<b>Environment</b>	<ol style="list-style-type: none"> <li>1. Helps prevent land conversion</li> <li>2. Supports or restores native vegetation and wildlife habitat</li> <li>3. Supports clean and abundant water resources</li> <li>4. Emits the fewest possible GHGs</li> <li>5. Protects or enhances soil health</li> <li>6. Efficiently uses resources along the value chain</li> </ol>	<ol style="list-style-type: none"> <li>1. Beef production and feed sourcing does not create pressure for deforestation (e.g. Amazon &amp; Cerrado); native grassland/prairie conversion is avoided in the U.S. (no production on land that has been cleared of native vegetation in the past 10 years); keeps grazing lands intact.</li> <li>2. A sustainable grazing plan is implemented that improves vegetation condition and wildlife habitat; grain and hay (feed) are harvested during seasons and using methods that prevent bird and wildlife mortality; buffer strips are widely used; Integrated Pest Management adopted for managing pest and disease; critical habitat is conserved</li> <li>3. Water management plan to adjust irrigation to reduce water consumption in water-stressed areas; natural vegetation or filter strips installed to avoid runoff into waterways in grazing and feed production lands; cover crops and reduced tillage practiced on crop land; ranch water infrastructure and feedlot manure management systems designed to benefit livestock, wildlife, and ecosystems; nutrients incl. manure applied according to 4Rs principles</li> <li>4. Feed mixes and grazing supplements provided to reduce enteric methane; feed is grown using best soil health and nutrient stewardship practices and following TNC row crop principles progression.</li> <li>5. Feed is sourced or produced on land where practices to maintain or improve soil health are implemented: reduced/no-till, cover crops, crop rotations; rotational grazing, 4Rs of nutrient management</li> <li>6. Efficient processing and food waste reduction strategies are implemented (vacuum packaging, smart food labels)</li> </ol>
<b>Livestock*</b>	<ol style="list-style-type: none"> <li>7. Prioritizes animal health and well-being</li> <li>8. Uses antibiotics judiciously</li> </ol>	<ol style="list-style-type: none"> <li>7. Implementation of animal welfare best practices including zero tolerance for animal abuse; producers follow <a href="#">Cattle Care and Handling Guidelines</a> and strive to provide a high level of health and wellbeing in accordance with the Five Freedoms of Animal Welfare</li> <li>8. Antibiotics are used in accordance with <a href="#">Judicious Use Principles</a> as to avoid antibiotic resistance in humans and animals, cumulative effects of resistance, and reduction in soil health and microbial diversity due to waste ending up in soil</li> </ol>
<b>People</b>	<ol style="list-style-type: none"> <li>9. Supports economic livelihoods and helps communities thrive</li> <li>10. Provides unprocessed source of protein to consumers</li> </ol>	<ol style="list-style-type: none"> <li>9. Workers throughout the supply chain are treated with dignity and operate in safe working conditions; farmers are supported to keep land intact through intergenerational transition, etc.</li> <li>10. Nutrient-rich, minimally-processed protein is produced on well-managed natural lands</li> </ol>

\* Beyond scope of TNC's expertise but important aspects of Sustainable Beef



## Section 4

## Improvement Opportunities

# TNC has Identified Key Improvement Opportunities

Beef Phase	Improvement Opportunity	Climate	Water Quality	Water Quantity	Bio-diversity
<b>Feed Production</b>	Nutrient management (following the “4Rs” principle; “right source, right rate, right time, right place”)	X	X		
	Soil health practices (cover crops, crop rotation and reduced tillage)	X	X	X	X
	Reduced water/energy consumption (irrigation equipment, precision, timing, pumping efficiency)	X		X	
	Avoided conversion (crops not produced on land that has been cleared of native vegetation in 10 yrs)	X	X	X	X
	Other opportunities: buffer and pollinator strips, alley cropping, and other on-farm habitat conservation	X	X		X
<b>Grazing</b>	Integrated ranch management planning (development, implementation, monitoring, adaptation)	X	X	X	X
	Prescribed/planned grazing (AMP grazing, optimized grazing/forage improvement, etc.)	X			X
	Grazing land improvement-site specific practices (riparian corridor/forest restoration, range plantings (trees, grasses), fenced waterways and stabilized water-crossings, silvopasture, etc.)	X	X		X
	Beneficial fire management		X	X	X
	Improved wildlife habitat				X
	Avoided conversion	X	X	X	X
	Feed Additives/Supplemental Nutrition (to reduce methane production from enteric fermentation and/or increase digestive efficiency)	X			
<b>Feedlots</b>	Feed additives (to reduce methane production from enteric fermentation)	X			
	Feed composition (specific feed rations and supplements designed to to reduce enteric fermentation, improve digestibility of feed, shorten finishing time)	X	X		
	Manure management (e.g. digesters, separators, composters, covers) and reuse (nutrient management)	X	X	X	
<b>All</b>	Use of renewable energy and energy efficiency upgrades	X			
	Continuous improvement and adaptive management (ability to show year over year progress toward better environmental outcomes)	X	X	X	X
	Other opportunities: breeding, vaccines for rumen mitigation, animal welfare	X			

