

Managing Soil Health for Sustainable Rangelands

The Samuel Roberts Noble Foundation



70TH
ANNIVERSARY

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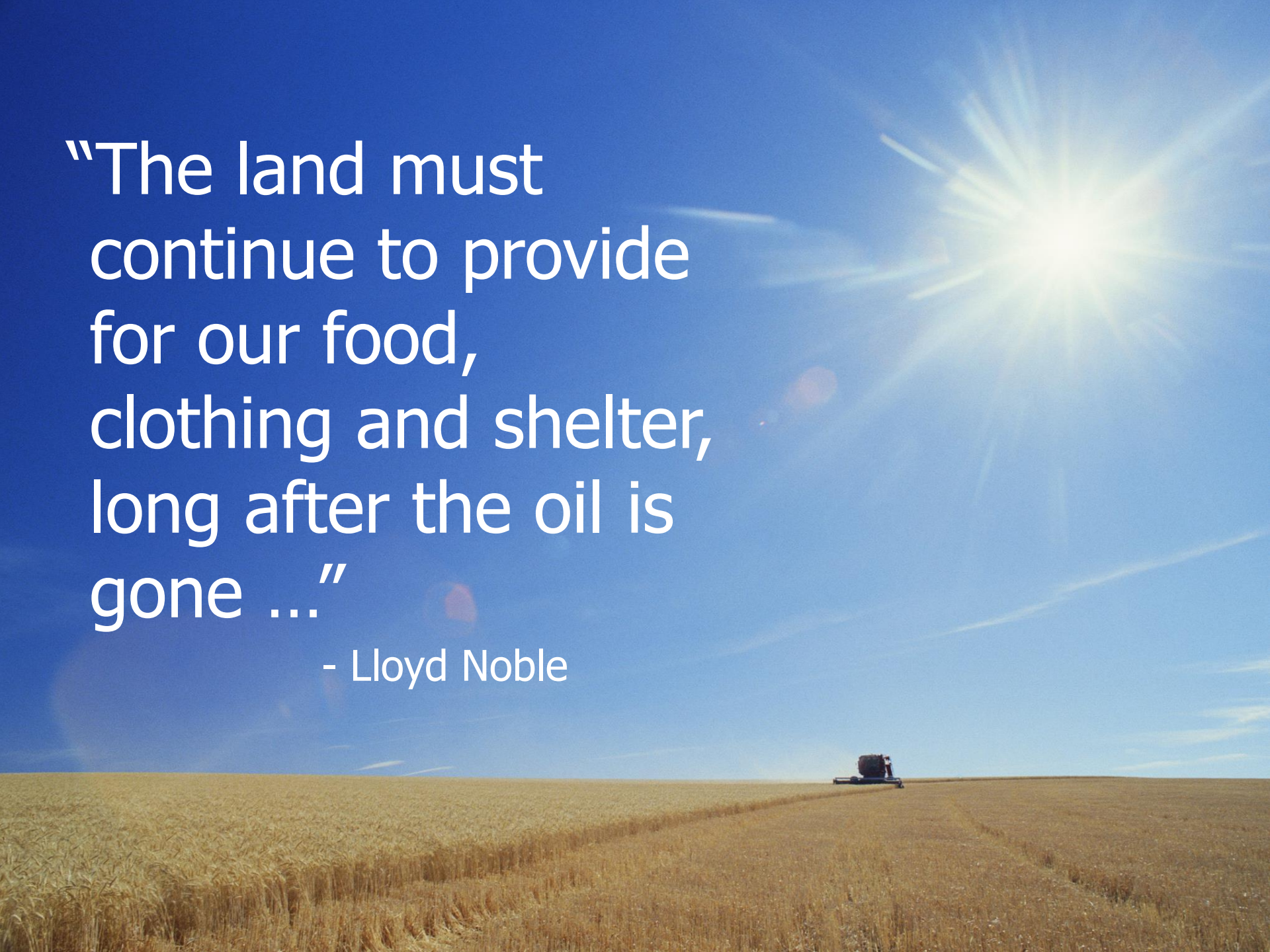
Lloyd Noble
1896-1950

1930s



“The land must
continue to provide
for our food,
clothing and shelter,
long after the oil is
gone ...”

- Lloyd Noble



An aerial photograph of a university campus. The central focus is a large, modern building with a prominent glass and brick facade. Surrounding it are several other brick buildings, parking lots with cars, and green spaces. A winding road and a pond are visible in the foreground. The text 'Plant Biology', 'Agriculture', and 'Forage Improvement' is overlaid on the image in white, sans-serif font.

Plant Biology
Agriculture
Forage Improvement

FORAGE365

Year-round Grazing for the
Southern Great Plains



FORAGE365: Pillar Species



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.*

FORAGE365: Soil Health Specific

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

Producer Relations



Multidisciplinary Approach



Livestock



Pasture and Range



Wildlife
and
Fisheries



Agricultural
Economics



Soils and Crops



Horticulture

Technical



Planned



Strategic



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

Finding Answers: Research

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**

SOIL RENAISSANCE



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.



SOIL HEALTH
— INSTITUTE —



SOIL HEALTH

— INSTITUTE —

UNIFY. RESTORE. PROTECT.



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

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