Efficiency and Conservation in Agricultural Water Use

Scott D. Edwards
Assistant State Conservationist for Programs,
June 10, 2017
As the Nation’s largest water user, agriculture accounts for about 80 percent of the country’s annual water consumption.

Irrigation Water Management encourages the application of water in an amount that meets the need of the growing plant in a manner that avoids extended soil saturation and runoff.

NRCS works with producers by increasing application precision and reducing unneeded applications, resulting in water and energy conservation.
NRCS 2014 Farm Bill Toolbox

Five Major Programs

- Conservation Technical Assistance
- Environmental Quality Incentives Program
- Conservation Stewardship Program
- Regional Conservation Partnership Program
- Agricultural Conservation Easement Program
2016 Conservation Budget
Total = $6.3 Billion

- Conservation Reserve: 29%
- Conservation Stewardship Program: 23%
- Discretionary Programs: 16%
- EQIP: 22%
- Agricultural Conservation Easement Program: 7%
- All Other Mandatory Programs: 3%

More Production ❑ Less Risk ❑ Cleaner Water ❑
Farm Bill Conservation Programs
Cumulative Acres Enrolled

- More Production
- Less Risk
- Cleaner Water
PRESIDENT’S FY18 BUDGET REQUEST

Agriculture Secretary Sonny Perdue announced plan to reorganize the mission areas under USDA, including creating “Farm Production and Conservation.”

This new mission area will house the Farm Service Agency (FSA), Risk Management Agency (RMA), and the Natural Resources Conservation Service (NRCS), and will be led by a newly created undersecretary position.

Proposes more than $5 billion in cuts over 10 years to farm bill conservation.

FY18 the President’s request includes a substantial $100 million cut to mandatory funding for the Environmental Quality Incentives Program (EQIP) and a $91 million (13%) cut to USDA’s Conservation Technical Assistance (CTA) program.

Proposes to completely eliminate new enrollment in CSP and RCPP in the future. CSP is USDA’s largest voluntary working lands conservation...
Conservation Technical Assistance (CTA)

At its core, the focus of conservation planning is on increasing voluntary adoption of:

– Right conservation systems
– Right position on landscape
– Right amount
– Right timing and sequencing of practice/system implementation (progressive implementation)
Irrigation Related Resource Concerns

- Irrigation Efficiency
- Energy Conservation
- Drainage Systems
- Erosion
- Water Quality Impacts
NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE PRACTICE STANDARD
IRRIGATION WATER MANAGEMENT
(Ac.)
CODE 449

DEFINITION
The process of determining and controlling the volume, frequency, and application rate of irrigation water.

PURPOSE
- Improve irrigation water use efficiency
- Minimize irrigation induced soil erosion
- Decrease degradation of surface and groundwater resources
- Manage salts in the crop root zone
- Manage air, soil, or plant micro-climate
- Reduce energy use

Irrigation water required for each irrigation event.

Include in the IWM plan the method for determining the timing and amount of each irrigation event using at least one of the following methods:

- Evapo-transpiration of the crop, using appropriate crop coefficients and reference evapo-transpiration data,
- Soil moisture monitoring, and/or
- Scientific plant monitoring (e.g. leaf water potential or leaf/canopy temperature measurements).

When irrigation water is not available on demand, such as when provided by an
### Fiscal Year 2015 Investment

**Natural Resources Conservation Service**

<table>
<thead>
<tr>
<th>Program</th>
<th>Number of Contracts/Agreements</th>
<th>Number of Acres Enrolled</th>
<th>Dollars Obligated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Quality Incentives Program</td>
<td>690</td>
<td>134,809</td>
<td>$17,681,092</td>
</tr>
<tr>
<td>Conservation Stewardship Program</td>
<td>515</td>
<td>438,470</td>
<td>$9,524,268</td>
</tr>
<tr>
<td>Agricultural Conservation Easement Program</td>
<td>38</td>
<td>9,023</td>
<td>$14,187,741</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,243</strong></td>
<td><strong>582,302</strong></td>
<td><strong>$41,393,101</strong></td>
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</tbody>
</table>

Data Source: FMMI 9/20/2015, NEST 10/1/2015, ProTracts 10/9/2015

### State of Louisiana

<table>
<thead>
<tr>
<th>Program</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 319 Non-point Source Pollution Program</td>
<td>$1,900,000</td>
</tr>
<tr>
<td>Re-vegetation Program</td>
<td>$400,000</td>
</tr>
<tr>
<td>Other</td>
<td>$1,800,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4,100,000</strong></td>
</tr>
</tbody>
</table>

These dollars do not include the significant investment in conservation made by Louisiana’s agricultural producers.

