NUTRIENT TRACKING TOOL (NTT: 2ND GEN.): AN APEX INTERFACE & A TOOL TO EVALUATE THE ECONOMIC AND ENVIRONMENTAL IMPACTS OF FARM MANAGEMENT PRACTICES (HTTP://NN.TARLETON.EDU/NTTG2)

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General Description and Use

What is NTT

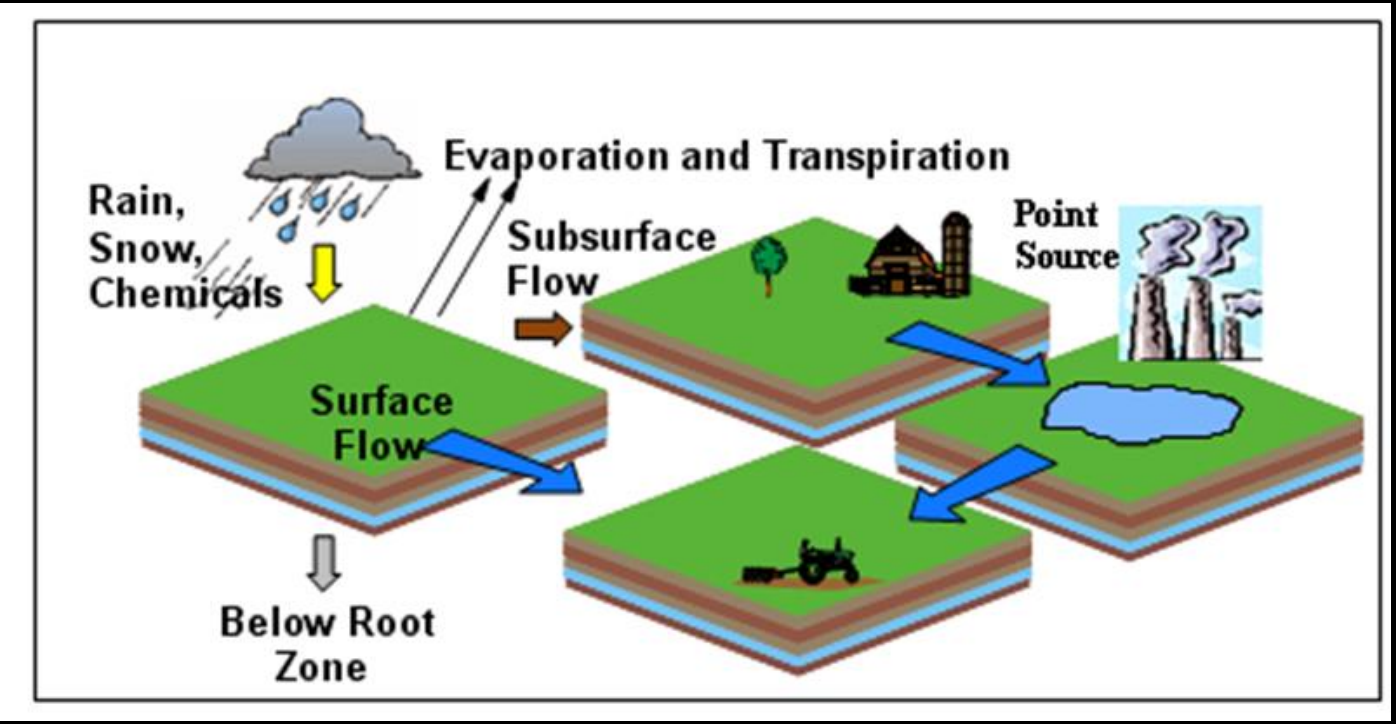
- Is built to evaluate the economic and environmental impacts of management practices at farm and small watershed levels
- NTT a free, user-friendly, web-based program, and is directly accessible to producers, crop consultants, government officials, and the general public
- The results obtained from NTT can be used for different programs such as trading & TMDL
- Is used as an interface for APEX and NCDC models

How does NTT work?

- Uses Agricultural Policy Environmental eXtender (APEX) to determine nutrient and sediment losses and runoff from agricultural fields
- Uses the Farm Economic Model (FEM) to assess the cost/benefit of farm management practices
- A web-based program that requires no software installation
- Transparent and easy to use

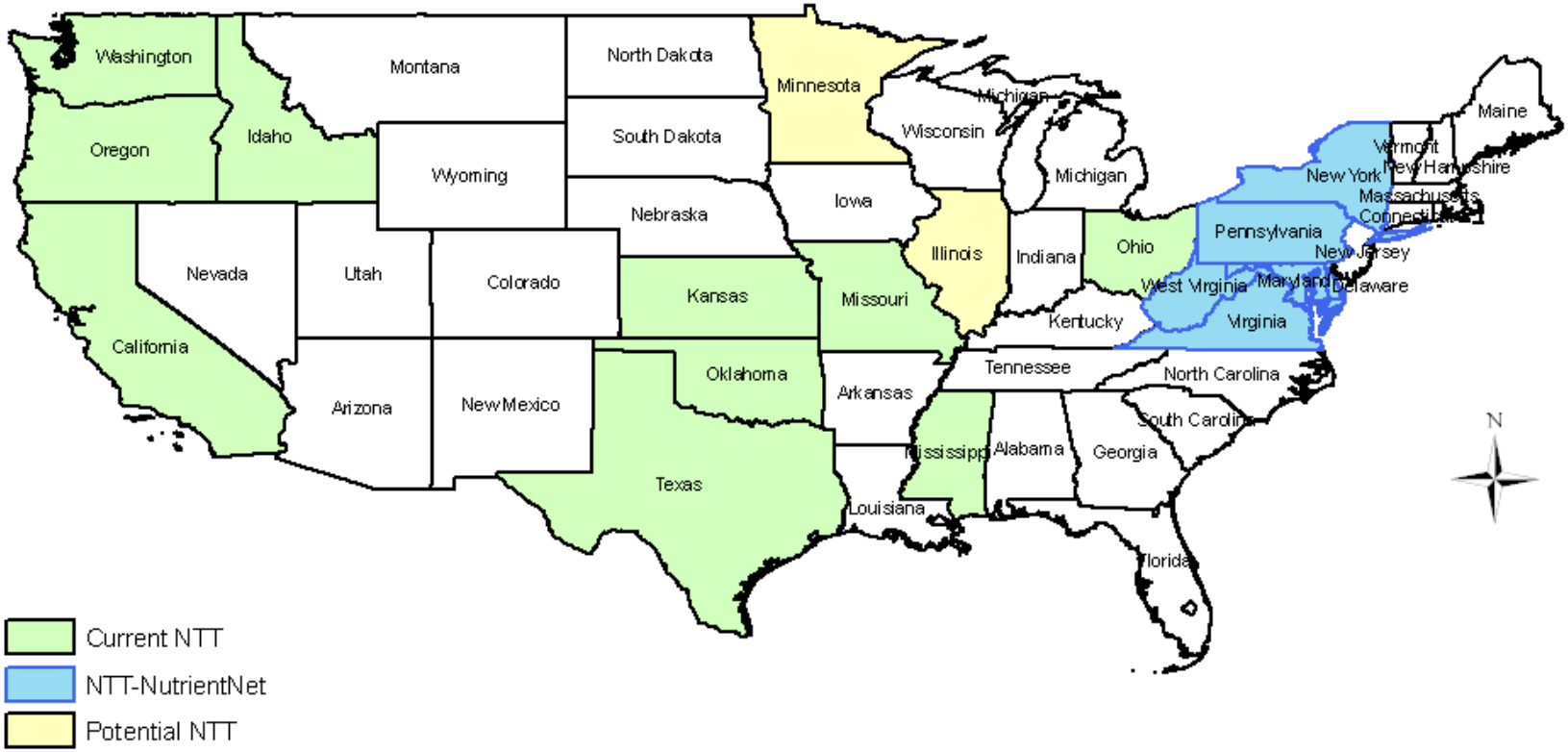
Field and Farm Linkage: NTT

- Ability of connecting the fields in the farm by APEX routing function



Current NTT Applications

States with current, completed, and potential NTT/NutrientNet applications



Science

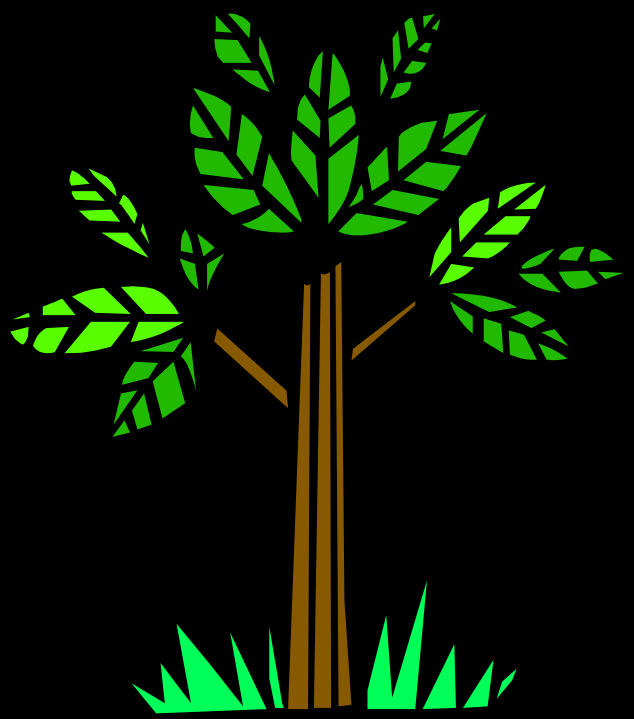
APEX (0806)

