Addressing Future Challenges Today
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Fig. 1. A global map of the land-grabbing network: land-grabbed countries (green disks) are connected to their grabbers (red triangles) by a network link. Based on data in Table S1 but considering only 24 major grabbed countries (as in Table 1). Relations between grabbing (red triangles) and grabbed (green circles) countries are shown (green lines) only when they are associated with a land grabbing exceeding 100,000 ha.
U.S. Challenges
Changes Annual Soil Moisture, 1988-2010

Annual Surface Soil Moisture Trends

Change in soil moisture (m^3 m^-3 y^-1)

-0.002 -0.001 0.000 0.001 0.002
Projected Water Demand: 2005-2060

(a) Without Climate Change

% change
- < 0
- 0 to 10
- 10 to 25
- 25 to 50
- >50
1920s - 2008

Trends in Flood Magnitude

Change per Decade (%)

Positive Trends

Negative Trends
Relevancy
Chart 17. Proportion of total employment of farmers and of farm laborers, 1910–2000

NOTE: Data for 1930 are an average of 1920 and 1940 data because 1930 data were unavailable when this article was written.
Path Forward
NRCS Priorities

1. Deliver excellent and innovative service.
2. Strengthen and modernize conservation delivery.
3. Enhance and expand scientific and technical capabilities.
4. Broaden our reach, customers, and partners.
Deliver Excellent and Innovative Service

- Working Lands/ Easement Programs
- Soil Health Campaign
- Landscape Initiatives - NWQI, MRBI, WCMP, Energy
- Working Lands for Wildlife
- RCPP
- CSP Improvements - allowing more state input

Voluntary Conservation Works
Enhance Scientific/Technical Capabilities

- National Conservation Planning Partnership
- Resource Stewardship Evaluation
- Technology Assessment
- Conservation Innovation Grants
- CEAP Enhancements
Seriously - What is the Resource Stewardship Framework?

- A voluntary conservation evaluation and planning framework using NRCS’ best 9 science-based evaluation tools.

- Precision Conservation - measures the state of an operation’s natural resources condition and determines if that farm or ranch meets stewardship thresholds for soil and resource health, water quality and quantity, air quality and habitat health.

- You can then provide a conservation plan that focuses on the key resource concerns needing improvement.

- A conservation product to motivate farmers to a stewardship level.
Operation: Mississippi  Date: 04/10/2017
Operator: Sunflower  Site ID: Field 1
Assessor: Land Use: Cropland  Farm #:
Tract #:

**Cropland Stewardship Objectives**

- Soil Management
- Water Quality
- Pesticide Management
- Water Quantity
- Air Quality
- Habitat Health

**Cropland Stewardship Achievement**

- **Soil Management B4**
- **Water Erosion**
- **Wind Erosion**
- **Soil Carbon B4**
- **Water Quality**
  - Sediment in Surface Water
  - Total Phosphorus Loss
  - Soluble Phosphorus Loss
  - Surface Nitrogen Loss
  - Subsurface Nitrogen Loss
- **Pesticide Management**
  - Pesticide Management (Leaching)
  - Pesticide Management (Solution Runoff)
  - Pesticide Management (Adsorbed Runoff)
  - Pesticide Management (Drift)
- **Water Quantity**
  - Irrigation Management
- **Air Quality B4**
  - Nitrogen Loss to Air
  - Soil Carbon B4
  - Habitat Health
  - Terrestrial Habitats
  - Aquatic Habitats B3, P3

**Conservation Practices and Management Techniques**

- Benchmark: Conservation Crop Rotation (328)
- Planned: Conservation Crop Rotation (328), Cover Crop (340), Grade Stabilization Structure (410)
Return on our Nation’s Soil Health Investment
Changing the Face of Agriculture and How We Feed our Nation

BENEFITS

- Nutrient cycling
- Pest suppression
- Carbon sequestration and energy savings
- Water infiltration
- Less runoff, erosion, flooding
- Water storage and availability
- Resilience
- Biodiversity, groundwater, clean water and air...
- Long-term economic viability
- Sustained reliable productivity – to feed 9 billion

Photos: NRCS and Dorn Cox, 2012
Adapting Soil Health Management Principles to soils, regions, and cropping systems requires broad collaboration!

- **Do not disturb**
  - Minimize soil disturbance.

