USDA

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NRCS Update for ICCA

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Natural Resources Conservation Service

nrcs.usda.gov/

Main Updates for 2017

- **Erosion Prediction Technologies**
  - Water Erosion Prediction Program
  - Wind Erosion Prediction System
- **Nutrient Management**
  - 590 Conservation Practice Standard in process of revision
  - Conservation Activity Plans 102 (CNMP) or 104 (NMP)
- **Integrated Pest Management**
  - 595 Conservation Practice Standard
- **CAP 138 Conservation Plan Supporting Organic Transition**


Photo by B. James

Erosion Prediction Technologies

- **Water Erosion Prediction Project (WEPP)**
  - A process-based model which utilizes web-based management, climate, and soil databases
    - Using updated climate information (1973-2013)
    - Databases stay current; no annual uploading
  - Yields and crop growth predictions are adjusted for each unique year based on generated climate
    - Simulates a number of years
    - Each day having different input climatic data

Management Example 1

Mulch till corn and soybeans

Management Name: Corn 180 FC Disk Fld Cult- Soybeans 60 bu FC Disk Fld Cult Rotation Length: 2

Num		Date	Operation	Crop	Residue	Residue Amount (lb/ac)	Yield	Yield Unit
1		5/1/1	Disk, tandem light finishing					
2		5/5/1	Cultivator, field 6-12 in sweeps					
3		5/5/1	Planter, double disk opnr	Corn, grain			180	bu/ac
4		10/20/1	Harvest, killing crop 50pct standing stubble					
5		11/1/1	Chisel, st. pt.					
6		5/1/2	Disk, tandem light finishing					
7		5/10/2	Cultivator, field 6-12 in sweeps					
8		5/10/2	Drill or airseeder, double disk	Soybean, group II, III and IV			60	bu/ac
9		10/5/2	Harvest, killing crop 20pct standing stubble					
10		11/1/2	Fert applic. surface broadcast					
11		11/1/2	Chisel, st. pt.					

Use this Management | Save Local | Upload Local | Increment All Years | Decrement All Years | Add Management | undo

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Management Example 1 Results

WEPP 8/30/2017 Project Results Analysis History Map Managements Help

Client Name: ICCA
Field Name: Field 1
Location (Latitude): 41.32284041587107
Location (Longitude): -94.55255335027522

State: Iowa County: ADAIR COUNTY Change
Climate Database: 2015 Run Years 100
Use PRISM Adjustments Map
Latitude and Longitude represent center of delineated field.

Soil 370BlSharpsburg silty clay loam, 2 to 5 percent slopes(5T)

Slope Shape Uniform Steepness (%) 4 Aspect/Direction South
Length (ft) 200

Strips/Barriers 0 - None
Contouring a. rows up-and-down hill

Managements (Total Slope Length: 200 ft) Repeat Strips

Num	Name	Length(ft)	Offset(yrs)
1	Corn 180 FC Disk Fld Cult- Soybeans 60 bu FC Disk Fld Cult	200	0

WEPS Erosion 0 (t/ac/yr) (for final SCI)

Run Save Local Upload Local Example Projects

Results Mgt 1.

Generated Yields based on temp. water, and soil

Results

NRCS Soil Loss for Planning(t/ac/yr)	4.72	Fuel (gal/a/yr)	4.15
Average Annual Soil Loss (t/ac/yr)	4.72	Annual STIR	95.57
Average Annual Sediment Delivery(t/ac/yr)	4.72	SCI	0.42
Average Annual Runoff(in/yr)	6.80	SCI OM Subfactor	1.41
Average Annual Precipitation(in/yr)	34.66	SCI FO Subfactor	0.05
Average Annual Irrigation(in/yr)	0.00	SCI ER Subfactor	-0.86
Average Annual Sediment Deposition(t/ac/yr)	0.00		

Crop Calibration Details

Crop Name	Calibration Factor	Calibrated	Target Yield	Calibrated Yield
Corn, grain	1.705003	Yes	180.0	169.1
Soybean, group II, III and IV	0.731338	Yes	60.0	56.1

Note: Calibration factors above 2.0 or below 0.5 indicate a significant adjustment was made. The management inputs should be reviewed to be sure the yield is reasonable, and the growing season length is correct. Other inputs to check would be the climate and irrigation, is there enough water for successful plant growth.