- APEX 0806 (Dr. Jimmy Williams) with TIAER modifications

- APEX was developed by USDA scientists to predict the effects of different management scenarios on water quality, sediment yields, and pollutant loading from various landuses within fields and small watersheds

Components of Environmental models

Weather
Hydrology
Erosion (wind and water)
Nutrients (N, P, and K)
CO_2
Pesticides
Crop growth
Tillage
Management
Routing
Reservoirs
Groundwater
Grazing
Manure management



NRCS Conservation Practices (CPs) Evaluated in NTT

- No-till
- Mulch-till
- Prescribed grazing
- Riparian forest buffer
- Forestry
- Grassed waterways
- Filter strips
- Terrace
- Range planting
- Field Border
- Fence
- Pipelines
- Nutrient management
- Brush management
- Grade stabilization structure
- Pest management
- Conservation crop rotation
- Contour farming
- Critical area planting
- Pasture planting

Input and Output Databases

Databases

- Weather files
  - 4-KM2 resolution up to Dec-2014 (PRZM data)
- Soil Data
  - USDA-NRCS soil survey (SURGO) databases hosted in NTT site (modified every six month) and debugged automatically before used in NTT
  - Ability to modify or create the soil (up to 10 layers)
  - Slope calculation using the 10-m DEM resolution
- Economic data and for simulation of FEM
- Capability of users to input their own data basis

Output

- Model outputs under Baseline and BMP's regimes
  - N, P, C, Pesticide, Herbicides, and Sediment at different forms and sources
  - Crop yield
- Obtaining results at the edge of individual and combined field(s) (sub-watershed) and farm (watershed)
  - results of single or multiple scenarios (e.g., Nutrient management and filter strips)
- Graphics
- PDF report

Interface

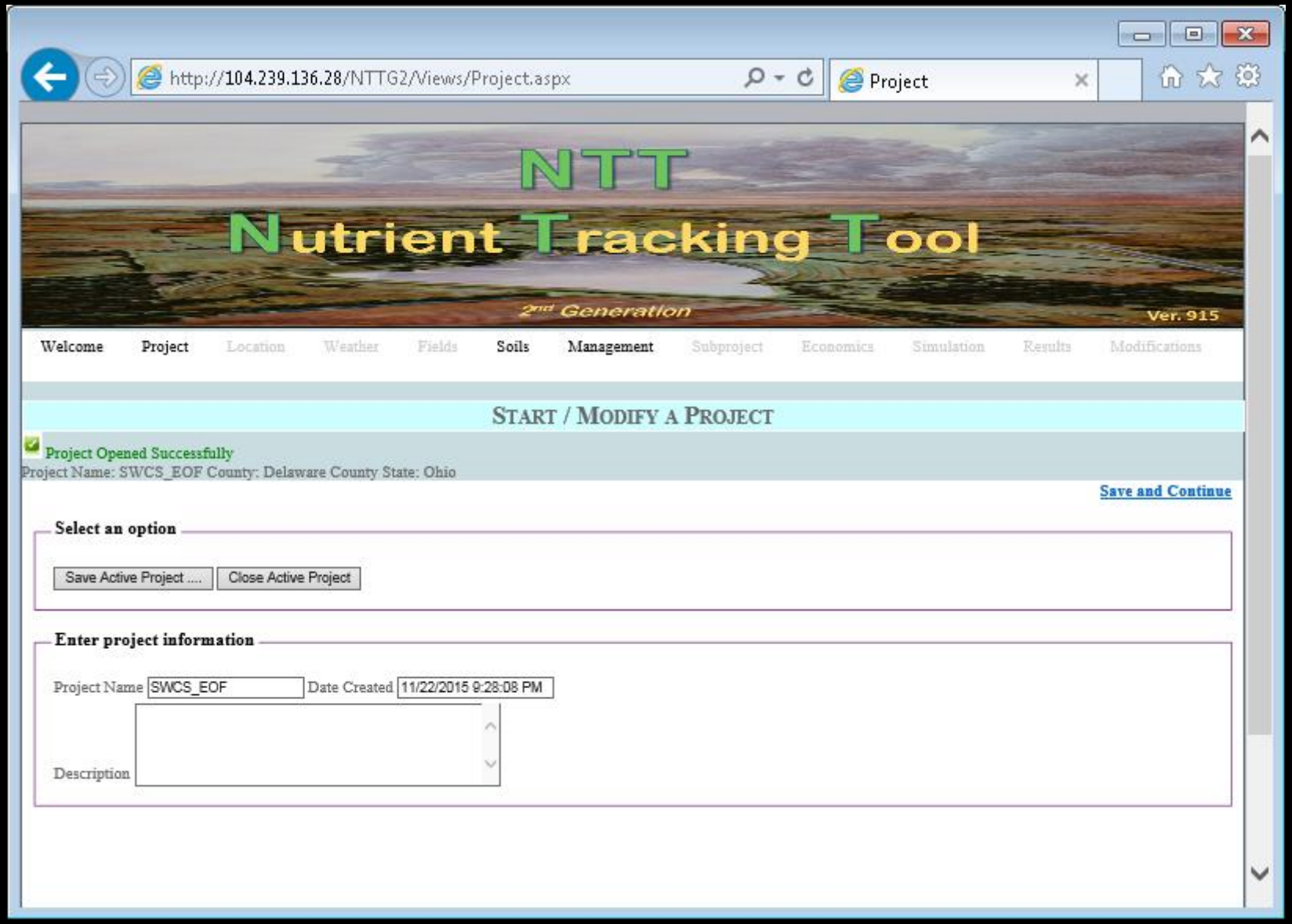
Accessibility

- Fast (fraction of a sec per year of simulation)
- Easy steps to create and simulate program
- Capability of users to input their own data basis
- Ability to modify the parameters for calibration within the program
- Ability to download the project and associated APEX files
- English and Spanish Languages
- Electronic help for NTT and associated programs (e.g., APEX) in English and Spanish languages

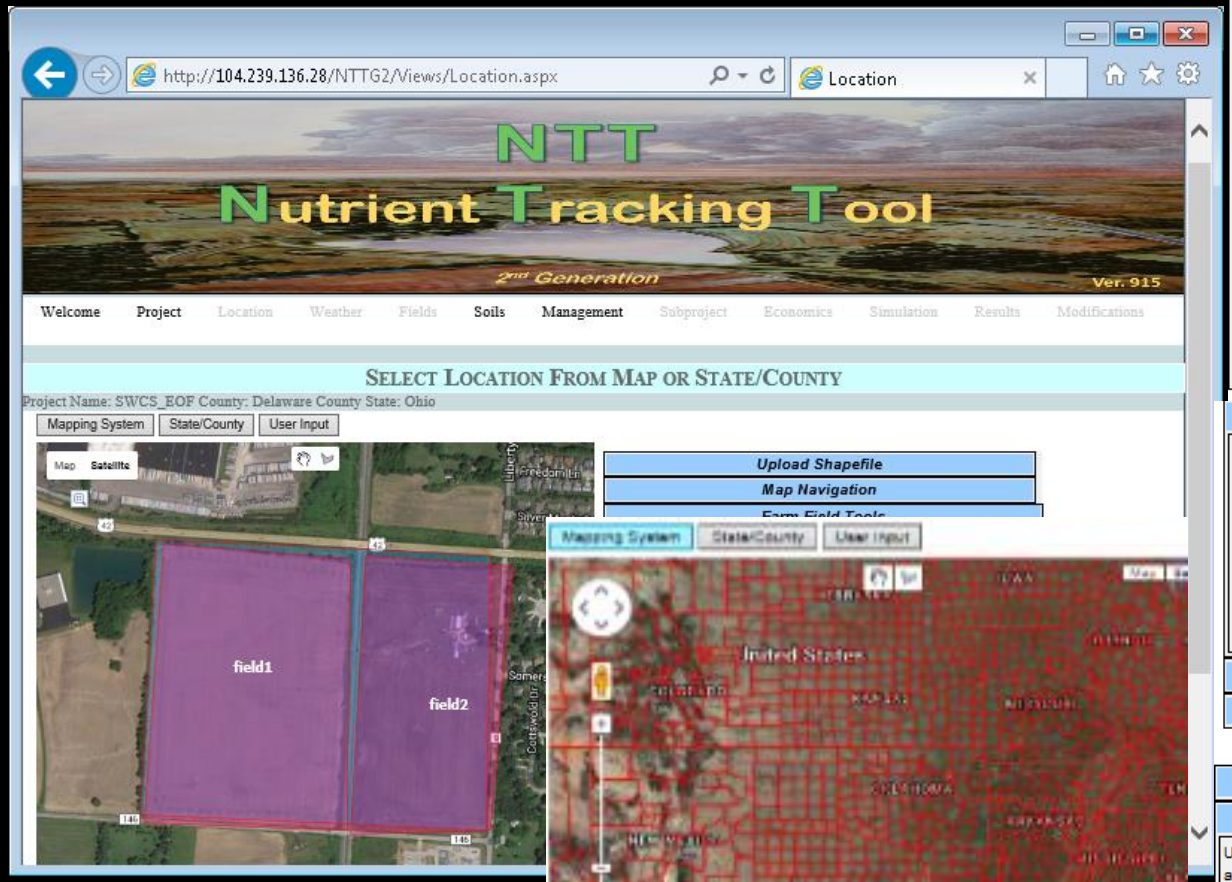
Selection of Area of Interest (AOI) Interface

