

# Raramuri Criollo

*Old genetics for new landscapes*



"The reason we have started to switch over to Criollos is they appear so far to be much more adapted to the fragile nature of our high desert country."

Rob Paulin

Corta Madera Ranch

## ***Why Raramuri Criollo?***

Raramuri Criollo is a *Bos taurus* biotype with characteristics that are showing promise for profitable and sustainable production in the arid US Southwest. On-ranch research has shown that compared with breeds commonly used in the Southwest, Raramuri Criollo travel greater distances from water, spend more time grazing and traveling, forage on low-quality grasses, and appear to experience less heat stress - while gaining weight and maintaining desirable body condition.

Raramuri Criollo is one of 33 known biotypes of heritage Criollo cattle that exist throughout the Americas today. The Tarahumara communities of the Copper Canyon of Chihuahua, Mexico have raised Raramuri Criollo cattle in fairly isolated locations for close to four centuries. These cattle have undergone natural selection to adapt to the harsh and variable environment of the Copper Canyon while receiving minimal modern-day animal husbandry inputs. Their potential to produce beef sustainably in the Southwestern US and elsewhere is being explored by the USDA-NIFA funded Sustainable Southwest Beef Coordinated Agricultural Project.

Rancher observation and research suggest that Raramuri Criollo have the following characteristics:

- Improved distribution and efficiency during foraging
- Hardy, self-reliant and suited to arid environments
- Lower impact on sensitive soils and vegetation
- Quality carcass from all-forage diet
- Protective mothering styles
- High fertility and longevity
- Mild temperament
- Small calves



## ***What About the Bottom Line?***

The USDA Jornada Experimental Range imported Raramuri Criollo cattle from Mexico in 2005. Economists at New Mexico State University conducted a case study to compare economics of production and marketing of the Raramuri Criollo herd (range-finished) vs. Angus-Hereford herd (cow-calf) at the Jornada.

The enterprise budgets were developed using known costs for running a cow/calf ranch with grazing capacity of 150-AUY (on BLM, state, and private lands) and input costs for raising the two herds at the Jornada. Key inputs to the budgets were the more widespread foraging of the Raramuri Criollo and the documented success in the Southwest grass-fed meat market with positive consumer acceptance of meat quality and flavor.

## ***Potential for Added Grazing Capacity***

The NMSU economists found that selection of the production enterprise is a toss-up when 5-year average beef prices were considered. With the budget assumptions, the typical Angus x Hereford enterprise only nets \$1,327 more than the Raramuri Criollo enterprise, a small amount when compared to total livestock sales for the enterprise (\$78,014). Importantly, the improved grazing distribution of Raramuri Criollo cattle would need to add only 17 AUY (11% increase in carrying capacity) before net returns would be equivalent. Studies on landscape use suggest a 62% increase may be possible. The added grazing capacity from improved livestock distribution is the major benefit of Raramuri Criollo cattle production. Another price factor is the strong demand for Raramuri Criollo breeding animals. More information on enterprise budgets can be found at [swbeef.org](http://swbeef.org).

## ***The Ranches***



Further research about landscape use, behavior, and production economics of Raramuri Criollo is taking place 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.



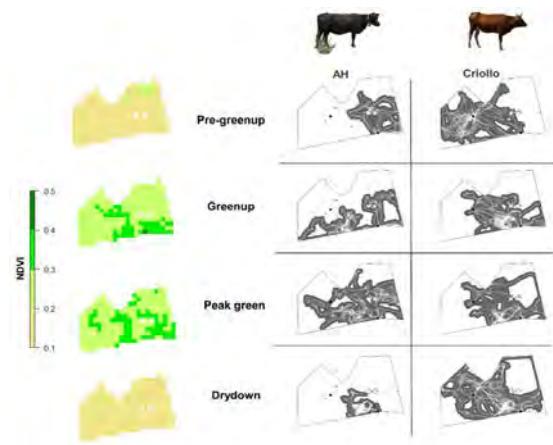
**Sustainable  
Southwest Beef**

Knowledge and tools for ranch and rangeland resilience

## Promising Spatial Distribution of Raramuri Criollo When Pasture Resources are Scarce

Results of three studies conducted in different pastures in different years corroborate observations from Criollo ranchers that Raramuri Criollo cattle have behavior and landscape use that differ in important ways from the cattle types used widely in the Chihuahuan Desert. In particular, results support conjectures about the heritage breed having a wider spatial distribution during drier seasons, greater daily mobility, superior heat tolerance, and lower impact on resources of concern.

If the landscape use and behavioral patterns documented here are consistent in a wide range of conditions, stocking desert pastures with the heritage breed instead of conventional breeds may help producers more effectively advance the sustainability of agriculture by meeting dual goals of agricultural production and natural resource conservation.



Pattern of broader landscape use when pasture resources are scarce has been recorded in different arid environments and different years in West-central Chihuahua in 2005, and in Southern New Mexico in 2006 and 2008 (studies can be found at [swbeef.org](http://swbeef.org))

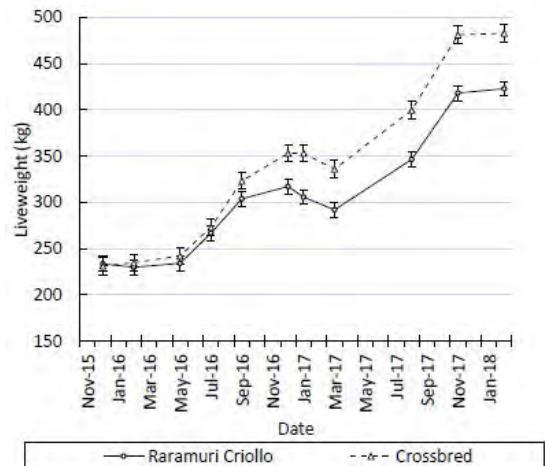
"The criollo is a very efficient cow on the land. They're super efficient grazers and converters of grass and other forages into high-quality meat."  
Cindy Tolle  
Evergreen Ranching & Livestock



[swbeef.org/genetics](http://swbeef.org/genetics)

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## Live Weight Gains – Purebreds and Crossbreds



Live-weight gains of Raramuri Criollo (n=11) and Criollo Crossbred (n=9) steers. All were finished on rangelands.

## Carcass Quality – Purebreds and Crossbreds

	Raramuri Criollo	Criollo Crossbred
Hot carcass weight (kg)	220	265
Cold carcass weight (kg)	210	254
Ribeye area (cm <sup>2</sup> )	56	61.7
Marbling score	452	456
Preliminary yield grade	2.3	2.4

Carcass quality of the Criollo (n=11) and Criollo x Brangus (n=9) crossbred range-finished steers shown above.

## Collaborators and Stakeholders



Climate Hubs  
U.S. DEPARTMENT OF AGRICULTURE