Lessons Learned

Southern Plains

Cover Crops and
Soil Health

Our Farms, Our Future – SARE Conference
April 2018 | Jodie Reisner – State Conservation Agronomist
Temple Texas
Objectives

- Location of Southern Plains
- Climatic & Soil Conditions
- Cropping Systems
- Cover Crop & Soil Health Research
- Opportunities & Successes
- Challenges
- The Culture of Agriculture

Photo: Jodie Reisner
Location of Southern Plains

- USDA Climate Hubs
- National Agriculture Statistics Service (NASS) OK & TX

Source: USDA Climate Hubs
Climatic Conditions

Precipitation

- Typical rainfall range <10 to >55 inches.
- Arid in the West to Subtropical Humid in the Southeast and South.
- Evaporation exceeds precipitation in most of the state.

Irrigated Farms
Dryland Farming

Source: NOAA
Oklahoma Conditions

Source: Oklahoma Climatological Survey
Climatic Conditions

Temperature

- Varies widely each month or on a weekly basis.
- Growing season length can vary from 175 days to 365 days.

Snow, freezing rain, to tropical conditions in south Texas.

Currently: Wildfires in the Panhandle

Source: Texas A&M
Soil Conditions

Mollisols
Vertisols
Ultisols
Alfisols
Aridisols

Source: USDA-NRCS
Soil Conditions
Southern High Plains
- Clayey, loamy, to sandy
- Calcareous subsoils
- Oklahoma typically has ultisols in the east, alfisols and mollisols in the center, and inceptisols in the west.

Source: USDA-NRCS
Cropping Systems

Row Crops – cotton, corn, wheat, sorghum, rice, soybeans, canola, peanuts, oats.

Native Rangeland
Introduced Pastures

Oklahoma – Wichita Mountains in SW
Ouachita Mountain in SE
Cover Crop Research

Oklahoma – Oklahoma State University
Jason Warren, Adam Cobb, Noble Research Institute
Texas

- Lubbock – Dr. Katie Lewis
- Vernon – Dr. Paul DeLaune
- Subtropical Soil Health Initiative
- Stiles Farm – TAMU
- NRCS Plant Material Centers
- Prairie View A&M
- Tarleton Farms
Cotton Lint Yield
Combined years, 2014 – 2016

Slide Credit: Katie Lewis
Wayne Keeling  Texas AgriLife
Summary

- Rotation vs. continuous cotton with rye cover
  - Cotton/wheat rotation has consistently increased lint yields compared to continuous cotton with rye cover
    - Pathogens, water, and nutrients
  - Continuous cotton with rye cover has increased SOC more so than rotation - unlike yield response

Slide Credit: Katie Lewis
Wayne Keeling Texas AgriLife
Successes

Matt Braun – Kiowa County, Oklahoma

Previous: Dryland no till cotton, wheat, corn, sorghum, and sesame

Changes: Cover Crops

Results: Improved weed control, increased infiltration, reduced wind erosion, improved cotton yield
successes

R.N. Hopper – Texas Panhandle
Floyd and Hale Counties
Previous: minimum till/100% cotton, output of irrigation well dropping, wind erosion

Changes:
• Corn/Wheat/Cotton
• No Till
• Cover Crops

Results:
• Save Irrigation Water
• Reduction of Wind Erosion

photos: Brandt Underwood and Jodie Reisner
Cotton in Corn Residue
Cover Crop Mix after
Wheat
Wheat Cover Crop after
Corn

Photos:
Brandt Underwood and
Jodie Reisner
Challenges - Erosion

Photos: Jodie Reisner
Challenges

Wind Erosion
Water Quantity and Quality
Fragile Soils
Challenges - Pests - Social

Wild Hogs
Voles

Farmers need a peer to peer network
Economic and Social Risk

Photos: Jodie Reisner
Challenges - Culture of Agriculture

- Graze out wheat
- Sand fighter
- Fallow in rotations
- Monocultures – low residue crops
- Perseverance

Photo: Caleb Stone and Jodie R.
Tips for Success

• Set goals with the farmer
• Start with a single farm or small acreage
• Talk about realistic expectations and timeframes - commitment
• Think SYSTEM – Implement as a SYSTEM
  • Rotation, timing, tillage, cover crops, animals
• Know your environment – farmers who are successful know their environment and work it out.

Photos: Jodie Reisner
Soil Health Management Principles

1. Minimize Disturbance
2. Maximize Soil Cover
3. Maximize Biodiversity
4. Maximize presence of living roots
5. Integrate Livestock when possible

Photos: Jodie Reisner
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