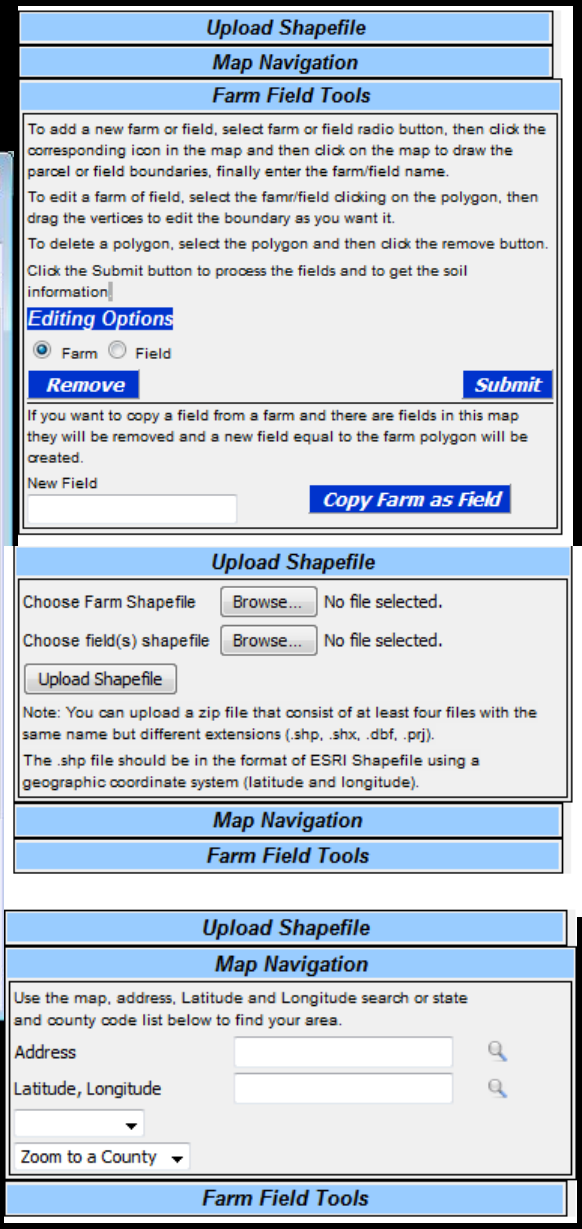
- State and County data basis
- Google map rather Soil Survey Site
- Faster surfing the map
- Selection of multiple fields (sub-watersheds) within a farm (watershed)
- Using Shape files to select the AOI
- Using longitude and latitude or address to select the AOI
- Ability to obtain the land use data
- View the picture of the AOI (if available by GOOGLE MAP)

Project Properties

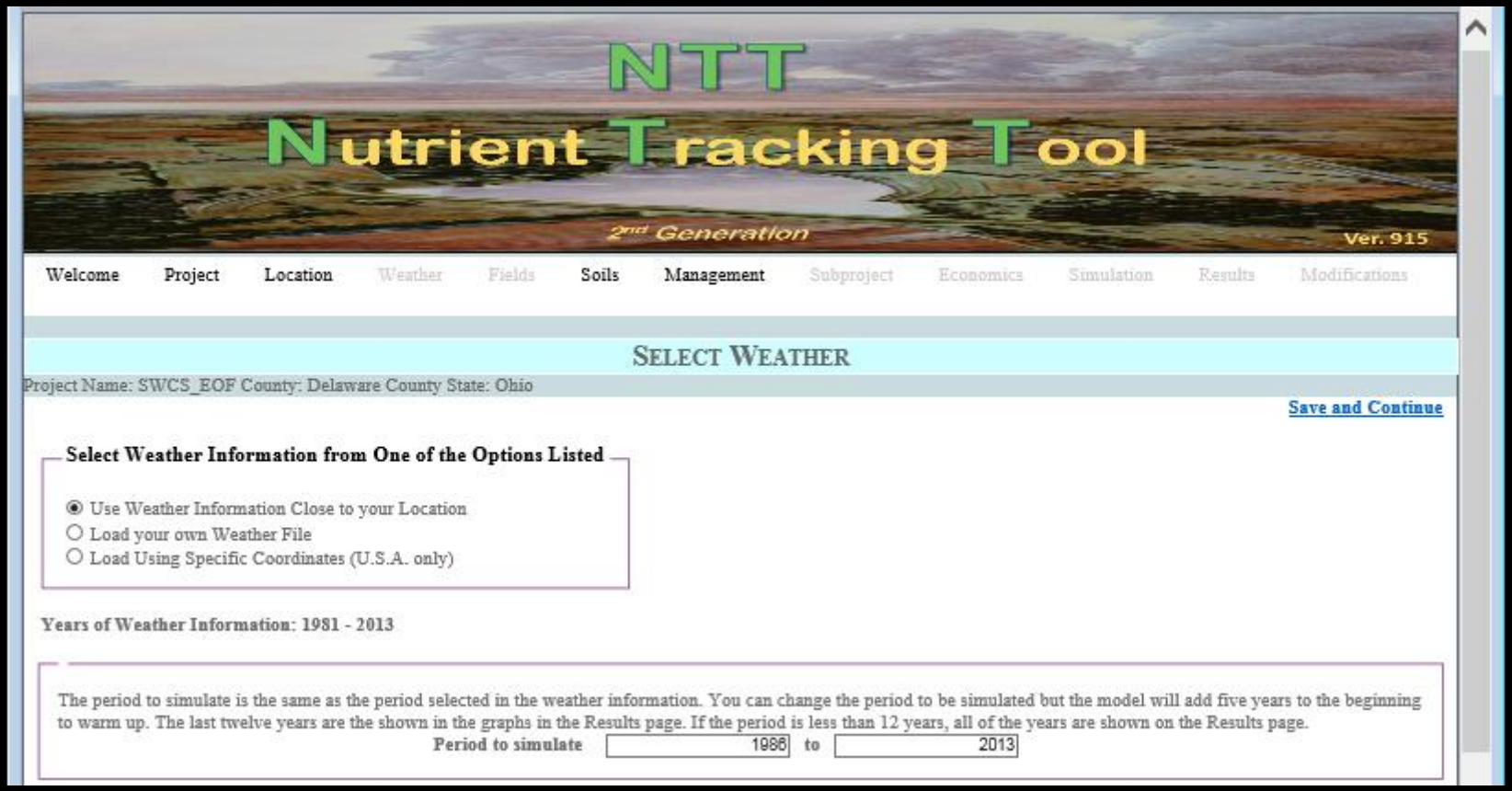


Area of Interest (AOI) Selection

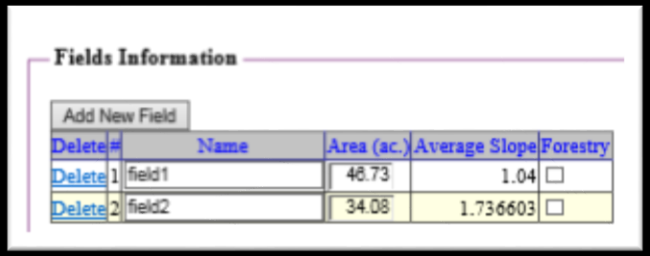




Weather


NTT
Nutrient Tracking Tool
2nd Generation
Ver. 915
Welcome
Project
Location
Weather
Fields
Soils
Management
Subproject
Economics
Simulation
Results
Modifications
SELECT WEATHER
Project Name: SWCS_EOF County: Delaware County State: Ohio
Save and Continue
Select Weather Information from One of the Options Listed
Use Weather Information Close to your Location
Load your own Weather File
Load Using Specific Coordinates (U.S.A. only)
Years of Weather Information: 1981 - 2013
The period to simulate is the same as the period selected in the weather information. You can change the period to be simulated but the model will add five years to the beginning to warm up. The last twelve years are the shown in the graphs in the Results page. If the period is less than 12 years, all of the years are shown on the Results page.
Period to simulate
1986
to
2013