- New research and technology are constantly emerging; this list should be updated regularly to reflect the latest state of knowledge.
- TNC has done robust research and can provide more information upon request.
- Not listed in order of impact.
- Scale and certainty vary by practice and level of impact will vary by geography and implementation/maintenance.



# Why Feed Production?

In 2017, approximately 1/3 of US corn production went directly into animal feed (USDA ERS, 2020). Additionally, a portion of the distiller's grains (both wet and dry) that are a by-product of ethanol production go into the livestock feed supply chain.




Producing this corn (and other feed commodities) requires a vast land area, with more than 90 million acres of land in the U.S. dedicated to corn production in 2017 (USDA NASS, 2017).

Feed production requires significant fuel, fertilizer, and irrigation water use.  $N_2O$  from fertilizer application is the predominant GHG emitted from corn production. Proper nutrient management can produce a significant reduction in  $N_2O$  emissions, as well as reduce runoff and water quality issues.



# Select Feed Production Opportunities

Row Crop Agriculture; Corn, Soybean, and Alfalfa Production

Improvement Opportunity	Description
 <p data-bbox="667 525 963 625"><b>Nutrient Management</b></p>	<p data-bbox="1065 504 2107 644">Encourage proper nutrient management practices (4Rs-source, rate, time, &amp; place), including appropriate use of manure.</p>
 <p data-bbox="715 739 963 839"><b>Soil Health Practices</b></p>	<p data-bbox="1065 722 2020 865">Encourage the planting of cover crops (that can be used for feed), a more diverse crop rotation and reduced tillage.</p>
 <p data-bbox="652 936 963 1096"><b>Reduced Water/Energy Consumption</b></p>	<p data-bbox="1065 946 2084 1089">Encourage improved irrigation management (equipment, precision, timing), pumping efficiency and using renewable energy as fuel for pumps.</p>

\* Other opportunities like improved plant genetics (e.g. varieties with improved nutrient use efficiency or yield stability traits) and avoided land conversion are important but not included because drought resistant varieties are already widely adopted in the US and avoided land conversion is less relevant in the US than in land conversion frontiers such as Brazil and Argentina. Additional opportunities such as buffer and pollinator strips, alley cropping, and other on-farm habitat conservation should be considered on a site by site basis.

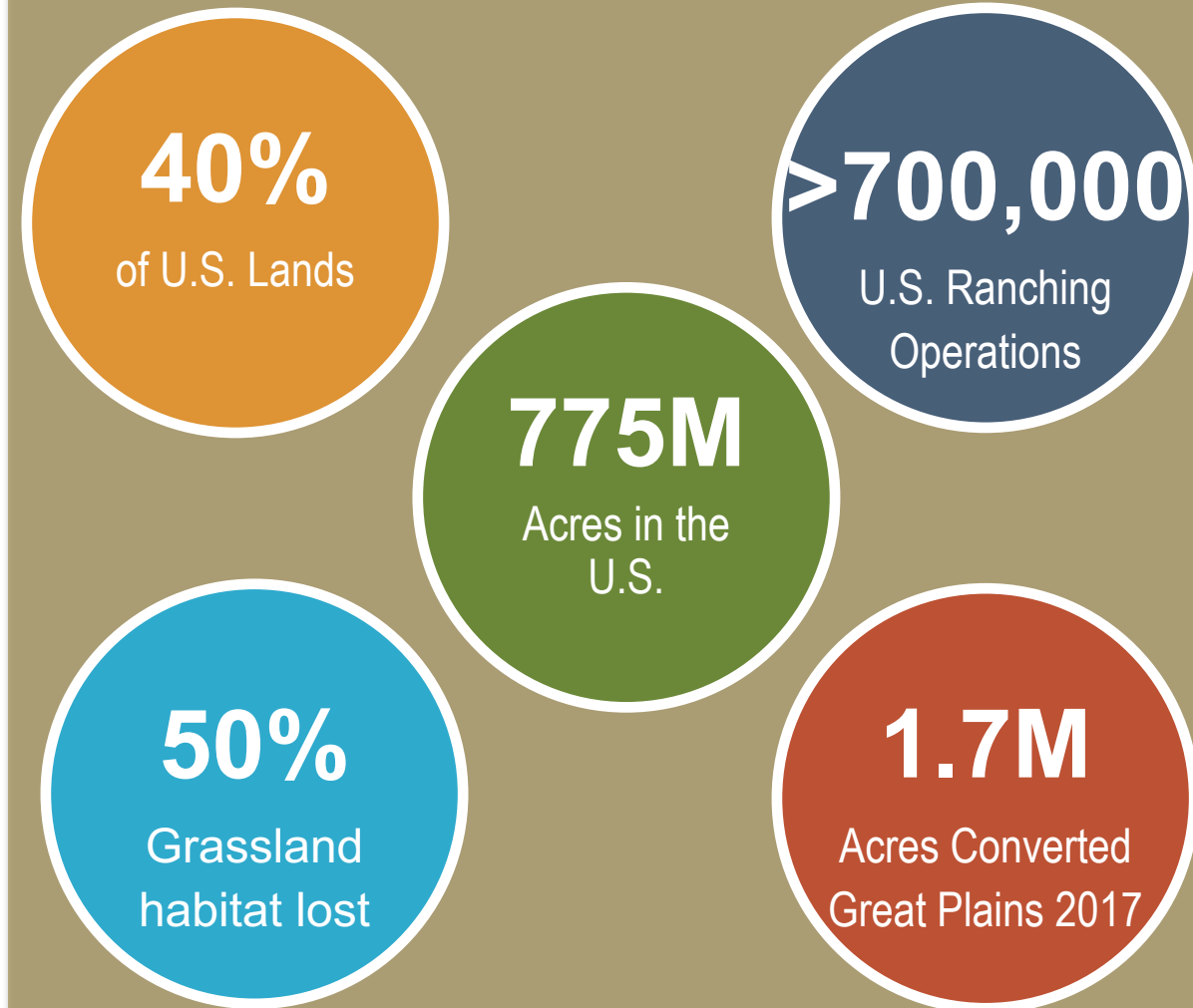
# Why Grazing?

