

Improving Soil Health in Pecan Orchards

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To assist farmers and ranchers as
they regenerate the land in a
profitable manner





Soil Health Principles



Know Your Context



Cover The Soil



Minimize Soil Disturbance



Increase Diversity



**Maintain Continuous Living Plants/
Roots**



Integrate Livestock

Know your context

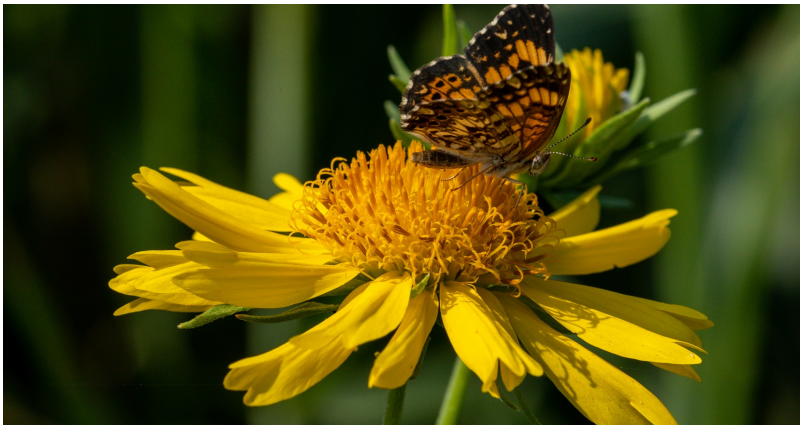




Cover the soil

A man wearing an orange shirt and a cap is operating a red Kubota M9000 tractor in a field. The tractor is equipped with large, treaded tires and a front loader. The background shows a cloudy sky and a line of trees. The text "Minimize soil disturbance" is overlaid in white on the image.

Minimize soil disturbance



Increase diversity

Maintain
continuous
living roots



Integrate
livestock





Regenerative Management of Noble Orchards



Cover The Soil

- Planting cover crops
- Maintaining ground cover



Minimize Soil Disturbance

- No application of herbicides



Increase Diversity

- No application of pesticides
- Installation of bat houses
- Plant diversity → Attracts beneficials



