

# Managing Livestock Nutrition Under Variable Stress Environments



## Conservation Stewardship Program

### United States Department of Agriculture (USDA) — National Resources Conservation Service (NRCS)

The Conservation Stewardship Program (CSP) helps agricultural producers maintain and improve their existing conservation systems. Through CSP, participants take additional steps to protect resources on their land—including soil, air, water, habitat and energy conservation and earn CSP payments for their effort.

## Grazing Animal Nutrition Laboratory (GAN Lab) - Texas A&M AgriLife Research

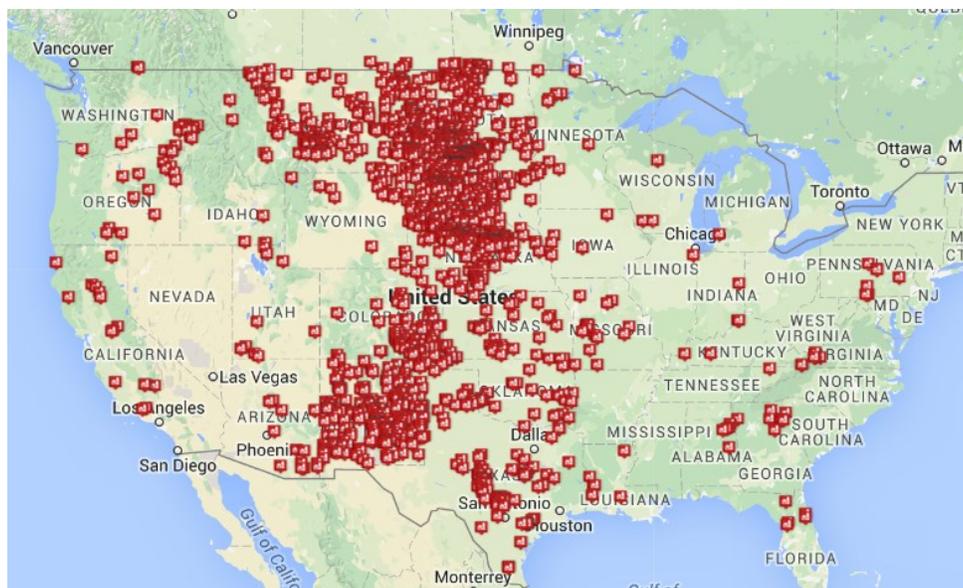
The GAN Lab, offers diagnostic analysis and decision support software that is used as a nutritional monitoring program for grazing livestock. The lab is a part the Center for Natural Resource Information and Technology (CNRIT), located at Texas AgriLife Research | Blackland in Temple, TX.



### ⇒ Contributing to the Conservation Stewardship Project

The GANLAB provides rapid assessment to determine the nutritional quality of forage the livestock are eating using **Near Infrared Reflectance Spectroscopy (NIRS)** scans of livestock manure. The manure samples are sent to the lab and are scanned to assess forage quality indicators. This information is then entered into the **Nutritional Balance Analyzer (NUTBAL PRO)** decision support software to determine nutritional deficits and provide producers with information on supplemental feeding options. Reports sent to the producer can aid in conservation decisions on grazing management and animal well-being. If a producer sends in 6 or more samples per year then they are eligible for one of many CSP payments encouraging safe and responsible conservation decisions.

The GAN Lab receives samples from across the country each year.