Grazing lands are estimated to hold ~20% of global soil carbon (Schuman et al., 2002), which is almost as much carbon as is in the atmosphere.

To fight climate change, it is critical to protect the carbon already stored in these systems by avoiding erosion or degradation and conversion to row crop agriculture. In addition, there is potential to increase the amount of carbon stored in grazing lands (Henderson et al., 2015). The potential for soils to store additional carbon depends on climate, soil type, prior management, current level of degradation, and dominant vegetation (McSherry & Ritchie, 2013).

*Whether a specific practice is appropriate for a specific ranch or pasture must be determined on a site to site basis.*

## Grazing by the Numbers...



# Select Grazing Opportunities

Cow-Calf Operations, Grass-fed Backgrounder, Stocker Farms

## Improvement Opportunity

## Description



**Integrated Ranch  
Management  
Planning**

Implement integrated ranch management planning for all operations to inform which practices are most appropriate and helpful for each site, set continuous improvement goals, and establish plans for monitoring and adaptive management. By this process, maximum potential can be achieved.



**Grazing  
Management**

Improve grazing management to increase plant productivity and diversity through that optimized stocking rates and rotation timing. This includes-prescribed grazing, such as AMP grazing.



**Grazing Land  
Improvement**

Improve grazing land carbon storage by increasing plant species diversity and adding trees/shrubs to pastures in areas that were historically dominated by forest, as appropriate on a site by site basis. This could include riparian forest restoration, range planting, and/or silvopasture.

\* Other opportunities like improved plant genetics (e.g. varieties with improved nutrient use efficiency or yield stability traits) and avoided land conversion are important but not included because drought resistant varieties are already widely adopted in the US and avoided land conversion is less relevant in the US than in land conversion frontiers such as Brazil and Argentina. Additional opportunities such as buffer and pollinator strips, alley cropping, and other on-farm habitat conservation should be considered on a site by site basis.

# Why Feedlots?

As of January 1, 2020, there were more than 14.7 million head of cattle and calves in feedlots for the U.S. beef industry (USDA NASS, 2020).

Of these 14.7 million, ~82% reside in feedlots that are classified as “large,” with a capacity of 1,000 head or more (USDA NASS, 2020). These large-scale operations present a number management challenges, that are compounded by their close geographic proximity (more than 65% of U.S. fed cattle are located in Texas, Nebraska, and Kansas; USDA NASS 2020).

Some have estimated that these large-scale feedlot operations can produce more waste annually than some U.S. cities (GAO 2008). The predominant GHG emissions from feedlot operations are methane and nitrous oxide resulting from enteric methane and manure management (Pelletier et al. 2010, U.S. EPA 2015b). While biodiversity is not a major direct issue at this phase, water quality impacts can be significant, particularly from manure runoff.