PDF Summary of Simulation

Management Results By Segment

Num	Name	Soil Detachment (t/yr)	Detachment Length (ft)	Soil Deposition (t/yr)	Deposition Length (ft)	Soil Deposition (in/yr)	Sediment Delivery (t/yr)
1	Corn 180 FC Disk Fld Cult- Soybeans 60 bu FC Disk Fld Cult	1.08	200.00	0.00	0.00	0	1.08

Note: Results were calculated based on a slope width of 50 feet and a soil weight o

Statistics over 100 Years – Notice the ranges

Annual Statistics for 100 years

Model Output	Mean	Median	Standard Deviation	Coef. of Variation	Min	Max
Precipation (in/yr)	34.66	33.97	5.97	0.17	21.65	52.11
Sediment Delivery (t/yr)	1.08	1.74	0.75	0.69	0.01	3.91
Runoff (in/yr)	6.80	7.26	3.21	0.47	1.78	21.73
Irrigation (in/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Run Identifier: f776a6f1-9993-11e7-9211-dbb9db4bacd4

Management Example 2

No Till corn and soybeans

Management Name: Corn 180 No Till Soybeans 60 bu No Till Rotation Length: 2

Num		Date	Operation	Crop	Residue	Residue Amount (lb/ac)	Yield	Yield Unit
1		5/5/1	Planter, double disk opnr w fluted coulter with starter fertilizer	Corn, grain			180	bu/ac
2		10/20/1	Harvest, killing crop 50pct standing stubble					
3		5/10/2	Drill or air seeder single disk openers 7-10 in spac.	Soybean, group II, III and IV			60	bu/ac
4		10/5/2	Harvest, killing crop 20pct standing stubble					

Use this Management | Save Local | Upload Local | Increment All Years | Decrement All Years | Add Management | undo

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Management Example 2 Results

Client Name: ICCA
Field Name: Field 1
Location (Latitude): 41.32284041587107
Location (Longitude): -94.55255335027522

State: Iowa County: ADAIR COUNTY Change
Climate Database: 2015 Run Years 100
Use PRISM Adjustments Map
Latitude and Longitude represent center of delineated field.

Soil 370B|Sharpsburg silty clay loam, 2 to 5 percent slopes(5T)

Slope Shape Uniform Steepness (%) 4 Aspect/Direction South
Length (ft) 200

Strips/Barriers 0 - None
Contouring a. rows up-and-down hill

Managements (Total Slope Length: 200 ft) Repeat Strips

Num	Name	Length(ft)	Offset(yrs)
1	Corn 180 No Till Soybeans 60 bu No Till	200	0

WEPS Erosion 0 (t/ac/yr) (for final SCI)

Run | Save Local | Upload Local | Example Projects

Erosion Reduced (4.7 vs 0.6 ton/ac/yr) and Less runoff

Higher Yields based on better water use efficiency

Results

NRCS Soil Loss for Planning(t/ac/yr)	0.66	Fuel (gal/a/yr)	2.03
Average Annual Soil Loss (t/ac/yr)	0.67	Annual STIR	2.99
Average Annual Sediment Delivery(t/ac/yr)	0.67	SCI	1.20
Average Annual Runoff(in/yr)	5.75	SCI OM Subfactor	1.66
Average Annual Precipitation(in/yr)	34.66	SCI FO Subfactor	0.97
Average Annual Irrigation(in/yr)	0.00	SCI ER Subfactor	0.74
Average Annual Sediment Deposition(t/ac/yr)	0.00		

Crop Calibration Details

Crop Name	Calibration Factor	Calibrated	Target Yield	Calibrated Yield
Corn, grain	1.742339	Yes	180.0	170.1
Soybean, group II, III and IV	0.761479	Yes	60.0	62.1

Note: Calibration factors above 2.0 or below 0.5 indicate a significant adjustment was made. The management inputs should be reviewed to be sure the yield is reasonable, and the growing season length is correct. Other inputs to check would be the climate and irrigation, is there enough water for successful plant growth.

PDF Summary of Simulation

Management Results By Segment

Num	Name	Soil Detachment (t/yr)	Detachment Length (ft)	Soil Deposition (t/yr)	Deposition Length (ft)	Soil Deposition (in/yr)	Sediment Delivery (t/yr)
1	Corn 180 No Till Soybeans 60 bu No Till	0.15	200.00	0.00	0.00	0	0.15

Note: Results were calculated based on a slope width of 50 feet and a soil weight of 100 lbs/ft^3.