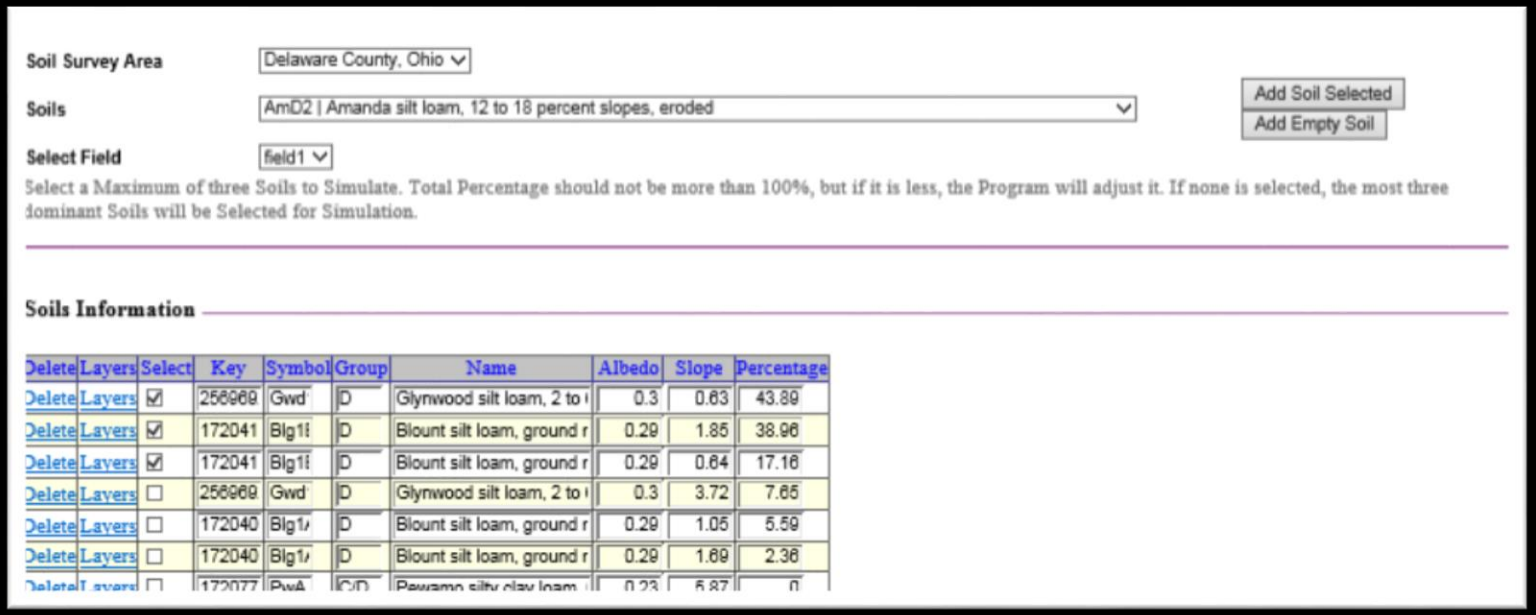
Fields and Soils



Fields Information

Add New Field

Delete	#	Name	Area (ac.)	Average Slope	Forestry
Delete	1	field1	46.73	1.04	☐
Delete	2	field2	34.08	1.736603	☐



Soil Survey Area Delaware County, Ohio

Soils AmD2 | Amanda silt loam, 12 to 18 percent slopes, eroded

Add Soil Selected

Add Empty Soil

Select Field field1

Select a Maximum of three Soils to Simulate. Total Percentage should not be more than 100%, but if it is less, the Program will adjust it. If none is selected, the most three dominant Soils will be Selected for Simulation.

Soils Information

Delete	Layers	Select	Key	Symbol	Group	Name	Albedo	Slope	Percentage
Delete	Layers	☑	256969	Gwd	D	Glynwood silt loam, 2 to	0.3	0.63	43.89
Delete	Layers	☑	172041	Blg1	D	Blount silt loam, ground r	0.29	1.85	38.96
Delete	Layers	☑	172041	Blg1	D	Blount silt loam, ground r	0.29	0.64	17.16
Delete	Layers	☐	256969	Gwd	D	Glynwood silt loam, 2 to	0.3	3.72	7.65
Delete	Layers	☐	172040	Blg1	D	Blount silt loam, ground r	0.29	1.05	5.59
Delete	Layers	☐	172040	Blg1	D	Blount silt loam, ground r	0.29	1.69	2.36
Delete	Layers	☐	172077	PwA	C/D	Pewamo silty clay loam	0.23	5.87	0

Soils Detailed Layers

Select Field [field2]

Select a Maximum of three Soils to Simulate. Total Percentage should not be more than 100%, but if it is less, the Program will adjust it. If none is selected, the most three dominant Soils will be Selected for Simulation.