# Select Feedlot Opportunities

Feedlot, Feed Yard, Animal Feeding and/or Nutrition Operations

## Improvement Opportunity

## Description



**Feed Additives\***

Include specific compounds or products as a component of feed rations to reduce rumen fermentation and the amount of methane produced by animals.



**Feed Composition\***

Include alternative feed components in rations to directly reduce enteric fermentation (e.g. *Brassica* spp., high-lipid feeds) or improve digestibility of feed (e.g. amylase-trait corn).



**Manure Management\***

Use of best practices in manure storage, treatment, application, and disposal (e.g. digesters, separators, composters, covers).

\*These improvement opportunities may also have potential at the grazing phase



## Section 5

## First Steps of Implementation

# The Time to Act Is Now

- As the **global population** is expected to reach more than 9 billion by 2050, agriculture production will need to increase by 60 percent to meet projected demand, which has enormous implications for ranchers, grazing lands, farmers, and land use (FAO, 2017).
- **Companies** are seeing the critical importance of reducing the impacts of their supply chains. Beef represents the single largest source of greenhouse gas (GHG) emissions in the animal agriculture sector with significant opportunities for mitigation along the value chain (i.e., Scope 3).
- The majority of **consumers** state sustainability is important and over half claim a willingness to pay slightly higher prices for sustainable products. Trust is an important driver of sustainable purchasing decisions and consumers look to NGOs such as TNC as a credible source for sustainability information.
- As pressures rise, we are seeing more and more farmers and ranchers going out of business. TNC seeks to create sustainable and economically viable systems that **keeps working lands intact**. We believe rancher participation is vital and the financial and technical support for changes they need to make in management approaches a necessity.





# TNC Is Here to Help

TNC is looking to partner with additional companies that are willing to:

## Lead in the feed phase by...

**Driving improved traceability and transparency** in the complex supply chain by requiring more information about where suppliers buy their inputs.

**Requiring feed suppliers to participate in TNC principles implementation**, which highlights improvement areas (soil health, nutrient management) and provides useful data to growers.

**Considering how to promote farm-level improvements in management practices:** incentives and disincentives, supporting peer learning, etc.

## Lead in the grazing phase by...

**Supporting widespread adoption of Integrated Ranch Management Planning**, improved grazing management practices (e.g. prescribed grazing, AMP grazing) and grazing land improvements (e.g. riparian restoration, range planting, silvopasture) on a site by site basis.

**Increasing capacity of technical advisors** to support ranchers in their planning/adaptive management efforts; investing in research to better quantify mitigation opportunities for specific regions, soil types and operations.

**Supporting needed science, research and monitoring** to ensure triple bottom line outcomes and transparency.

## Lead in the feedlot phase by...

**Piloting of feed additives** like 3NOP and adopting feed additives that are introduced to the market.

**Piloting/adopting** low-GHG feeds and alternative feed components.

**Determining the potential for manure management best practices** on a site by site basis and implementing with operators.

**Considering how to promote farm-level improvements in management practices:** incentives and disincentives, supporting peer learning, etc.



 **Section 6 | TNC Case Studies**

# Our Partnership Approach: Retail Case Study

**Description:** TNC developed a company wide US beef program that includes ambitious goals coupled with internal and external strategies and actions to meet those goals.

## What We Did

Prioritized issues and opportunities

## Output

Identified 15 internal and external strategies for company that make business sense

## Outcomes

*(in progress)*

e.g., Soil health improvements on X acres, # of GHG emissions reductions plans in place

# TNC Led a 3-Step Process to Identify Solutions

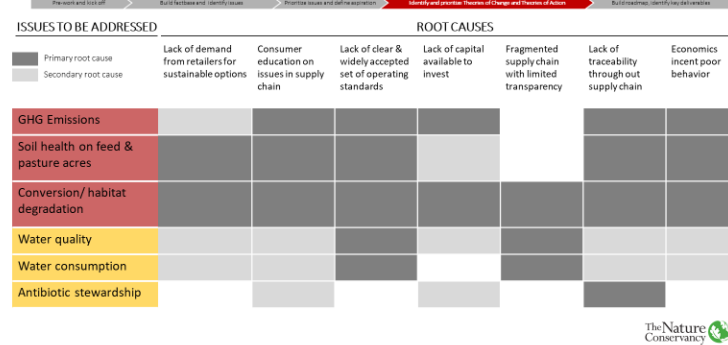
## Identified And Prioritized Issues Across Geographies

Severity of issues faced in beef supply chain varies by sector and geography but can be categorized into two sections