### Other Funding:

$48.2 million

2015 Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)
EQIP Louisiana FY14 - FY16

Inefficient Use of Irrigation Water
508 Applications Received – 94,657 acres
186 Applications Funded – 43,774 acres

Inefficient Moisture Management
150 Applications for 36,683 acres
57 Applications Funded for 17,342

Total Economic Impact - $9,519,577
$6,454,334 and $3,064,243
The purpose of CSP is to encourage producers to address priority resource concerns and improve their conservation performance by installing and adopting additional conservation activities and improving, maintaining, and managing existing conservation activities on eligible land.
CSP Statutory Limitations

• Private Land
• Five year contract term with option for the producer to renew for one additional 5-year period at the end of the initial contract
• Payment Limitations
  – A person or legal entity may not receive, directly or indirectly, payments under CSP that, in the aggregate, exceed $200,000 under all contracts entered into during fiscal years 2014 - 2018
• Payments after October 1 for activities completed in the previous fiscal year
### Conservation Stewardship Program for Crop Growers

#### CSP Enhancements to assist Crop Growers

**Crops (including agro-forestry), Soil & Water**
- Conservation Cover
- Cover Crops
- Residue and Tillage Management
- Reduced Till
- Irrigation Water Management
- Mulching
- Nutrient Management
- Riparian Buffer

**Pest Management**
- Conservation Cover
- Cover Crops
- Crop Rotation
- Pollinator Habitat Development
- Integrated Pest Management
- Upland Habitat Management

**Natural Resources, Biodiversity & Buffers**
- Conservation Cover
- Critical Area Planting
- Field Border
- Hedgerow Planting
- Riparian Forest Buffer
- Wildlife Habitat

**Wildlife**
- Monarch Butterfly Habitat
- Wildlife Corridors
- Leave Standing Grain Crops to Benefit Wildlife
- Pollinator and Beneficial Insect Habitat Development
- Water Management for Wildlife Habitat

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**More Production ✓**
**Less Risk ✓**
**Cleaner Water ✓**
Advanced Irrigation Water Management

**Advanced IWM--Soil moisture is monitored, recorded, and used in decision making**

- Completed IWM plan, documenting guidance and landowner decisions using State specific protocol
  - Map delineating where enhancement was implemented
  - Location and installation of remote soil moisture probes
  - Copy of irrigation, rainfall, and soil moisture data
Conservation activities available for implementation

• There are 223 enhancements available to meet or exceed resource concerns.

• 32 Bundles are available for most operations.

• Specific bundles are also available for OAI, MRBI, LLPI, LPCI, and SGI landscape Initiatives.

• There are 77 practices available to address resource concern causes.
Regional Conservation Partnership Program

- Partner Driven, Locally-led approach to Conservation
- Harness Innovation and Expand Conservation Delivery
- Voluntary Private Lands Conservation
- In 3 years, NRCS has invested over $590 million across 200 projects
- 2,000 Conservation Partners have contributed $900 million in Financial and Technical Assistance
Regional Conservation Partnership Program

- New program in 2014 FARM Bill
- Combined CCPI, AWEP, Great Lakes and Chesapeake Bay
- Covered Programs CSP, EQIP, ACEP, HFRP +$100m/yr. and PL-566 in CCA’s
- 7% contribution from covered programs
- 8 Critical Conservation Areas
- State (25%), National (40%), and CCAs (35%)
More Production ✔️
Less Risk ✔️
Cleaner Water ✔️

Figure 3: Concentration of RCPP Projects, Fiscal Years 14-16

Mapp includes projects from all funding pools where state is a lead or partner state.
Figure 1: Projects by Focus

- Water Quality - 89
- Wildlife Habitat - 47
- Soil Health - 21
- Water Quantity/Drought - 31
- Degraded Plant Condition - 5
- Energy - 2
- Air Quality - 3

Partners identify a primary resource concern for each project to address.
Partner TA Capacity Map - Progress Report - Spring 2017
Regional Conservation Partnership Program (RCPP)

Thank you!
To our leading financial supporters:

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BASF
Freeport-McMoRan Foundation
RiceTec
Delta Plastics
Riviana