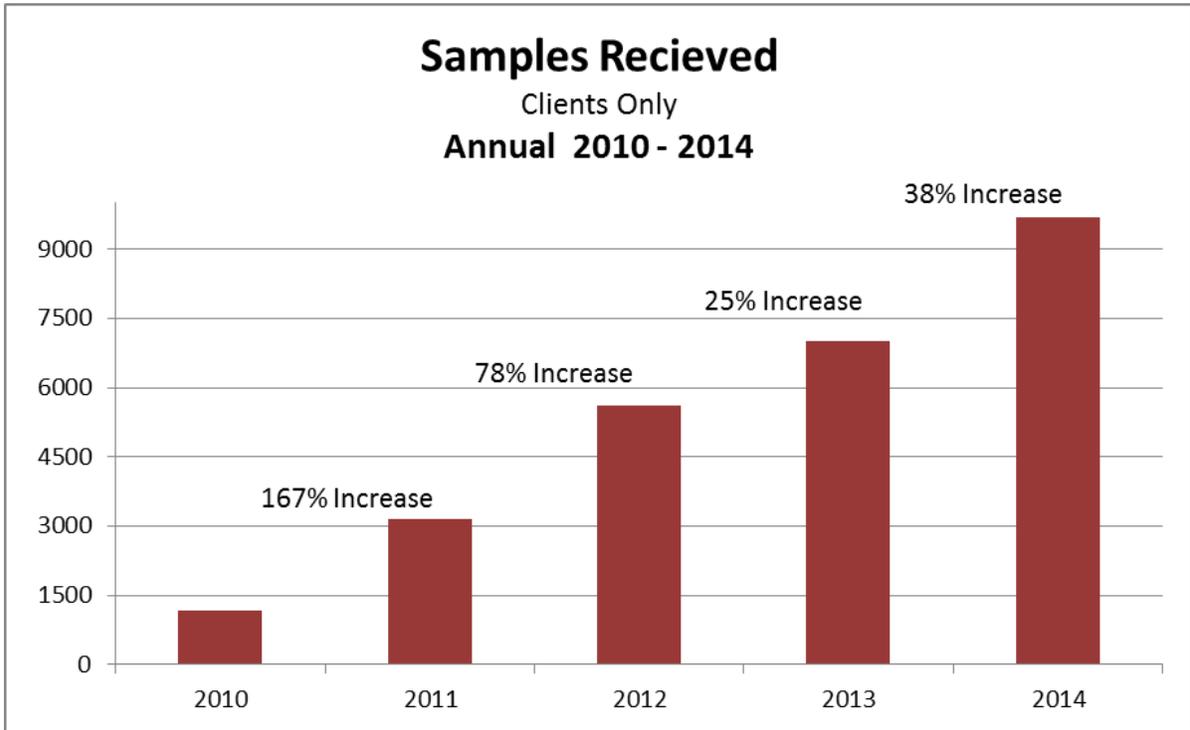
# Technology

- **NIRS** — The NIRS process involves exposing a dried, ground manure sample to light energy. The intensity of reflectance is measured and is influenced by number and type of chemical bonds in the manure. Forages of different qualities have variation in the number and type of chemical bonds. The scans are statistically compared to reference samples of known quality, thus allowing the GAN Lab to predict the quality of forage the livestock is eating.
- **NUTBAL PRO** — This computerized decision aide uses the animal description, body condition, forage conditions, supplemental feed, environmental conditions, and NIRS results on forage quality to produce a nutritional balance report. Such reports can be used to maximize animal weight gain, minimize costs and proactively identify and address problems.



- Knowing the nutritional status of the livestock can help producers make informed decisions for better management of drought situations and feed supplementation. NUTBAL helps identify when, what, and how much to feed to maximize the cost effectiveness of winter feeding programs, drought supplementation, or grazing/feed management to meet production goals.
- Monitoring herd nutrition allows for better management of body condition helping to improve herd productivity. Animals receiving good nutrition are better able to resist and overcome disease and other health issues.

The USDA-NRCS has promoted this technology for their Conservation Stewardship Program. As a result the number of samples has increased 30-40% each year since 2010. The lab serves over 1800 producers.



The NIRS/NUTBAL Pro technology has been a major component of the **Livestock Early Warning System (LEWS)**. LEWS monitors livestock forage quality and quantity to aid in risk management decision making for nutrition, livestock health, and food security of humans in East Africa and Mongolia. LEWS is integrated with a near real time water monitoring system in East Africa to complement and enhance early warning for forage conditions and potential drought.