Maintain Continuous Living Plants/Roots

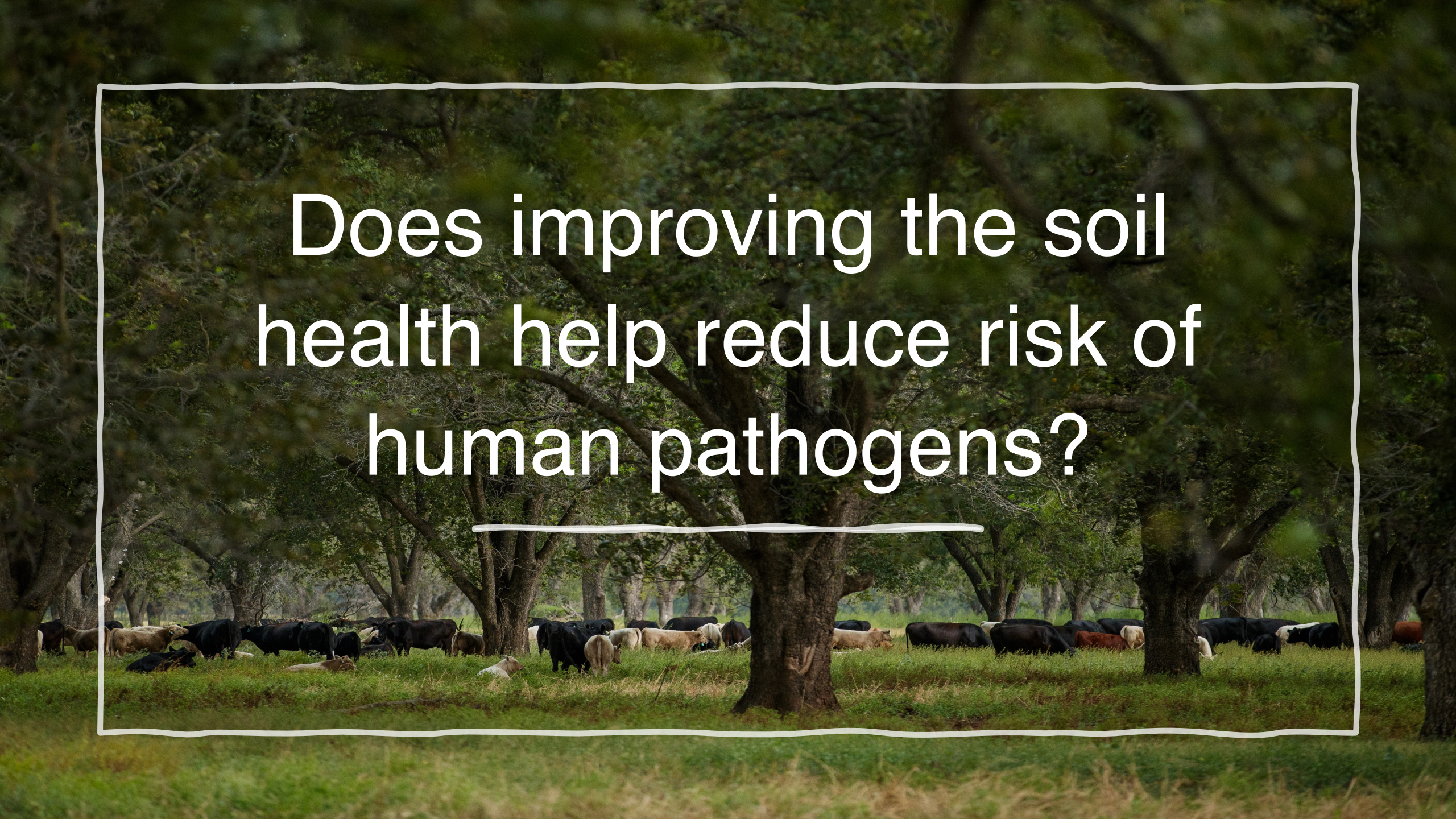
- Cover crops and perennials



Integrate Livestock

- Multispecies AMP grazing

Does improving the soil health help reduce risk of human pathogens?



A close-up photograph of a large pile of pecans, showing their characteristic ridged, brown shells. The nuts are piled together, filling most of the frame. The background is a plain, light gray surface.

Does improving the soil
health increase health
benefits in pecans?



Does improving the soil
health reduce insect and
disease damage?

Monitoring the Transition to Regenerative Agriculture on Noble Farms

- **Soil health**
- **AMP grazing impacts on FSMA rules**
- **Tree health**
- **Orchard Scorecards**
- **Insect and Disease Reports**
- **Monitor insect pests**
- **Economic evaluation**
- **Health benefits of regenerative pecans**



PECAN RESEARCH STRATEGY

Managing from the ground up...

Can managing for soil health improve overall orchard health and profitability?

PROJECT GOALS

Better soil with stronger profit

The aim of this research strategy is to assess levels of soil health, ecosystem resiliency and increased profit per acre **across a continuum of orchard management strategies.**



Monitoring orchard health

Soil analysis: Haney & PLFA
FSMA livestock pathogens
Leaf analysis
Orchard scorecards
Nut nutrient value
Bat guano analysis
Economics

PECAN RESEARCH STRATEGY

Number of Participants
20+ Producers

Soil Health Evaluated for
6 Years

PROJECT BY NUMBERS 2023

Number of Participants
11

Number of Blocks
50

Number of Trees
186

STUDY AREA PECAN RESEARCH STRATEGY



RESEARCH WORKSHOP





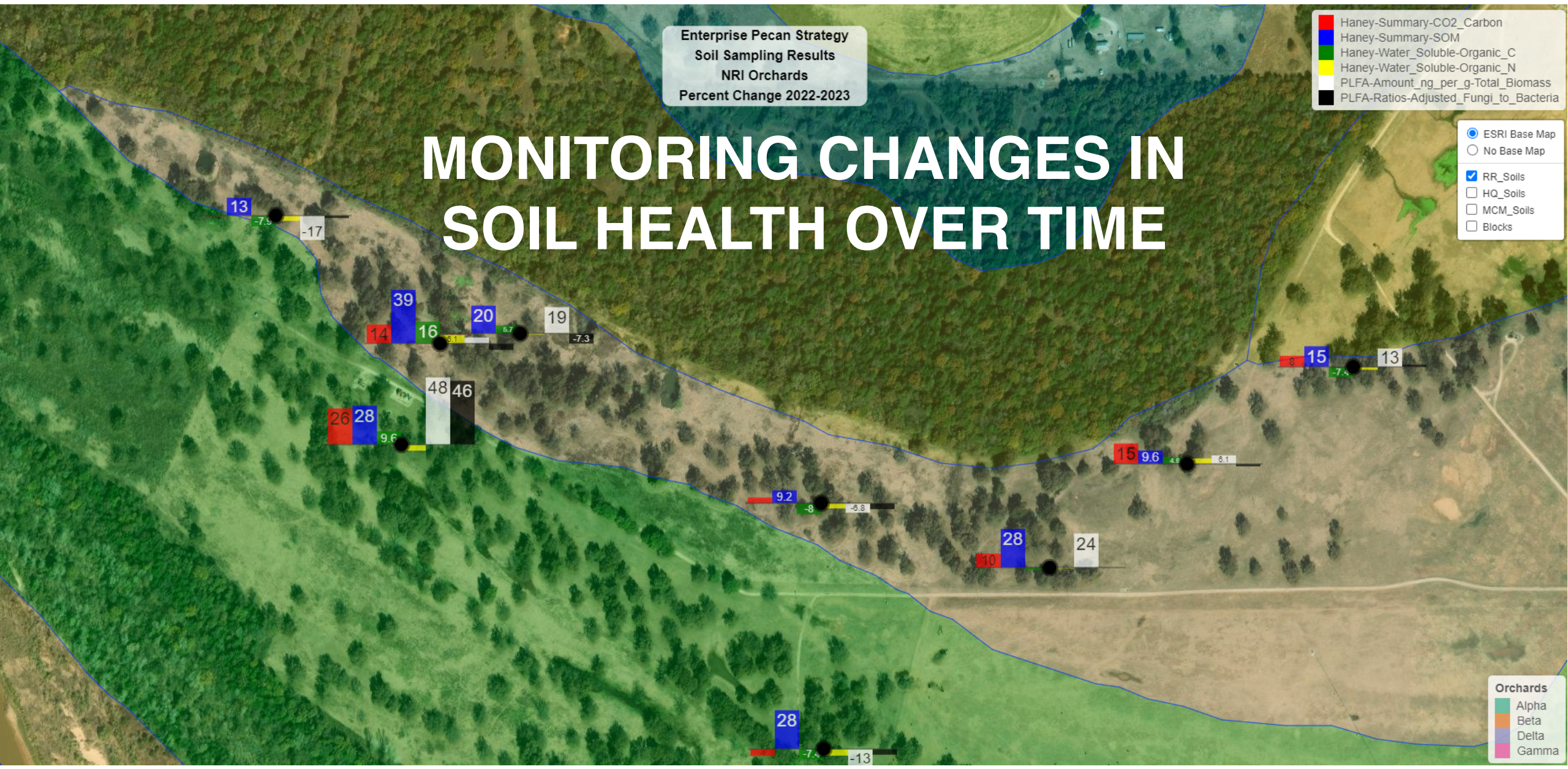
Enterprise Pecan Strategy
Soil Sampling Results
NRI Orchards
Percent Change 2022-2023