A special thanks to Bob and Kim Spoerl for their financial support.
<table>
<thead>
<tr>
<th>START YEAR</th>
<th>PROJECT NAME</th>
<th>STATES</th>
<th>NRCS PROJECT</th>
<th>PCRE ACRES</th>
<th>FINANCIAL ASSISTANCE</th>
<th>PROJECT CONTRACTS</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>NATIONAL RICE STEWARDSHIP</td>
<td>AR, CA, LA, MO, MS, TX</td>
<td>EQIP</td>
<td>72,400</td>
<td>$5,600,000</td>
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<td>2015</td>
<td>NATIONAL RICE STEWARDSHIP</td>
<td>AR, CA, LA, MO, MS, TX</td>
<td>CSP</td>
<td>120,000</td>
<td>$12,000,000</td>
<td>120</td>
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<td>2015</td>
<td>SW LOUISIANA - MICROWATERSHEDS</td>
<td>LA</td>
<td>EQIP</td>
<td>5,000</td>
<td>$910,600</td>
<td>18</td>
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<td>2015</td>
<td>SW LOUISIANA - MICROWATERSHEDS</td>
<td>LA</td>
<td>CSP</td>
<td>7,500</td>
<td>$750,000</td>
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<td>2015</td>
<td>TEXAS GULF STREAMS &amp; WETLANDS</td>
<td>TX</td>
<td>EQIP</td>
<td>20,000</td>
<td>$4,900,000</td>
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<td>2016</td>
<td>LOUISIANA EQIP 590</td>
<td>LA</td>
<td>EQIP</td>
<td>20,000</td>
<td>$600,000</td>
<td>25</td>
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<td>2017</td>
<td>MID-SOUTH WATER STEWARDSHIP</td>
<td>AR, LA, MO, MS</td>
<td>EQIP</td>
<td>22,500</td>
<td>$3,200,000</td>
<td>64</td>
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<td>2017</td>
<td>MID-SOUTH WATER STEWARDSHIP</td>
<td>AR, LA, MO, MS</td>
<td>CSP</td>
<td>165,000</td>
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<td>2017</td>
<td>LCRA PRAIRIE WATER CONSERVATION</td>
<td>TX</td>
<td>PL-566</td>
<td>20,000</td>
<td>$7,350,000</td>
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<td>2017</td>
<td>LCRA PRAIRIE WATER CONSERVATION</td>
<td>TX</td>
<td>CSP</td>
<td>32,500</td>
<td>$3,250,000</td>
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<td><strong>TOTALS</strong></td>
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<td></td>
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<td>484,900</td>
<td>$55,060,600</td>
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</table>
Typical Louisiana Agriculture Field

- Side-inlet Poly Pipe Irrigation System
- Ground Water Well
- Slope
- Uneven Rows
- Public Ditch – Leaving Farm

© 2014 Google
Imagery Date: 4/4/2013 35°40′50.84″ N 91°01′54.08″ W elev 222 ft eye alt
• Phaucet Program
• Irrigation Water Management Plan
• Drainage Water Plan
• Pipeline
• Irrigation Land Leveling
Side-inle Poly Pipe Irrigation System

Slope

Surge Valve/Flow Meter Tech

Soil Moisture Meters

Water Control Structures
Wetland Reserve Easement

- Side-inlet Poly Pipe Irrigation System
- 2-Stage Ditch
- Slope
- Surge Valve/Flow Meter Tech
- Soil Moisture Meters
- Water Control Structures
- Multi-depth Channel/Slough
- Trees
- Levee
- Created Wetlands
Questions?

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YOUR CONFERENCE PRESENTATION

HOW YOU PLANNED IT:

INTRODUCE YOURSELF
DESCRIBE OUTLINE OF TALK
MOTIVATION
START

METHODODOLOGY AND
EXPERIMENT DESIGN

RESULTS

CONCLUSIONS

15 MINUTES

APPLAUSE

ENGAGING Q&A

HOW IT GOES:

PREVIOUS SPEAKER RUNS LATE AND EATS INTO YOUR TIME.
TECHNICAL DIFFICULTIES CONNECTING YOUR LAPTOP.
FORGET INTRODUCING YOURSELF.
SPEND WAAAY TOO MUCH TIME DESCRIBING YOUR OUTLINE.

MOTIVATION

POWER THROUGH THE REST OF YOUR 30 SLIDES.

REALIZE YOU ONLY HAVE 3 MINUTES LEFT.

ANOYING AUDIENCE MEMBER INTERRUPTS WITH SELF-AGRANDIZING QUESTION.

AWKWARD SILENCE Q&A.

15 MINUTES