



# Sustainable Southwest Beef

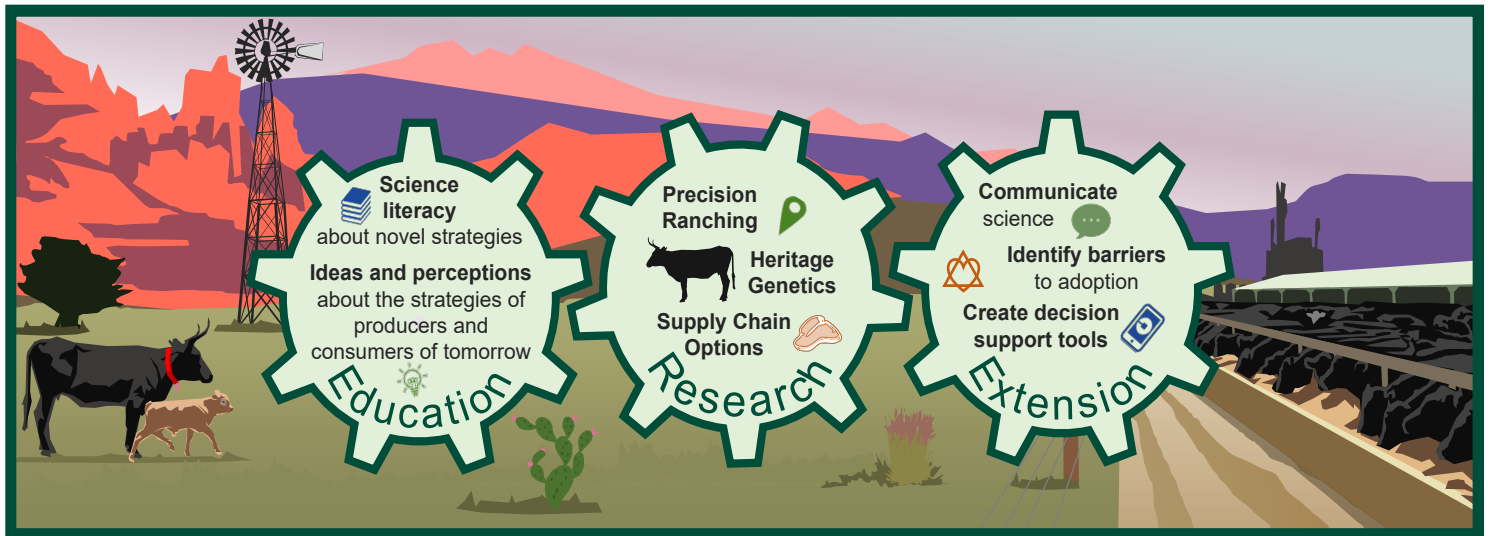
knowledge and tools for ranch and rangeland resilience

The Sustainable Southwest Beef Coordinated Agriculture Project (CAP) is a five-year (2019-2024) USDA-NIFA funded project that promotes ranch and rangeland resilience in the Southwestern US. The diverse team is evaluating:

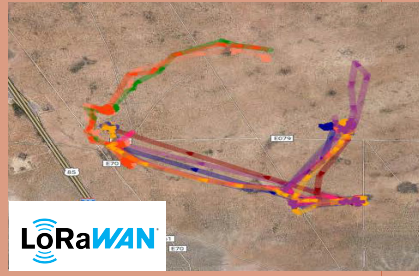
1. Heritage Raramuri Criollo cattle,
2. Precision ranching technologies, and
3. Supply chain options

as strategies to help keep ranching and rangelands ecologically and economically healthy as climate, markets, and policies change.

- Assessing the economics, viability, ecological factors, and tradeoffs associated with the three strategies for sustainable beef production on Southwestern rangelands.
- Creating lesson plans for K-12 education that center around sustainability in beef production.
- Engaging ranchers, educators, and students in collaborative research and extension to develop and train the next generation of researchers and producers.
- Developing the “Southwest Beef Knowledge System” to share the science in an on-the-ground and user-friendly form.



For more information about this project and our diverse members, or to sign up for our quarterly newsletter, please visit [southwestbeef.org](https://southwestbeef.org)  
Funded by USDA National Institute of Food and Agriculture, Agriculture and Food Research Initiative's Sustainable Agricultural Systems (SAS) program. Grant #2019-69012-29853



**Heritage Genetics:** Raramuri Criollo cattle have undergone natural selection for generations to thrive in the harsh environments of Mexico's Copper Canyon. Preliminary research suggests that Raramuri Criollo travel greater distances from water, spend more time traveling, and appear to experience less heat stress, while maintaining weight and body condition, compared with breeds commonly used in the Southwest. Ranchers have observed and research also suggests that smaller framed and more mobile Raramuri Criollo may have a lower impact on sensitive soils and vegetation, and exhibit desirable reproductive and mothering characteristics. Our team is studying landscape use, behavior, and production economics of Raramuri Criollo at five ranches: Evergreen Ranching and Livestock in South Dakota, Dugout Ranch in Utah, Corta Madera Ranch in California, and the Jornada Experimental Range and Chihuahuan Desert Rangeland Research Center in New Mexico. There are cooperating sites in Mexico, Argentina, and Uruguay. We are additionally exploring the potential for producing crossbred calves from Criollo dams and British breed sires.

**Precision Ranching Technologies:** Precision ranching (PR) includes the use of sensors for automated monitoring of livestock and other important components of ranching such as stock tanks, drinkers, and rainfall. Precision systems are fairly common in croplands and in intensive animal agriculture but are rare in extensive ranching operations. A well-calibrated, user-friendly PR system could aid ranchers in making rapid decisions to address issues of animal health and forage shortage. The Sustainable Southwest Beef team will develop and test a precision ranching system able to log, transmit, and analyze animal, weather, and drinker sensor data in close-to-real time using a Long Range Wide Area (LoRa Wan) network. LoRa WAN is well suited for rangelands. It is currently being used in extensive pastoral systems of the Scottish Highlands by scientists at Scotland's Rural College who are key collaborators on this project. Costs and savings from this technology will be assessed to determine the pros and cons of implementing a PR system on commercial ranches. With this understanding of cost savings and feedback from participating ranchers, a market-ready product is expected to be available by 2026.

**Supply Chain Options:** From grazinglands to feedyards, US beef production systems are striving to meet new global demands while sustaining local profitability and environmental quality. These opportunities and challenges are manifest in four regions of the United States connected ecologically and socially through beef production: the Southwest, Ogallala Aquifer region, Northern Plains, and Upper Midwest. Most calves raised on the extensive, arid pastures of the Southwest are exported to the Ogallala Aquifer region for finishing on grains grown locally or imported from the Upper Midwest. However, changes in climate, vegetation, and human demographics threaten the sustainability of this regionally-interconnected system. We are working to understand plausible scenarios of change - depletion of Ogallala Aquifer water, sustained social distancing experienced in 2020, and increases in adoption of grass-finishing cattle on ranches of the Southwest or Northern Plains - and what those scenarios mean for long-term sustainability. We are building knowledge to help beef producers, consumers, and other stakeholders plan for a sustainable future.