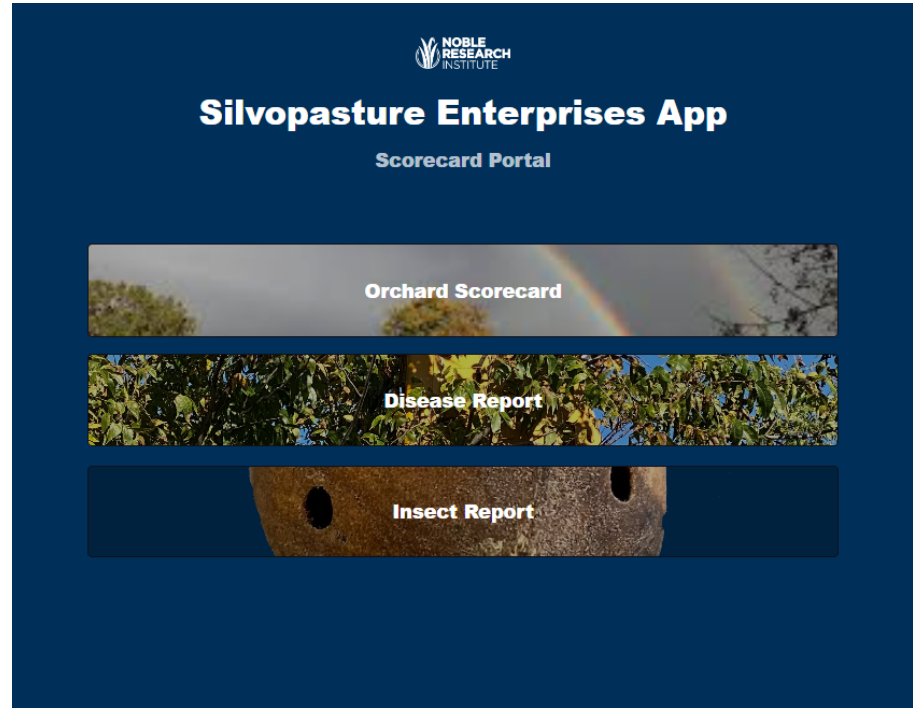
MONITORING CHANGES IN SOIL HEALTH OVER TIME

- Red: Haney-Summary-CO2_Carbon
- Blue: Haney-Summary-SOM
- Green: Haney-Water_Soluble-Organic_C
- Yellow: Haney-Water_Soluble-Organic_N
- White: PLFA-Amount_ng_per_g-Total_Biomass
- Black: PLFA-Ratios-Adjusted_Fungi_to_Bacteria

- ESRI Base Map
- No Base Map
- RR_Soils
- HQ_Soils
- MCM_Soils
- Blocks

- Orchards
- Alpha
 - Beta
 - Delta
 - Gamma





www.noble.org/pecan-strategy-research/

Orchard Scorecard Disease Report Insect Report



NUT NUTRIENT VALUE

Antioxidants

Vitamin E



Fatty acids

Phenolics

Oil content

“Should not our ultimate goal be profitable production, consumer satisfaction, and long-term ecological well-being using the least inputs? Said another way, how far can this be taken with increasing reliance on natural processes?”

Dennis Perz
Georgetown Pecan Company





Amy Bridges



Lauren Jones



Laura Putman



Nikki Charlton

Research
Team



Kim Cooper



Shawn Norton



Danielle Williams



**NOBLE
RESEARCH
INSTITUTE**

Questions?

Come see us at our booth!