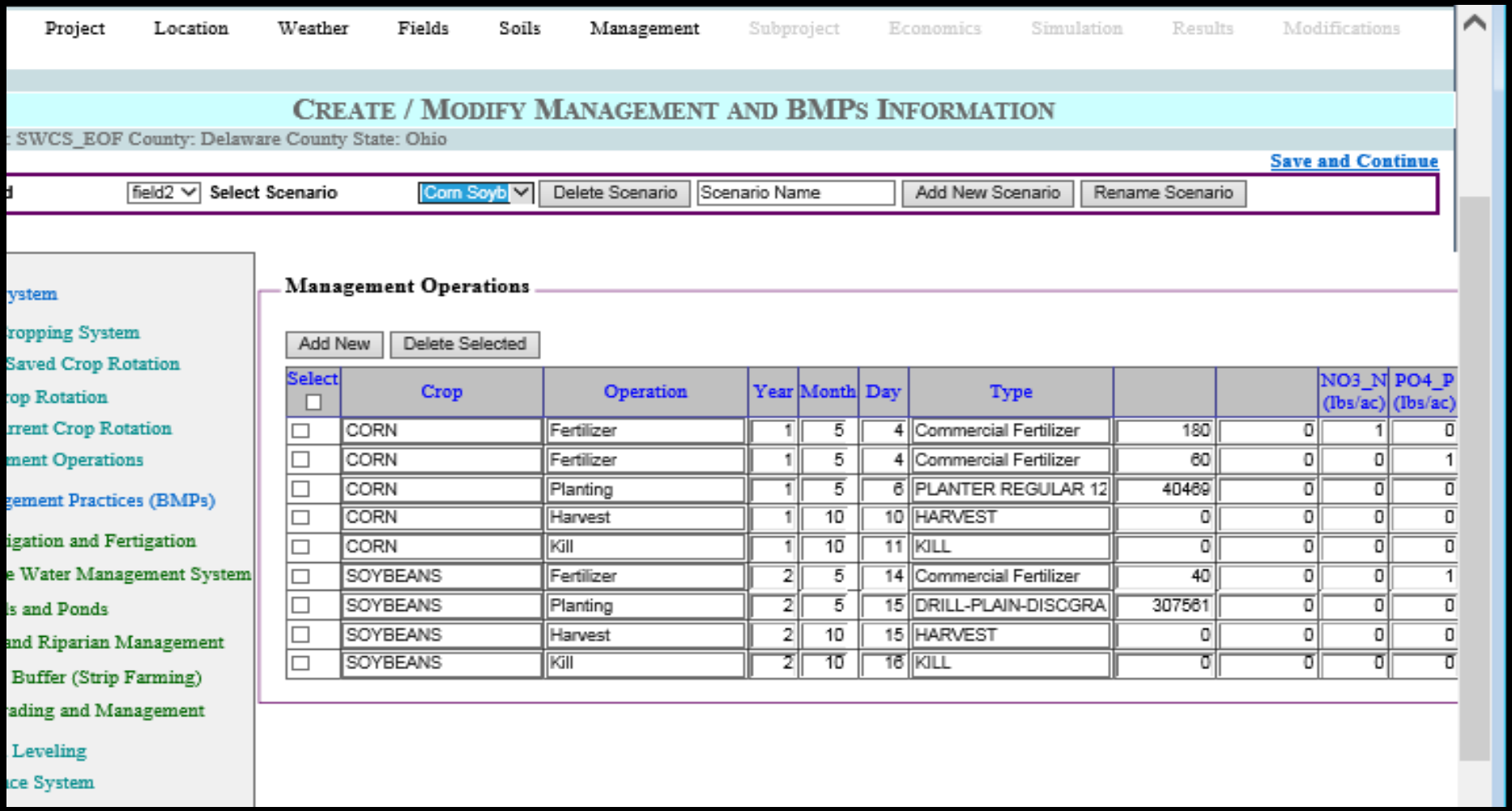
Soils Information

Delete	Layers	Select	Key	Symbol	Group	Name	Albedo	Slope	Percentage
Delete	Layers	☑	256969	Gwd	D	Glynwood silt loam, 2 to	0.3	2.63	66.49
Delete	Layers	☑	172040	Blg1	D	Blount silt loam, ground r	0.29	1.22	18.42
Delete	Layers	☑	256969	Gwd	D	Glynwood silt loam, 2 to	0.3	1.36	15.09
Delete	Layers	☐	172041	Blg1	D	Blount silt loam, ground r	0.29	2.79	6.76
Delete	Layers	☐	172040	Blg1	D	Blount silt loam, ground r	0.29	1.03	4.85
Delete	Layers	☐	172077	PwA	C/D	Pewamo silty clay loam,	0.23	0.97	1.65

0|2569692 | Gwd1B1 | D | Glynwood silt loam, 2 to 6 percent slopes Add Empty Layer Save and Return

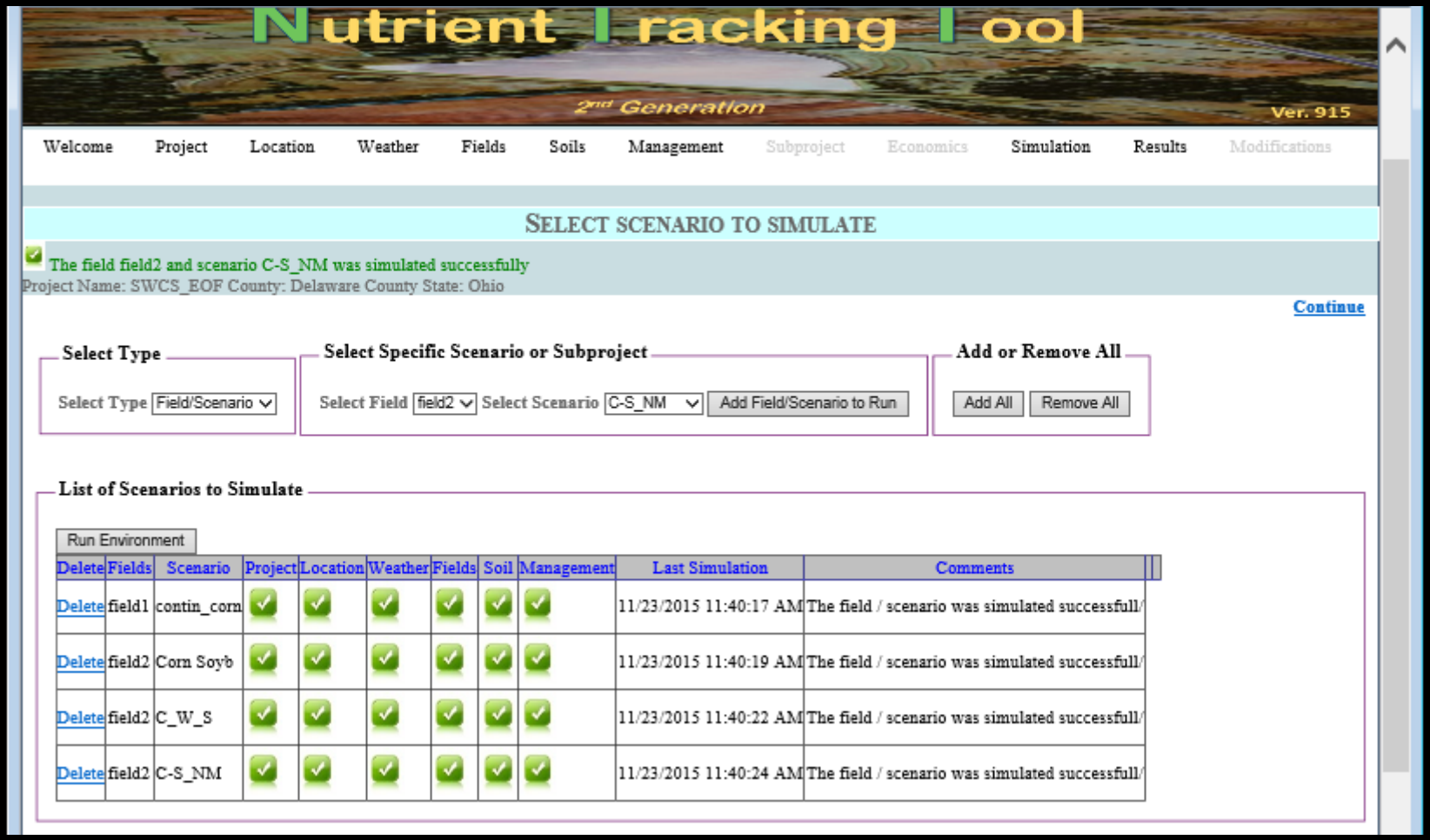
Delete	Layer	Depth (in)	Soil P(ppm)	Bulk Density (Mg/m3)	Sand (%)	Silt (%)	Organic Matter (%)	pH
Delete	1	9.06	0	1.4	24	51	2	6.2
Delete	2	29.92	0	1.55	16	42	0.5	5.9
Delete	3	35.83	0	1.79	24	40	0.25	7.3
Delete	4	79.92	0	1.79	26	40	0.25	7.9

Management Screen



Select	Crop	Operation	Year	Month	Day	Type			NO3_N (lbs/ac)	PO4_P (lbs/ac)
☐	CORN	Fertilizer	1	5	4	Commercial Fertilizer	180	0	1	0
☐	CORN	Fertilizer	1	5	4	Commercial Fertilizer	60	0	0	1
☐	CORN	Planting	1	5	6	PLANTER REGULAR 12	40469	0	0	0
☐	CORN	Harvest	1	10	10	HARVEST	0	0	0	0
☐	CORN	Kill	1	10	11	KILL	0	0	0	0
☐	SOYBEANS	Fertilizer	2	5	14	Commercial Fertilizer	40	0	0	1
☐	SOYBEANS	Planting	2	5	15	DRILL-PLAIN-DISCGRA	307561	0	0	0
☐	SOYBEANS	Harvest	2	10	15	HARVEST	0	0	0	0
☐	SOYBEANS	Kill	2	10	16	KILL	0	0	0	0

Simulation Screen



Detailed Result Summary

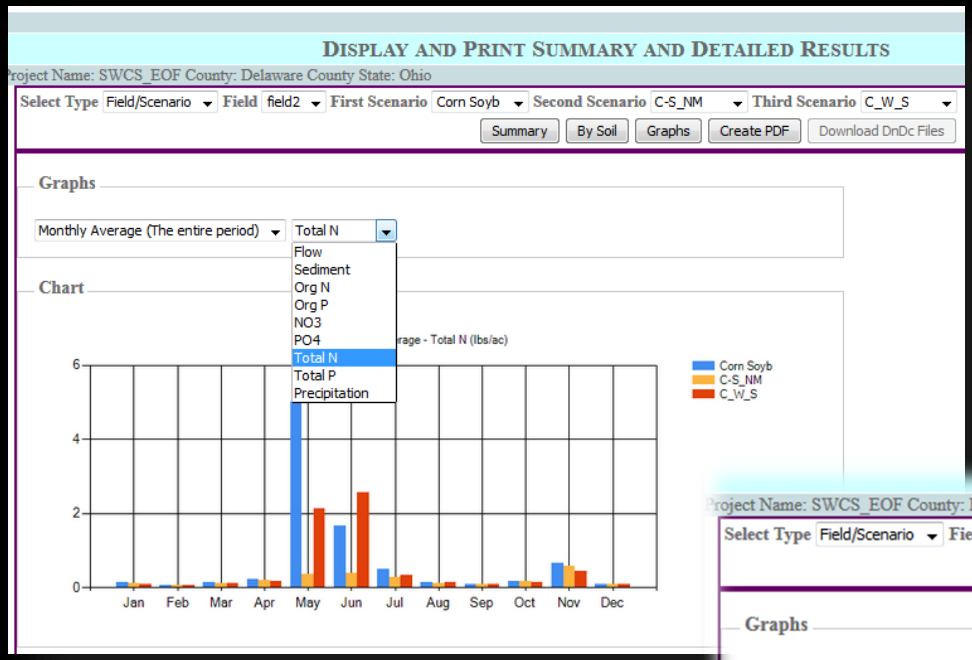
Select Type Field/Scenario ▾ **Field** EOF_WGS841 ▾ **First Scenario** Baseline ▾ **Second Scenario** Baseline_SubApp ▾

