



Use of Newly Acquired, Tropically Adapted Germplasm in Integrated Production Systems to Improve Beef Cattle Trade Between Mexico and the USA

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BOTTOM LINE

Ancient African and old Latin American Criollo cattle breeds may provide the long sought combination of tropical adaptation and desirable carcass characteristics in production systems transcending the USA-Mexico border.

Summary

- Evaluation of newly acquired germplasm from African Tuli and Mexican Criollo cattle is currently underway in Mexico.
- Use of the genotypes is expected to yield efficient and profitable integrated production systems, in stressful environments.
- Improved beef cattle trade between Mexico and Texas is envisioned, as the project will allow provision of appropriate breeding stock for Mexico and quality steers for the USA

Introduction

Around one million Mexican steers are exported to the USA annually and beef cattle production is increasingly interconnected across the border. However, the problems of matching breeding stock to severely stressful environments in Mexico and producing quality steers for the USA market persist. Tropical beef cattle withstand heat, disease and nutritional stressors well, but have low productivity due to slow maturation, long calving intervals and variable beef quality. On the contrary, fast growing European breeds produce either large cuts or quality beef, but do not thrive under harsh conditions prevalent to the border region. Identification, assessment and evaluation of genotypes, which combine tropical adaptation with high marketability of male progeny in the USA, remain the major constraints to improved productivity in USA-Mexican beef systems.

Recent acquisitions of germplasm from tropically adapted African Tuli and Mexican North Pacific Coast Criollo cattle both show potential for providing the vital combination of long sought traits. Tuli cattle are early maturing, medium-sized with excellent beef conformation and have desirable carcass characteristics. They are easy calvers, well adapted to semi-arid conditions and resistant to heat and ticks.

Experimental Approach

Scientists at the Texas Agricultural Experiment Stations (TAES) in Uvalde and Overton are collaborating with colleagues at the Mexican National Institute for Agricultural Research (INIFAP) and the Foundation for Livestock Research in the State of Sonora (PATROCIPES). A series of multi-disciplinary and interconnected experiments are in progress for evaluation of newly acquired beef cattle germplasm that shows promise of tropical adaptation with production of uniform, quality beef for the U.S and Mexican markets. This recently initiated project has ongoing research activities in three Mexican states with different tropical environments and activities are being planned in a fourth state (Table 1). The newly acquired genotypes, Tuli and Mexican Criollo, are being contrasted with European and Zebu breeds. At least two sire breeds and 10 bulls per breed will be compared and evaluated in each of the four tropical environments.

Crossbreeding schemes, utilizing artificial insemination of Tuli semen and locally acquired semen from at least one additional breed, were applied to cow herds in the three locations and the first calf crop will be born during the latter half of 1998 (Table 2.). Different estrous synchronization schemes are being used in Sonora, Chiapas and

Tamaulipas with the aim of establishing a practical management regime for effective use of A.I. under extensive conditions. Reproductive performance of the dams and female progeny and adaptability of the progeny to the tropical environments will be evaluated on pasture. Steers will either be exported (Sonora, Jalisco) to Texas and/or remain in Mexico (Tamaulipas, Chiapas) for evaluation of performance during growing and finishing phases and carcass characteristics.

It is hypothesized that crossbred Tuli and Mexican Criollo cattle will improve productivity by increasing sustainability of the beef cattle systems and contributing to high quality beef production and steers with desirable characteristics for export to the USA. Germplasm from other African and Criollo breeds are also becoming available and plans are to incorporate those into the project for evaluation during future breeding seasons.

Table 1. Participating Mexican states, environments and herd locations.

Location	Climate	Herd location
Sonora	Arid tropical	On station and on 3 ranches
Chiapas	Humid tropical	On 2 ranches
Tamaulipas	Sub-humid tropical	On 11 ranches
Jalisco ^a	Semi-arid and sub-tropical	Planned to be on 1-2 ranches

^a to be initiated in 1998.

Table 2. Research activities through Apr, 1998.

Location	Dam breed	Sire breed	Breeding seasons	Cows bred	Estrous synchronization
Sonora	Charolais x Zebu	Tuli and Angus	1	160	Yes
			2	235	Yes
Chiapas	Brahman	Tuli, Mexican Criollo Angus and Brahman	1	250	Yes
			2	250	No
Tamaulipas	Simmental	Tuli and Fleckvieh	1	240	Only anestrous cows