ISSUES	Value Chain Location	SITUATION TODAY		NOTES
		Irrigated areas	Non-irrigated areas	
Environment	GHG Emissions	Cow-calf, Feed, Feedlot	Feed phase: Over-use of fertilizer, loss of organic matter and declining carbon storage, declining biodiversity, increased crop disease and pests.	<p>• Lower priority because of substantial progress in the past five years, tools and standards available.</p> <p>** Lower priority because of the current relationship to environmental sustainability, but a lever where company has substantial influence and could strengthen that relationship.</p> <p><u>Underlined</u> phase in Value Chain Location indicates a hotspot compared to other phases.</p>
	Soil health	Cow-calf, Feed	Cow-calf: Soil compaction and erosion hotspots in a small # of regions.	
	Freshwater use	Cow-calf, Feed	50% of water consumed to produce beef is for irrigated row crops. Irrigated pasture also consumptive. Cow-calf phase water use is relatively low, well managed ranch water systems benefit wildlife.	
	Habitat conversion & degradation	Cow-calf, Feed	Stable/viable grazing operations protect from land conversion; expansion of row crop footprint = habitat loss. Poorly timed haying, mowing, heavy grazing can impact breeding birds/wildlife.	
Animal Welfare	Antibiotics	All	Antibiotic resistance in humans and animals, cumulative effects of resistance, reduction in soil carbon storage capacity and microbial diversity due to antibiotic waste ending up in soil.	
	Animal Welfare	All	Animal welfare best practices beyond basic handling and treatment practices as codified in BQA, industry standard *	
Social	Unstable business/Transparency	Cow-calf	Market fluctuations/consolidation, climate variability, lack of added value for good practices, barriers to entry, challenge to keep land intact through intergenerational transition, high or low land value, lack of incentives and transparency	
	Human health	All	Perception of beef as unhealthy for environment and a unhealthy food**	

## Identified Root Causes and Commonalities Across Issues

Issues across the beef supply chain may have common root causes



- For most significant issues, we identified and assessed root causes
- We also sought to identify linkages between issues at the root cause level—i.e. where common root causes across issues could be solved by the same intervention

## Identified and Evaluated Actions to Address One or More Root Causes

Internal		External		
A. Changes to sourcing or product offering	B. Consumer engagement	C. Collaborations/ collective action	D. Advocacy	E. Philanthropy
1. Implement programs that empower farmers and ranchers to implement best practices (e.g. grazing management plan, TNC row crop principles)	1. Consumer engagement (in-store). In-store promotions showcasing at sustainable products and ranches	1. Collaborate with USRSB and GRBS to advance objectives for industry	1. Collaborate with regulators to address legislation improvements and enforcements on environmental issues	1. Support efforts on rangeland monitoring tools, on-farm technology and conservation stewardship
2. Drive supplier engagement. Provide resources to suppliers for planning and program development	2. Develop transparency program and recommendations for suppliers	2. Align with NGOs, restaurants, industry on grain sourcing sustainability and pilots	2. Work with GR on Farm Bill rules that help ranchers/farmers and incentivize conservation	2. Support the scaling of integrated ranch planning
3. Identify and support rancher groups to improve sustainability and improve market access			3. Support climate change legislation and policy	3. Develop incentive programs for practice change
4. Increase % of sustainably certified or similar products				4. Support additional research on carbon sequestration and practice change

- Identified and evaluated a range of actions tied to one or more primary root causes of priority issues
- Prioritized actions based on expected impact and feasibility of implementation and ability to support other actions

- Assessed the current state of the industry and the issues faced
- Prioritized issues based on the perceived level of risk (severity of issue)

# Actions to Address Priority Issues

TNC developed a portfolio for the company that includes a mix of internal and external actions to address their priority issues

Internal		External		
A. Changes to sourcing or product offering	B. Consumer engagement	C. Collaborations/ collective action	D. Advocacy	E. Philanthropy
1. Implement programs that empower farmers and ranchers to implement best practices (e.g. grazing management plan, TNC row crop principles)	1. Consumer engagement (in-store). In-store promotions showcasing at sustainable products and ranches	1. Collaborate with USRSB and GRSB to advance objectives for industry	1. Collaborate with regulators to address legislation improvements and enforcements on environmental issues	1. Support efforts on rangeland monitoring tools, on-farm technology and conservation stewardship
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3. Identify and support rancher groups to improve sustainability and improve market access			3. Support climate change legislation and policy	3. Develop incentive programs for practice change
4. Increase % of sustainably certified or similar products				4. Support additional research on carbon sequestration and practice change

# Our Partnership Approach: Food Service Case Study

**Description:** To inform implementation of company's GHG reduction goals, TNC and the University of Minnesota analyzed the company's beef supply chain and quantified baseline GHG emissions and potential GHG emissions reductions attainable from various mitigation actions. The beef supply chain is highly spatially variable, meaning different agricultural practices have different impacts in different places. The FoodS3 model explicitly incorporates this spatial heterogeneity, which enables specific, place-based estimates of the GHG footprint and the potential impact of mitigation opportunities.