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files* | * To Download and Create PI

Detail	Description	Baseline	±	Baseline_SubApp	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**3.64**		**3.64**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**15.4**	**7.81**	**13.98**	**7.78**	**-1.42**	**9.2**	**-5.2**
	Org N (lbs/ac)	2.49	1.73	2.2	1.46	-0.29	11.6	-1.1
	Runoff N (lbs/ac)	3.38	2.51	0.45	1.71	-2.93	86.7	-10.7
	Subsurface N (lbs/ac)	1.36	0.61	1.56	0.74	0.2	-14.7	0.7
	Tile Drain N (lbs/ac)	8.17	2.96	9.78	3.88	1.61	-19.7	5.9
☑	**Total P (lbs/ac)**	**1.95**	**1.46**	**1.05**	**0.83**	**-0.9**	**46.2**	**-3.3**
	Org P (lbs/ac)	0.96	0.74	0.5	0.35	-0.46	47.9	-1.7
	PO4_P (lbs/ac)	0.57	0.29	0.1	0.04	-0.47	82.5	-1.7
	Tile Drain P (lbs/ac)	0.43	0.43	0.44	0.44	0.01	-2.3	0
☐	**Total Flow (in)**	**14.6**	**3.37**	**14.5**	**3.32**	**-0.1**	**0.7**	**-0.4**
☐	**Other Water Information**	**7.8**	**1.61**	**7.93**	**1.66**	**0.13**	**-1.7**	**0.5**
☐	**Total Sediment (t/ac)**	**0.6526**	**0.51**	**0.5588**	**0.42**	**-0.09**	**14.4**	**-0.3**
☑	**Crop Yield**					**0**	**0**	**0**
☐	CORN Yield (bu/ac)	179	8.44	178	8.20	-1	0.6	-3.6
☐	SOYBEANS Yield (bu/ac)	57	1.15	57	1.17	0	0	0
☐	WINTER WHEAT Yield (bu/ac)	69	70.03	71	71.39	2	-2.9	7.3

(±) Confidence Interval

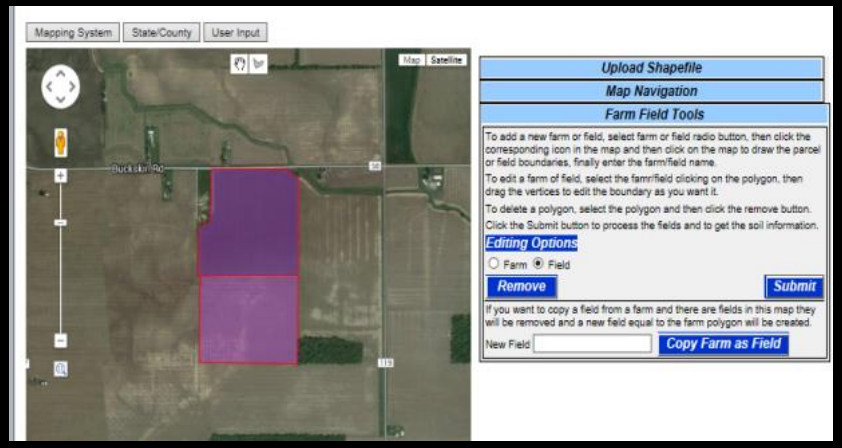
Graphs – Monthly – Annual

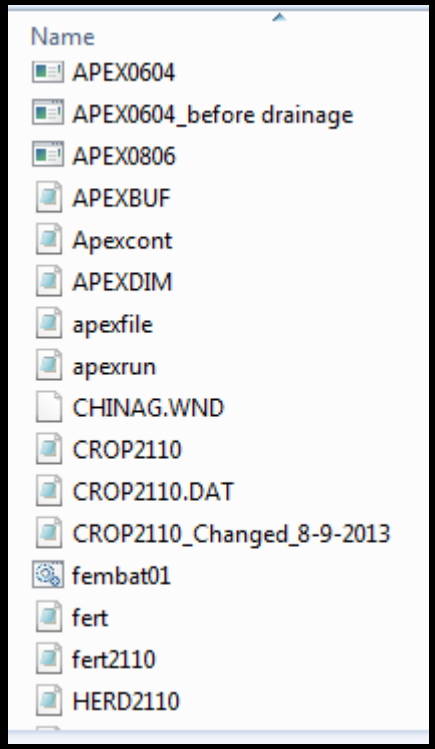


NTT as an APEX Interface

NTT: As new APEX interface

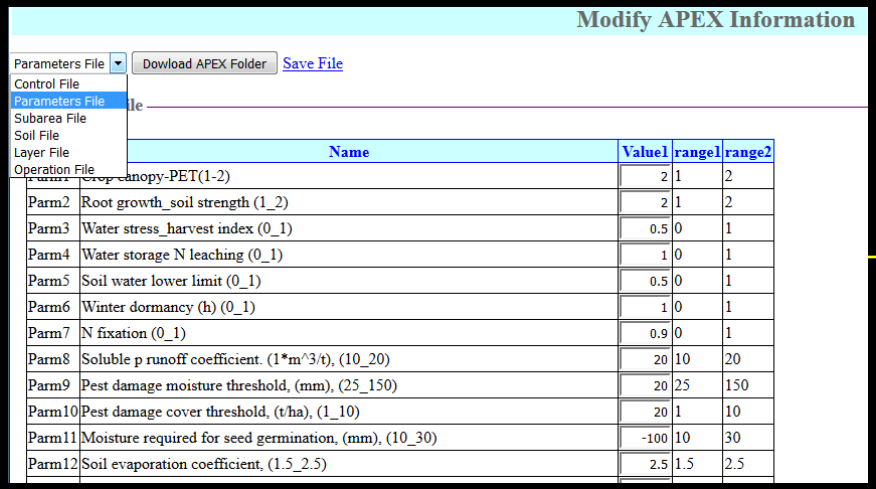
- Ability of creating APEX files for the area of interest using the mapping function



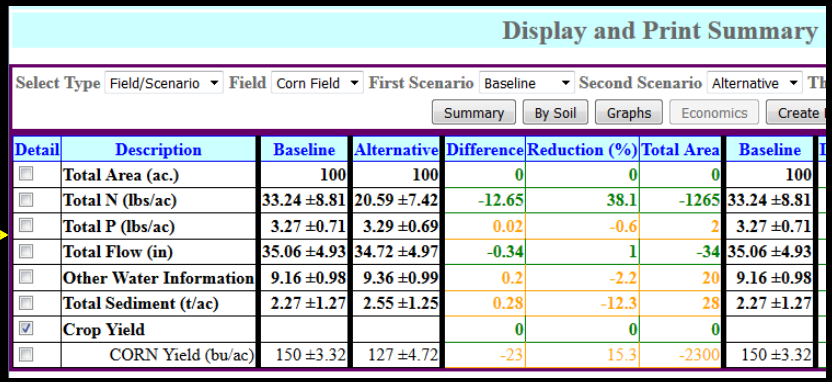


NTT: As new APEX interface

- Ability of modify files (e.g., Parm) and calibrate APEX using NTT program



	Name	Value1	range1	range2
	Crop canopy-PET(1-2)	2	1	2
Parm2	Root growth_soil strength (1_2)	2	1	2
Parm3	Water stress_harvest index (0_1)	0.5	0	1
Parm4	Water storage N leaching (0_1)	1	0	1
Parm5	Soil water lower limit (0_1)	0.5	0	1
Parm6	Winter dormancy (h) (0_1)	1	0	1
Parm7	N fixation (0_1)	0.9	0	1
Parm8	Soluble p runoff coefficient. (1*m^3/t), (10_20)	20	10	20
Parm9	Pest damage moisture threshold, (mm), (25_150)	20	25	150
Parm10	Pest damage cover threshold, (t/ha), (1_10)	20	1	10
Parm11	Moisture required for seed germination, (mm), (10_30)	-100	10	30
Parm12	Soil evaporation coefficient, (1.5_2.5)	2.5	1.5	2.5



