The cattle industry in Texas is facing a crisis due to doubling of fertilizer, grain, and fuel costs. New and better forage management practices must be developed to reduce input costs for cow-calf producers and stocker operators. Pasture systems for cow-calf producers must incorporate legumes that provide nitrogen for companion grasses and added nutritive value to forage, resulting in higher animal performance.

Higher feed costs are pressuring feed lot profits and causing feed lot owners to want heavy-weight stockers (750–850 lb) to reduce the feeding period. The stocker phase between weaning (450–550 lb) and the heavy-weight stocker desired by the feed lots is an opportunity for low cost gains on legume-based pasture that will keep the cow-calf and feed lot phases profitable. Traditional post-weaning stocker programs such as wheat pasture may be less available due to high grain prices.

Forage legumes offer the greatest potential for the stocker phase because they do not require nitrogen fertilizer and have higher nutritive value than grasses. Forage legumes, through symbiosis with Rhizobium bacteria, can convert atmospheric nitrogen to forms usable by plants and animals. Grazing legume-based pastures also enhances nutrient recycling since over 90% of the nitrogen, phosphorus, potassium, and other plant nutrients in the consumed forage passes through the animal and is excreted back on the soil in the urine and feces. When these nutrients are taken up by the forage they can be grazed and recycled again.

Process
- Forage legume and grass genetic resources will be screened for adaptation, water use efficiency, pest resistance, and forage nutritive value.
- New, efficient beef production systems will be developed and evaluated to target the development of heavy, healthy calves ready to enter the feed lot weighing from 750 to 850 lbs.

Objectives
- Elucidate the components of current beef production systems that limit profitability for both the cow-calf and stocker operator.
- Develop new forage cultivars, including high nitrogen fixing forage legumes (to reduce or omit commercial nitrogen fertilizer) and high plant nutrient efficiency grasses.
- Develop improved management systems to incorporate the new forage cultivars into profitable and sustainable beef production systems that conserve natural resources and provide a constant supply of healthy U.S.-produced beef.

Outcomes
- Sustainable beef and forage management systems that produce more beef per acre with less input costs.
- Development of productive, high-efficiency forage cultivars designed for the critical stages of Texas beef production.