- **Mix it up**
  - Maximize diversity (plants, animals, amendments, inoculants...).

- **Discover the cover**
  - Keep the soil covered.

- **Tap into roots**
  - Maximize living roots.
How do we get there?

- Producers and service providers must understand basic processes
- Assess current soil health status
- Develop appropriate plan
- Implement and adjust!
- Need economic info for broader adoption

Photos: NRCS and Dorn Cox, 2012
NRCS Conservation Client Gateway

"Conservation Assistance is just a Click Away!"

http://www.nrcs.usda.gov/clientgateway
What is the NRCS Conservation Client Gateway?

Conservation Client Gateway is a new NRCS public website that provides individual landowners and land users the option to request conservation technical and financial assistance from NRCS.

Through the Conservation Client Gateway, individual clients can apply for conservation program financial assistance, eSign applications and contracts, view conservation plans and practice schedules, and track payments due clients for certified practices completed.
What the NRCS Conservation Client Gateway is **NOT**!

- Conservation Client Gateway is **NOT** a replacement for the in person service that NRCS is famous for.
  
  - It is intended to free up time currently spent doing program administration for clients, to spend more time with the client, on conservation planning and implementation.

- Conservation Client Gateway is **NOT** all or nothing.
  
  - Clients who choose to use CCG are still welcome to come to the office and personally work with field personnel.
NRCS Conservation Client Gateway Benefits

Clients

- Payments can be checked by the client at any time
- Practices and contract items can be reported to the Servicing Office immediately after they are successfully completed, thereby speeding up the payment to the client
- Conservation plans, practice schedules, Farm Bill applications, contracts, and schedules of operation can be viewed and printed by the client at any time
- Photographs, receipts, and other information can be uploaded by clients to assist in communicating natural resource issues or practice completion
- Documents can be electronically signed on-line by the client, away from the Servicing Office

All this can save clients gas and time and allow them to spend more time at their agricultural operation.
http://www.nrcs.usda.gov/clientgateway

To access the Gateway, clients need a valid record in the Service Center Information Management System (SCIMS) with a valid e-mail address.
NRCS MISSISSIPPI PROGRAMS

Kurt Readus, NRCS State Conservationist, Mississippi

2017 MWRRI Conference, April 10-12

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MS NRCS, with its Cooperators and Partners, has been addressing Groundwater Resource Concerns since 1984:

- Hire Irrigation Specialists: 1984-
- Irrigation Team Reports: 1986-1992
  - established practices to be used
- Delta Water Supply Study w/ YMD
  - 1993-1998
  - established general concepts
- Financial Assistance Programs focus:
  - 1984 to present
- Special Focus Programs
  - Mississippi River Basin Initiative
  - Mississippi Water Conservation Management Project
NRCS Financial Assistance for Water Resource Concern Practices only in the Delta
(Cooperators basically match the federal investment)
2009-2016

All Programs: $114,694,170

Historically Underserved specific: $8,369,309

Mississippi River Basin Initiative: $39,648,957

Mississippi Water Conservation Management Program: $14,256,044
Mississippi Water Conservation Management Project
Row-crop Irrigation Science and Extension Research (RISER), Dr. Jason Krutz

Components for a RISER System:

- **Flow measurement (Flowmeter)**
  - 587 Flowmeter ($1400, 10”)
- Polypipe hole sizing (e.g. Phaucet, PipePlanner)
  - 449 - Intermediate Irrigation Water Management
- Water Management Device (e.g. soil moisture sensor, atmometer)
  - 449 – Irrigation Water Management Device (manual, recording, telemetry)
- Irrigation Scheduling Program (e.g. MIST, etc.)
  - 449 – Advanced irrigation Water Management
- Timer 533 – Basic Pump Automation
- Remote Pump Control – 533 – Intermediate Pump Automation
- Surge valve 443 – Irrigation System, Surface and Subsurface
MRBI 1.0 was available in selected watersheds only, primary concern was Nutrient reduction.
Followed the Delta Nutrient Reduction Strategy.
MRBI focus followed the Delta Nutrient reduction Strategy

- TWR/On-farm storage
- Pads & Pipes
- Cover Crops
All Water Conservation practices require an IWM plan, based upon soil properties (in this case Available Water Capacity) map from the NRCS Web Soil Survey.
Natural Resources Conservation Service
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