Detail	Description	Baseline	Alternative	Difference	Reduction (%)	Total Area	Baseline
☐	Total Area (ac.)	100	100	0	0	0	100
☐	Total N (lbs/ac)	33.24 ±8.81	20.59 ±7.42	-12.65	38.1	-1265	33.24 ±8.81
☐	Total P (lbs/ac)	3.27 ±0.71	3.29 ±0.69	0.02	-0.6	2	3.27 ±0.71
☐	Total Flow (in)	35.06 ±4.93	34.72 ±4.97	-0.34	1	-34	35.06 ±4.93
☐	Other Water Information	9.16 ±0.98	9.36 ±0.99	0.2	-2.2	20	9.16 ±0.98
☐	Total Sediment (t/ac)	2.27 ±1.27	2.55 ±1.25	0.28	-12.3	28	2.27 ±1.27
☑	Crop Yield			0	0	0	
☐	CORN Yield (bu/ac)	150 ±3.32	127 ±4.72	-23	15.3	-2300	150 ±3.32

Current NTT Enhancements

- Working with our colleagues at USDA to create a version of New NTT Program for USDA Trading program
- Incorporation of Forestry management practices
- Assist international users to adopt NTT at their region
- Completion of Economic data for all US for FEM simulation in NTT and CEEOT (Comprehensive Economic and Environmental Optimization Tool) programs

Environmental and Economic impacts of CPs on Crop Yield and Water quality and Quantity

CEEOT and NTT Intergraded Programs

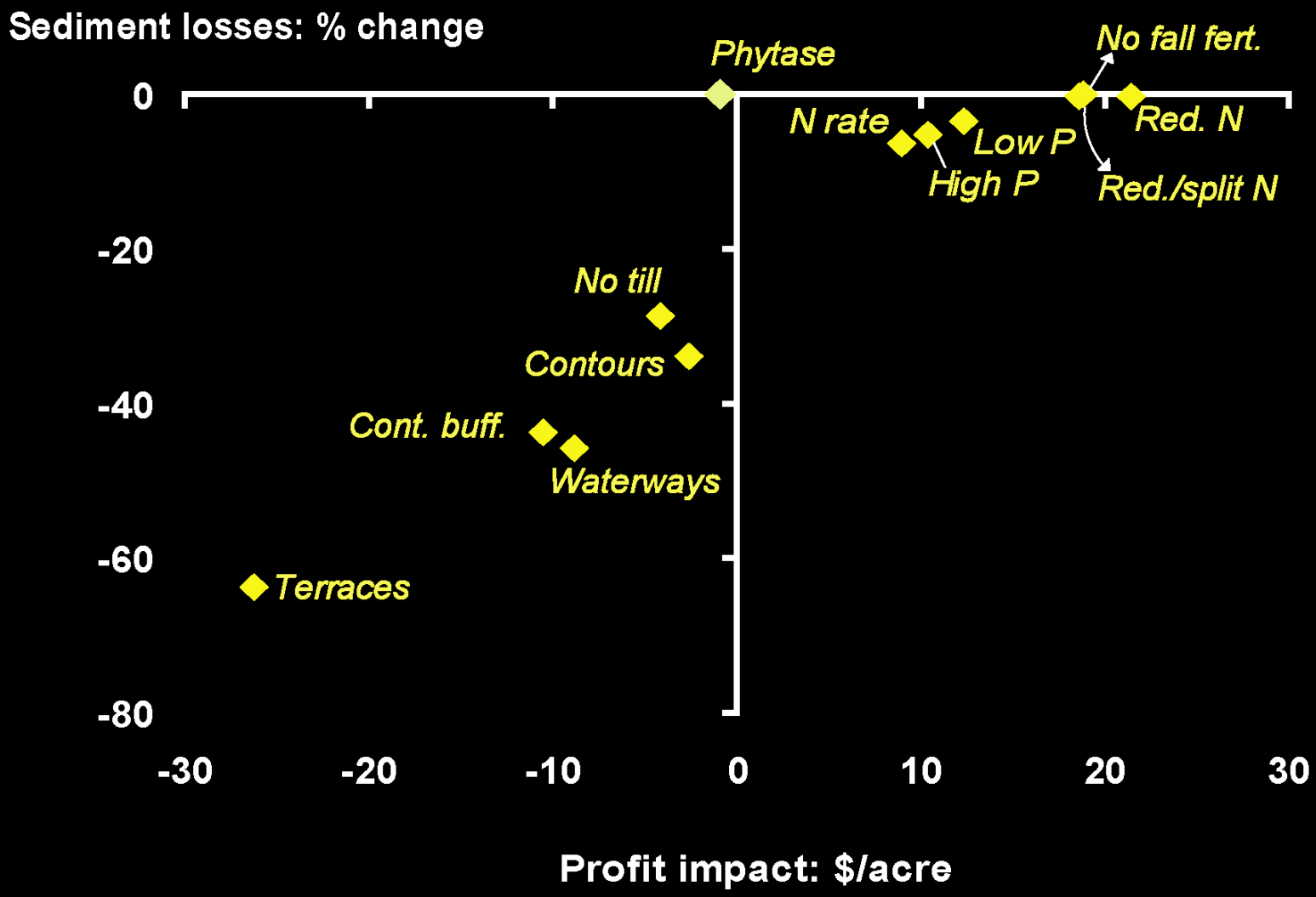
CEEOT(Farm and Watershed Scales)

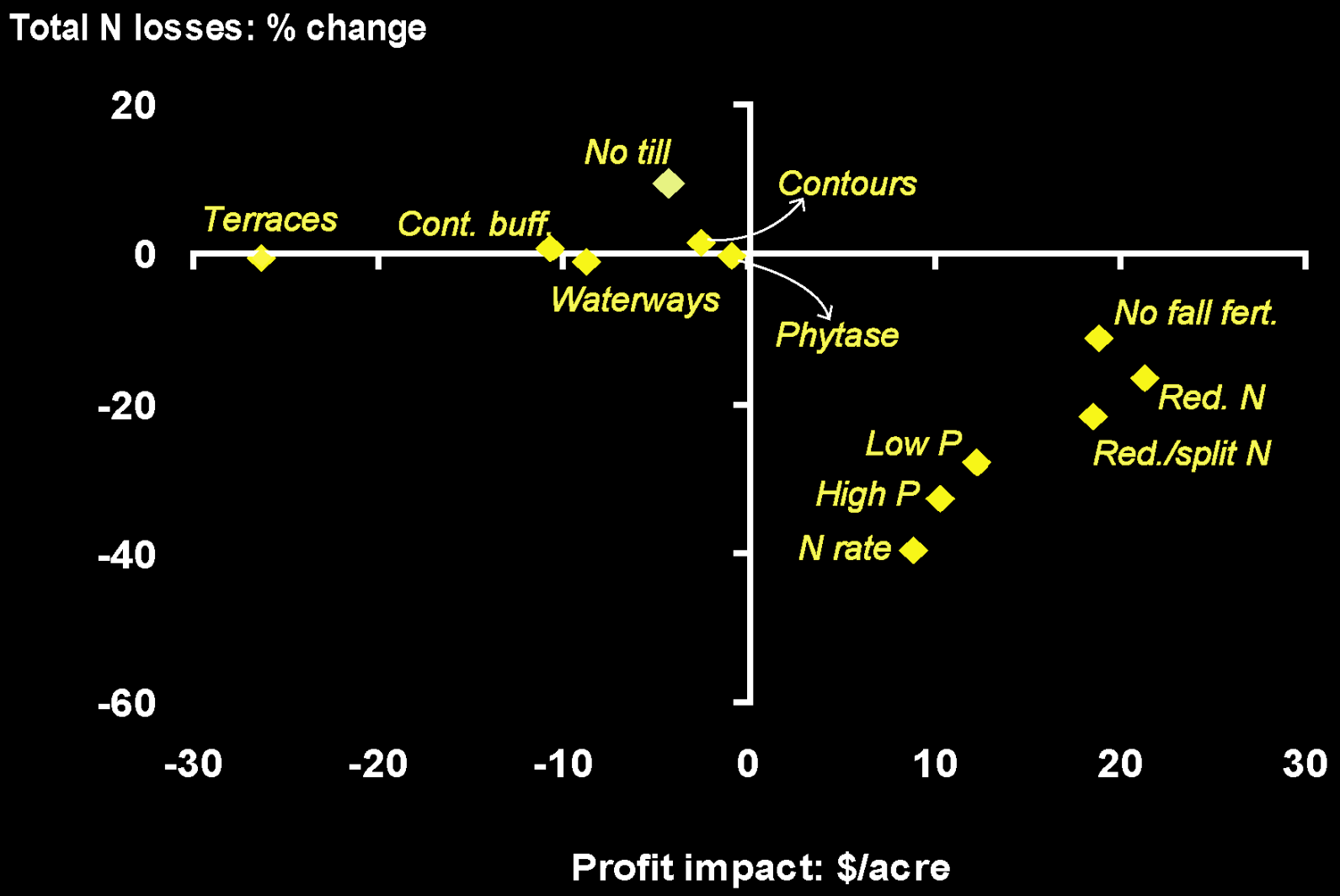
← SWAT (Watershed Model)

