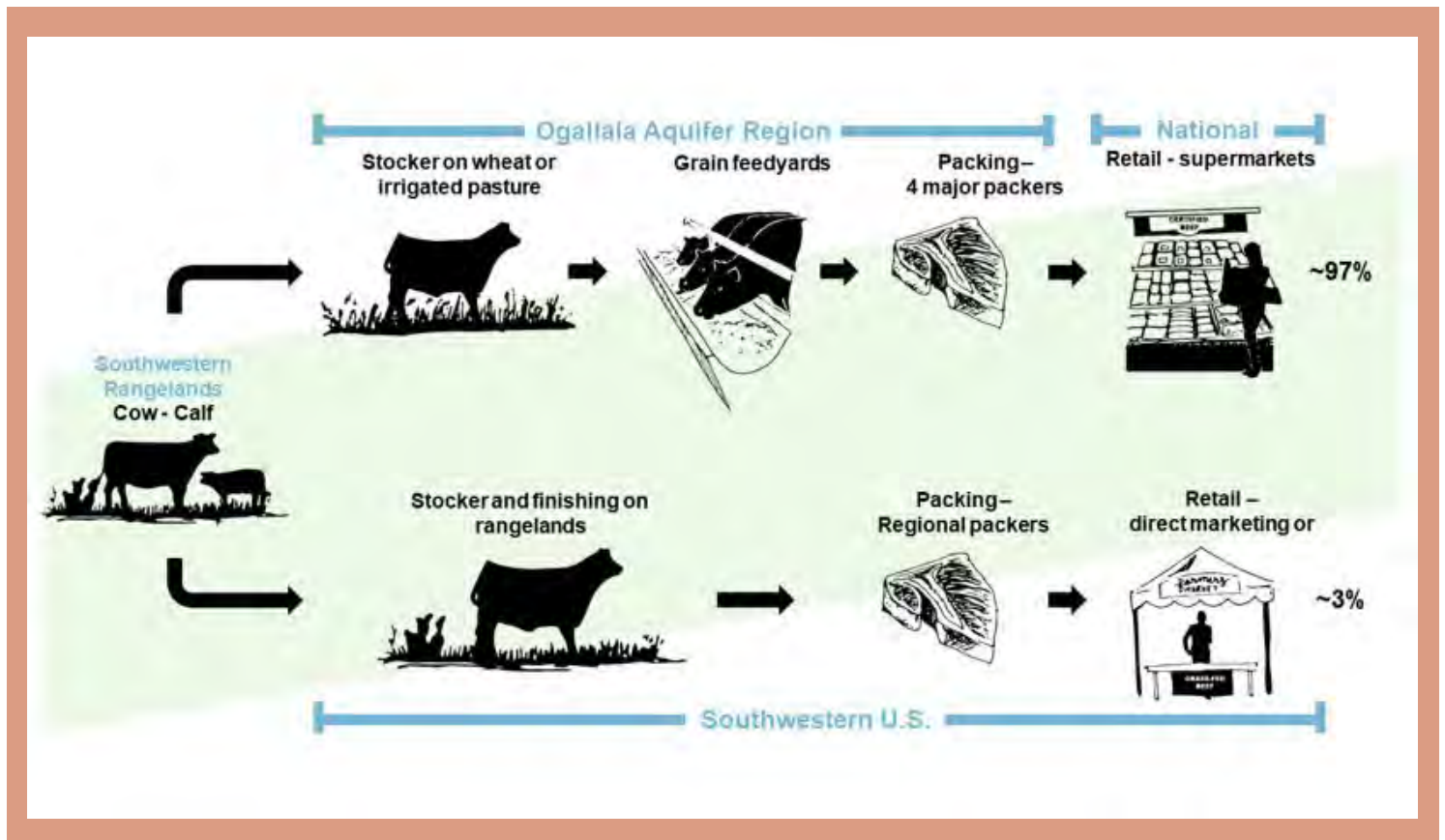


Supply Chain Options

From grazinglands to feedyards, US beef production systems are expected to meet new global beef demands while sustaining environmental quality. These opportunities and challenges are manifest in the American Southwest and Ogallala Aquifer region, neighboring regions connected ecologically and socially through beef production. Most calves raised on the extensive, arid pastures of the Southwest are exported to the Ogallala Aquifer region for finishing on grains. Intensification of changes in climate, vegetation, and human demographics threaten the sustainability of the bi-regional system.

Many US consumers perceive range finishing -- grass-finishing on rangeland -- as environmentally friendly, but much remains unknown about tradeoffs including: forage demands and greenhouse gas production of longer-living cattle, disruption of Ogallala Aquifer cattle feeding systems, and the time demands involved with niche marketing. The USDA-NIFA funded Sustainable Southwest Beef Coordinated Agricultural Project is working to fill these knowledge gaps to better understand the environmental and socio-economic outcomes of range finishing in the US Southwest, and how they compare with conventional supply chains.