## What We Did

Quantified baseline and mapped supply chain GHG reduction opportunities

## Output

Identified sourcing regions and associated GHG emissions, built roadmap of improvement opportunities to meet Science Based Target goal

## Outcomes *(in progress)*

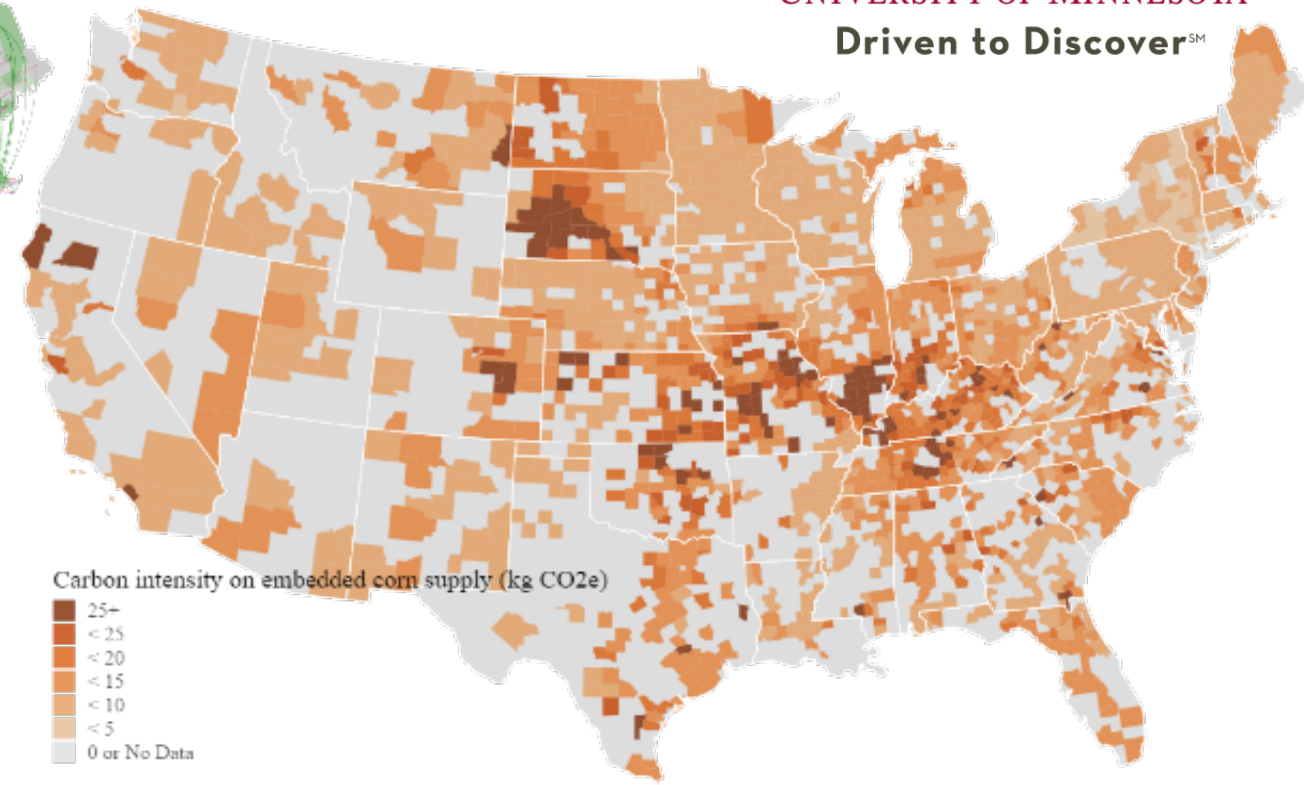
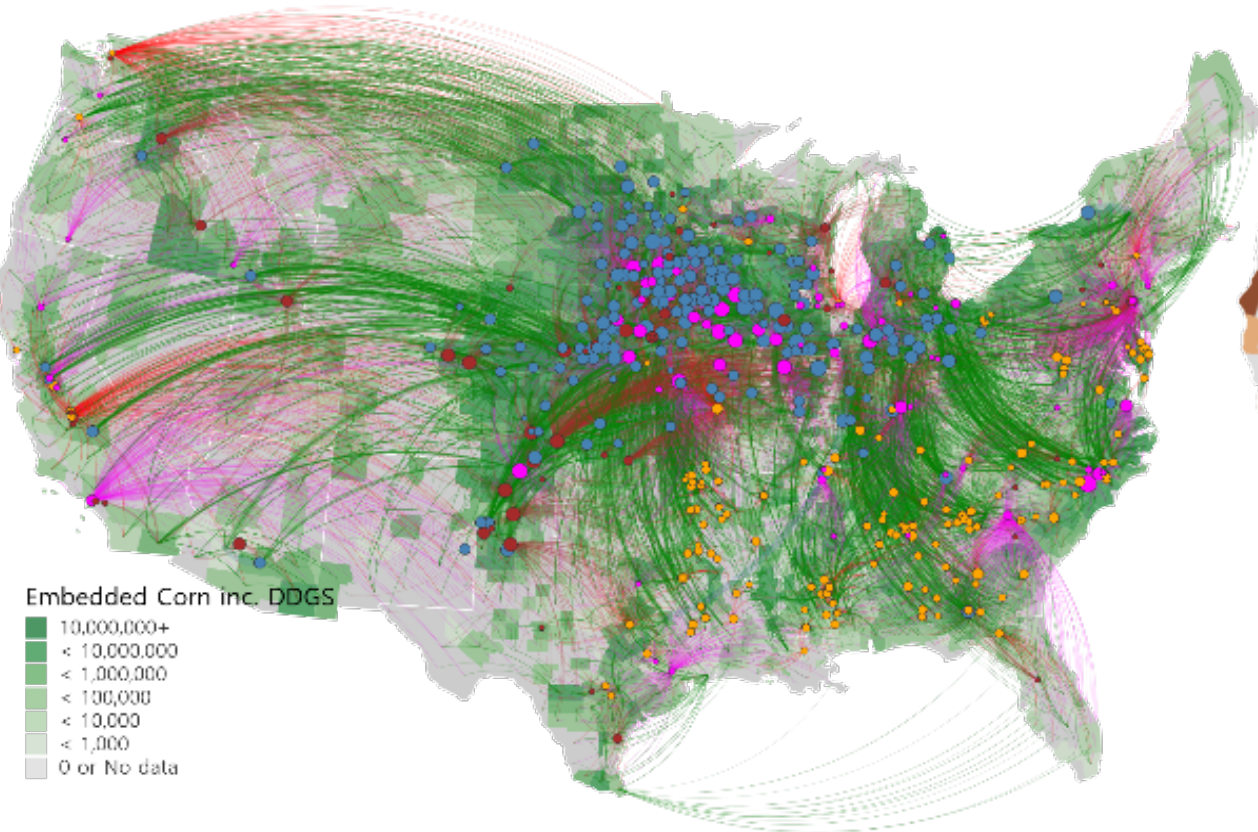
e.g., Supplier plans in place, resulting in potential for up to ~30% emissions reductions across supply