Annual Statistics for 100 years

Model Output	Mean	Median	Standard Deviation	Coef. of Variation	Min	Max
Precipation (in/yr)	34.66	33.97	5.97	0.17	21.65	52.11
Sediment Delivery (t/yr)	0.15	0.20	0.11	0.74	0.00	0.70
Runoff (in/yr)	5.75	6.80	3.16	0.55	0.90	19.39
Irrigation (in/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Run Identifier: 66519984-9995-11e7-9211-b305d398986f

Erosion Prediction Technologies

- **Water Erosion Prediction Project (WEPP)**
  - Upon release, the web-based model will replace the Revised Universal Soil Loss Equation, Version 2 (RUSLE2)
  - There will be standalone version available to NRCS, partners, and the public
  - Conservation planning, project planning, and inventory and assessment

Erosion Prediction Technologies

- **WEPP – Enhancements in Progress**
  - Small watershed soil loss results
    - Allows linkages of hillslope profiles to channels and impoundments
  - Prediction of ephemeral erosion
    - Simulates channel detachment, sediment transport, and deposition
  - Model testing using predicted changes in climate over the next century to predict effects on erosion, crop growth, etc.
  - State Agronomist level testing scheduled to be conducted this fall
    - Field office and TSP training planned for this winter

Erosion Prediction Technologies

- **Wind Erosion Prediction System (WEPS)**
  - A process based model that utilized managements, climate, and soil databases that will be web-based
    - Using updated climate information (1973-2013)
    - Databases stay current; no annual uploading
  - Yields and crop growth are adjusted for each unique year based on generated climate
  - Standalone version will be available to the Public and NRCS

Nutrient Management

- **590 Nutrient Management Conservation Practice Standard in process of revision**
  - Changes are to format and flow
  - No major technical changes expected

- **Current options for Nutrient Management**
  - Nutrient Management Conservation Activity Plan (CAP 104)
  - Comprehensive Nutrient Management Plan (CAP 102)
  - Farmers contract directly with private sector consultants/agribusiness (NRCS Technical Assistance Funds)
  - NRCS development of Nutrient Management Plans
  - Farmers contract with NRCS to implement nutrient management (NRCS Financial Assistance Funds)

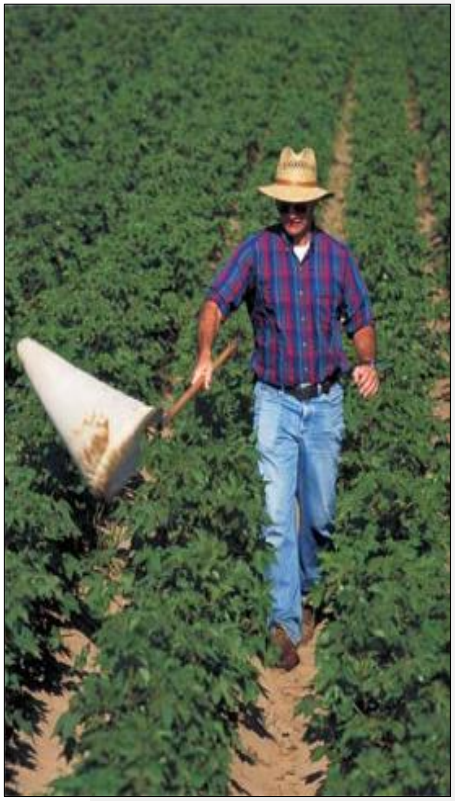
Nutrient Management

- **Partnerships**
  - Increased reliance on the agribusiness sector (TSPs, CCAs, independent crop consultants, companies and cooperatives)
  - Continue to encourage the development and utilization of nutrient management plans to address resource concerns, while maintaining (or increasing) production
  - Education and information sharing related to nutrient management and water quality, air quality, and soil condition

Integrated Pest Management

- **595 Integrated Pest Management (IPM) Conservation Practice Standard in process of revision**
  - Proposal to break it into 2 separate standards
    - IPM
    - Pesticide Mitigation
  - Should be on Federal Register in the next few months

- **Current options for IPM**
  - IPM Conservation Activity Plan (CAP 114) and template
  - IPM Herbicide Resistance Weed Plan (CAP 154) and template
  - Farmers contract directly with private sector consultants/agribusiness (NRCS Technical Assistance Funds)
  - NRCS development of IPM Plans
  - Farmers contract with NRCS to implement IPM (NRCS Financial Assistance Funds)
  - CSP Enhancement added for reduced seed treatments on corn and soybean crops



CAP 138 – Conservation Plan Supporting Organic Transition

- **Major change to utilize Organic System Plan (OSP) Templates:**
  - TSPs will complete section that are in *bold.
  - This will help producers and staff learn the different parts of the OSP
  - Eliminates the need for a supplement
  - Producers will complete the remaining sections for their OSP

CAP 138 – Conservation Plan Supporting Organic Transition

- **Minor changes are to the remaining NRCS sections:**
  - Resource Concern Inventory shortened to one page
  - Erosion Control Inventory updated to include wind erosion measurements

Cover Crops Issues

- **Pesticide Use and Cover Crops**
  - Considerations of pesticide used during crop production for cover crop establishment
- **Pesticide Use and Cover Crops used for grazing or silage**
  - Consideration of pesticide use when grazing cattle or using the cover crop as a silage
- **Pesticide Labels may not include Cover Crop**
  - Follow recommendations on a cash crop for the cover crop


Photo by B. James