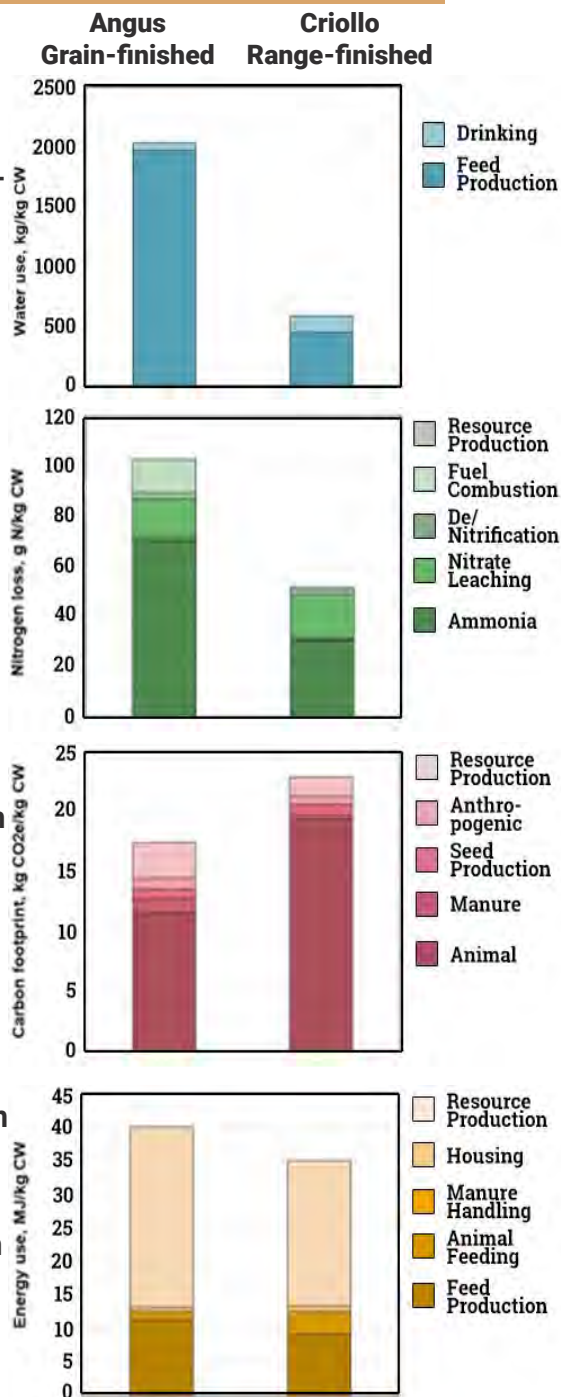
The Sustainable Southwest Beef team is evaluating Raramuri Criollo cattle, precision technologies, and tradeoffs among beef supply chain options from pasture to plate to enhance ranch and rangeland resilience in the Southwestern US. The project engages ranchers, educators, and students in collaborative research and Extension to develop a decision support dashboard and train the next generation of researchers and producers.



Sustainable Southwest Beef
 knowledge and tools for ranch and rangeland resilience

Integrated Farm System Model Analysis

The Sustainable Southwest Beef project is using the Integrated Farm System Model to compare the environmental footprint and profitability of range finishing vs. grain finishing production systems of the US Southwest. Model results are based on information about agricultural inputs and outputs collected from ranchers, backgrounders and feed yard finishers in the Southwest-Ogallala Beef Production Area. Model-simulated environmental and economic effects provide a measure of the long-term sustainability of the production systems, so that tradeoffs can be quantified and compared.



The model was used to compare the environmental footprints and net returns of range finishing Raramuri Criollo cattle on southern New Mexico rangeland vs. cow-calf production of Angus x Hereford on the same rangeland, with calves exported to the Ogallala Aquifer region for grain finishing. Preliminary results in the bar graphs above indicate differences in environmental footprints. Net returns are not shown here. Visit swbeef.org/ supply for more information.

Bi-regional Telecoupling Analysis

Even if Integrated Farm System Model results suggest that finishing on range has a smaller environmental footprint and greater profitability than grain finishing, a full understanding of sustainability outcomes will require identifying how widespread adoption of range finishing in the Southwest would affect the Ogallala Aquifer region, and how changes in the Ogallala Aquifer region (such as aquifer depletion) would affect the Southwest.



To fill these knowledge gaps, a telecoupling analysis is addressing three key questions:

1. What is the magnitude of inter-regional flows of cattle, grains, dollars, and manure nutrients associated with beef production systems in the Southwest-Ogallala Aquifer Production Area?
2. How do flows interact with social-ecological systems in the Southwest and Ogallala Aquifer regions?
3. How would social-ecological systems in the two regions, and linkages between them, change due to widespread adoption of range finishing, and further depletion of the Ogallala Aquifer?

Collaborators and Stakeholders



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