Managing Soil Health for Sustainable Rangelands
The Samuel Roberts Noble Foundation
“The land must continue to provide for our food, clothing and shelter, long after the oil is gone ...”

- Lloyd Noble
Plant Biology
Forage Improvement
Agriculture
FORAGE365
Year-round Grazing for the Southern Great Plains
FORAGE365: Pillar Species

- Alfalfa
- Winter Wheat
- Tall Fescue
- Bermudagrass
FORAGE365: Objectives

Establish sustainable year-round forage systems for the Southern Great Plains.

Improve forage productivity, production profitability and soil and water quality and sustainability.
Harnessing Root Endophytes (Microbes) to Improve Nutrient Acquisition and Utilization in Wheat and Bermudagrass

Objectives:
1. Identify Bacterial & Fungal Microbiome associated with plant/soil interface
2. Screen isolated bacteria and fungi for plant growth-enhancing and nutrient acquisition properties
3. Introduce these potentially beneficial microorganisms into production environment
Multidisciplinary Approach

- Livestock
- Pasture and Range
- Wildlife and Fisheries
- Agricultural Economics
- Soils and Crops
- Horticulture
Purposeful Outcomes Derived from Producer Driven Feedback
Producer Feedback

Soil Health & Cover Crops

Best option to generate revenue if implemented

What combinations to plant in Southern Great Plains

Equipment and management best suited (i.e. no-till, weed control, crop interactions)

Water utilization and impacts on cash crop
Title: Evaluate the use of summer cover crops on winter pasture production established either clean till or no-till

Objectives: 1) Compare the effects of summer cover crops, grazed and un-grazed, on winter pasture production in clean-till and no-till systems

2) Evaluate the impact of summer cover crops on soil moisture retention, nutrient stratification, soil bulk density and soil health in clean-till and no-till winter pasture crop production

3) Evaluate the profitability of the addition of cover crops to a winter pasture system under grazing.
Finding Answers: Collaboration

Title: Cover Crop Seed Segregation Project

Collaborators: North Central Texas College & Noble Foundation
(Green Cover Seed donated seed)

Objectives:
1) Determine seed varieties best suited for pasture land in Southern Great Plains in pasture.
2) Imitate potential cover cropping systems within common pasture management programs for the region.
   1) Bermuda (hayed)
   2) Bermuda (grazed)
   3) Native (grazed)
   4) Native (ungrazed)
3) Provide a resource for others to observe an array of cover crop plant varieties in pasture lands
Noble Foundation
Centers of Excellence

Center for Pecan and Specialty Agriculture Development and Technology Advancement

Center for Advanced Agricultural Systems and Technology

Center for Land Stewardship

Center for Economic Information and Analysis
Initiated in 2013, Farm Foundation, NFP and the Noble Foundation initiated the Soil Renaissance to advance soil health and make soil health the cornerstone of land use management decisions.

**RESEARCH**
Convene the research community to advance soil health.

**MEASUREMENT**
Incorporate soil health measures into standardized soil testing that is readily available, affordable, and commercially viable.

**ECONOMICS**
Quantify the effects of soil health on economic risks and returns.

**EDUCATION**
Reawaken the public to the importance of soil health.
As I look around at the strides that have been made in our research laboratories, as I look at the things undreamed of a few years ago...the only degree to which we have reached the end of the road of opportunity is the degree to which we have exhausted the imaginative capacity of the human mind.

- Lloyd Noble
Jan. 22, 1948