# FOODS<sup>3</sup>

## Food System Supply Chain Sustainability Model

NORTHSTAR INITIATIVE  
INSTITUTE ON THE ENVIRONMENT

UNIVERSITY OF MINNESOTA  
Driven to Discover<sup>SM</sup>



### Commodity flows:

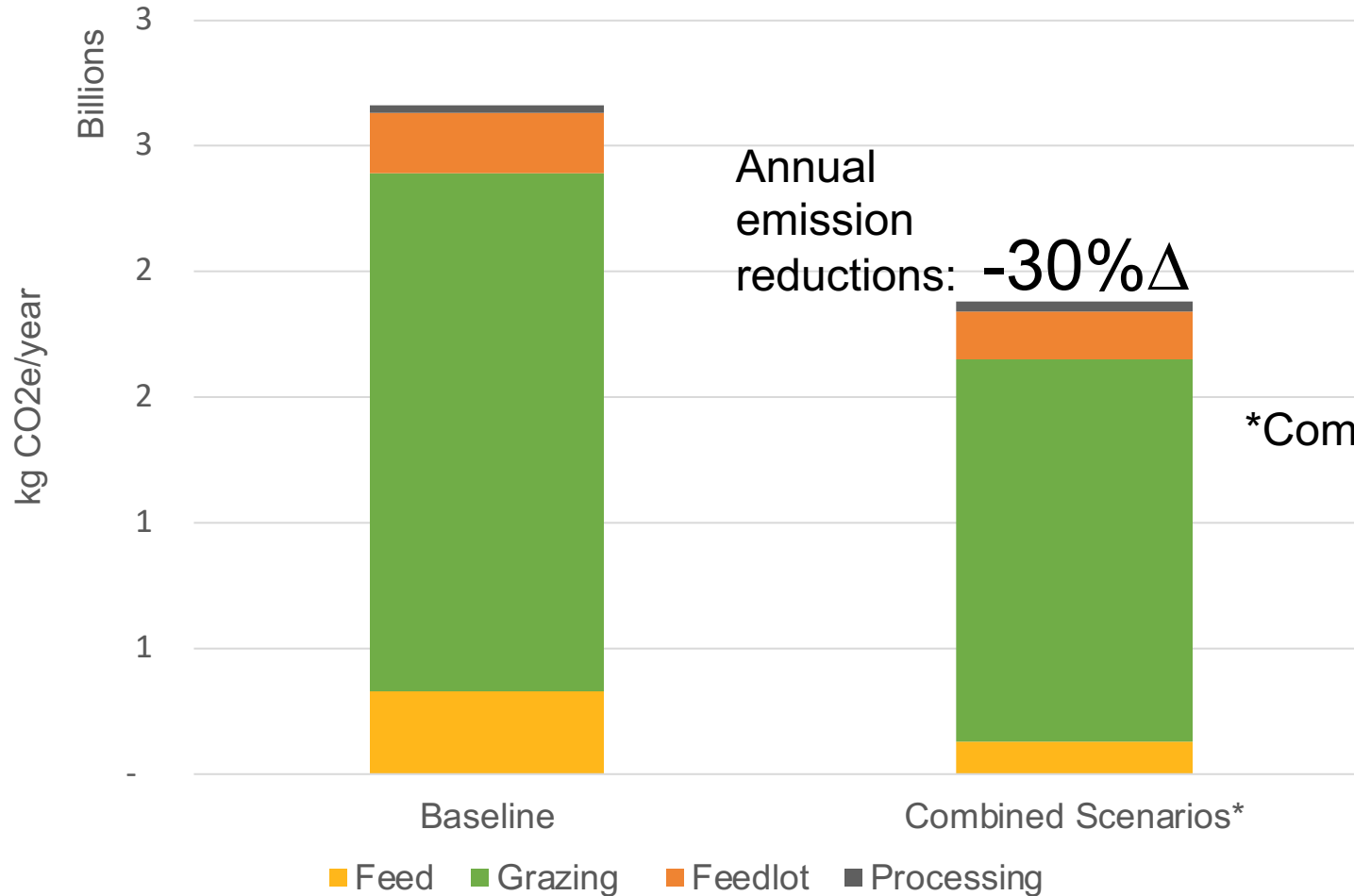
The movement and location of corn and cattle

### Spatially explicit environmental impacts:

Darker indicates higher GHG emissions per bushel

Example maps only

# Summary of Total Reduction Potential from Modeled Strategies



## Intervention Strategies

### Corn Feed:

- 4Rs of nutrient management
- Irrigation efficiency
- Cover crops
- No land use change
- No till

### Soymeal Feed

- No till
- Cover crops
- No land use change

### Grazing:

- Grazing management
- Riparian forest restoration
- Range planting
- Silvopasture in forest dominated areas
- AMP grazing
- Feed additives (3NOP)
- Feed composition

### Feedlot

- Feed composition
- Feed additives (3NOP)

### Processing:

- Energy efficiency
- Renewable grid

*TNC identified potential to reduce company baseline emissions by up to 30% by implementing combined best practices across the supply chain.*



# Our Partnership Approach: Ranch-level Case Study

**Description:** In 2010, TNC articulated a need to work at larger scales and across more area with less intensive engagements. Simultaneously, TNC and its grazing partner on its 14,000-acre Fox Ranch Preserve in eastern Colorado were recognizing the need for new approaches to develop and advance toward shared goals for conservation and business.

## What We Did

TNC developed and began to pilot an approach we now call Integrated Ranch Management Planning (IRMP) at the Fox Ranch

## Output

Increased stocking rate while improving habitat for greater prairie chickens; quantitative drought management strategies applied in 2012-2014 that limited business impact, protected the resource base, and reduced stress on livestock and our grazing partner; sustained improvements in plant community diversity and forage production were achieved within 3 years of launch.

## Outcomes

The IRMP approach developed at the Fox Ranch is now being used to improve outcomes on other TNC properties and partner lands and in the curriculums and guidance of other organizations

# Our Partnership Approach: Ranch-level Case Study

The **Fox Ranch** is recognized by Colorado Parks and Wildlife for providing among the best-known nesting and brood rearing habitat for greater prairie chickens in the state.

TNC and our grazing partner continue to use IRMP in the active pursuit of additional opportunities to improve outcomes on the Fox Ranch to benefit people and nature.



“  
I used to worry  
about how to pay  
the bills. Now I  
worry about how  
to make more  
profit.

— Fox Ranch  
Grazing Leasee



## Section 7 |

# Individual Guidance & References

# Contact Us

**Learn how  
The Nature Conservancy  
can help your company meet  
its sustainability goals.**

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