← APEX (Field scale model) →

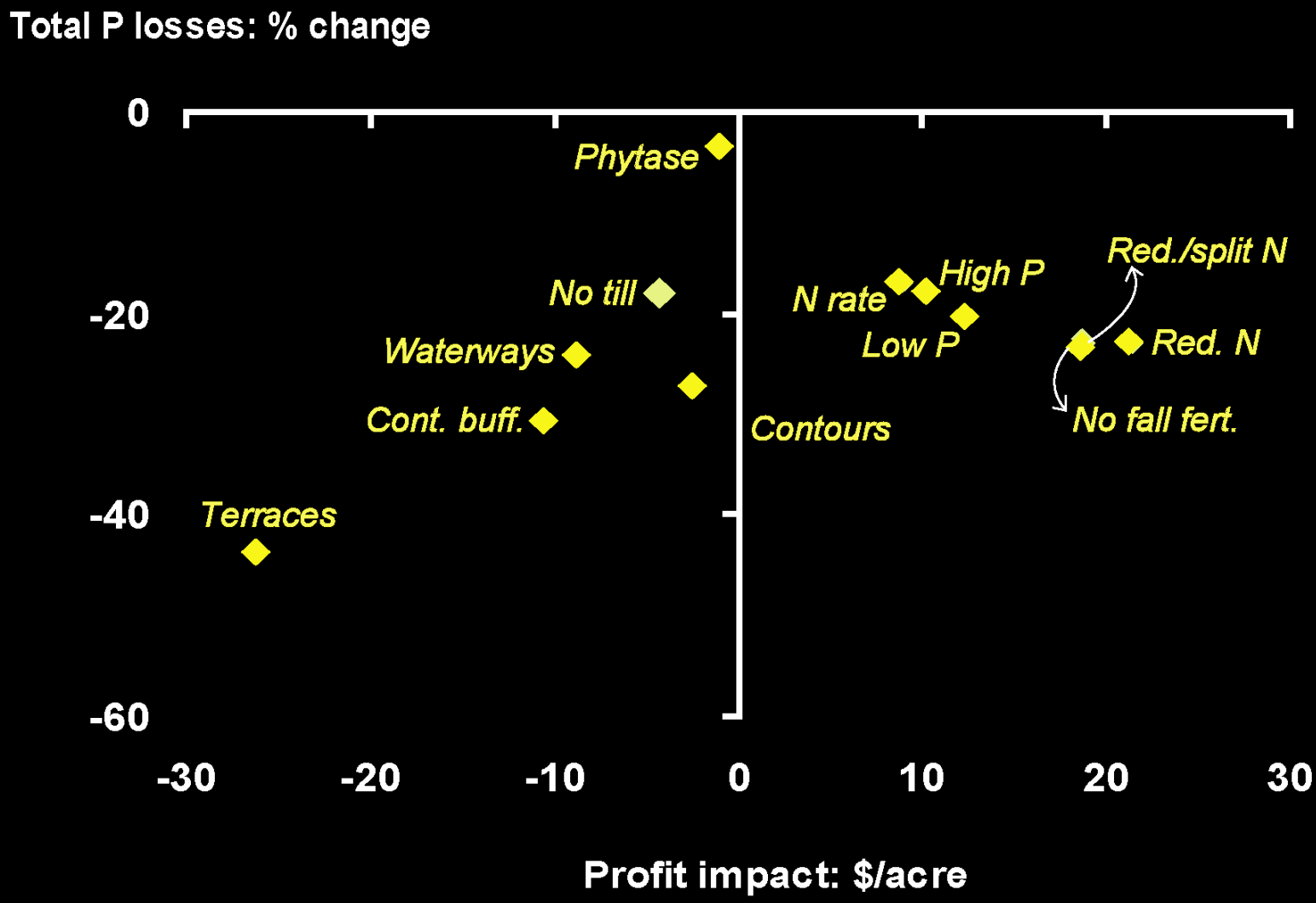
← FEM (Farm Economic Model) →

NTT (Farm Scale)

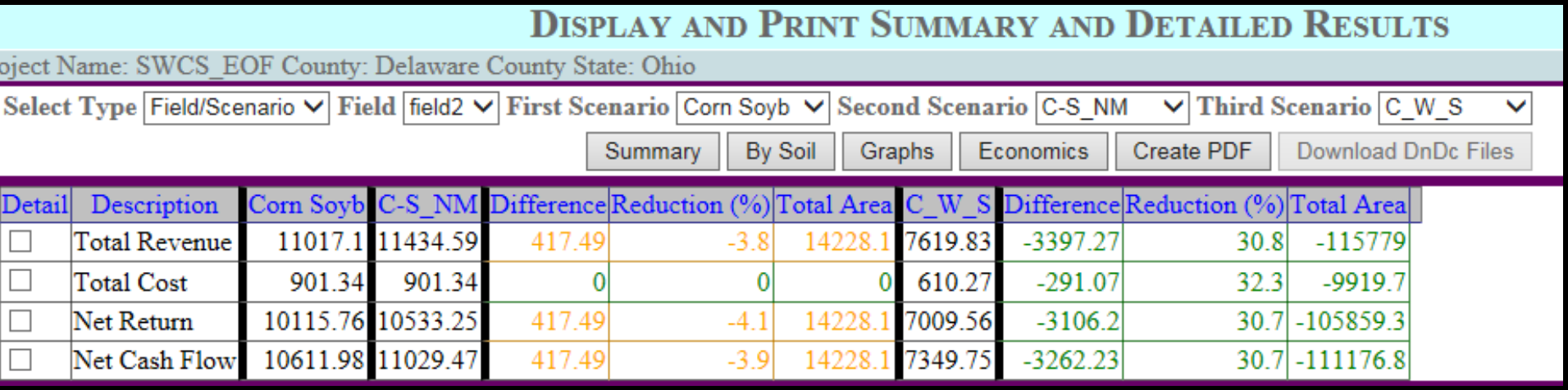

Sediment losses: % change
0
-20
-40
-60
-80
-30
-20
-10
0
10
20
30
Profit impact: $/acre
Phytase
No fall fert.
N rate
Low P
Red. N
High P
Red./split N
No till
Contours
Cont. buff.
Waterways
Terraces


Total N losses: % change
20
0
-20
-40
-60
-30
-20
-10
0
10
20
30
No till
Contours
Terraces
Cont. buff.
Waterways
Phytase
No fall fert.
Red. N
Red./split N
Low P
High P
N rate
Profit impact: $/acre

A. Saleh


Total P losses: % change
0
-20
-40
-60
-30
-20
-10
0
10
20
30
Profit impact: $/acre
Phytase
No till
Waterways
Cont. buff.
Terraces
Contours
N rate
High P
Low P
Red./split N
Red. N
No fall fert.

An Example of the Economic Simulation Result Screen



DISPLAY AND PRINT SUMMARY AND DETAILED RESULTS

oject Name: SWCS_EOF County: Delaware County State: Ohio

Select Type: Field/Scenario | Field: field2 | First Scenario: Corn Soyb | Second Scenario: C-S_NM | Third Scenario: C_W_S

Summary | By Soil | Graphs | Economics | Create PDF | Download DnDc Files

Detail	Description	Corn Soyb	C-S_NM	Difference	Reduction (%)	Total Area	C_W_S	Difference	Reduction (%)	Total Area
☐	Total Revenue	11017.1	11434.59	417.49	-3.8	14228.1	7619.83	-3397.27	30.8	-115779
☐	Total Cost	901.34	901.34	0	0	0	610.27	-291.07	32.3	-9919.7
☐	Net Return	10115.76	10533.25	417.49	-4.1	14228.1	7009.56	-3106.2	30.7	-105859.3
☐	Net Cash Flow	10611.98	11029.47	417.49	-3.9	14228.1	7349.75	-3262.23	30.7	-111176.8

Expected Environmental Results

Lake Earie Region

Results from site EOF-WGS841: “BASELINE” and “NUTRIENT SUBAPPLICATION” Scenarios

Select Type Field/Scenario ▾ **Field** EOF_WGS841 ▾ **First Scenario** Baseline ▾ **Second Scenario** Baseline_SubApp ▾

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files* * To Download and Create PD

Detail	Description	Baseline	±	Baseline_SubApp	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**3.64**		**3.64**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**15.4**	**7.81**	**13.98**	**7.78**	**-1.42**	**9.2**	**-5.2**
	Org N (lbs/ac)	2.49	1.73	2.2	1.46	-0.29	11.6	-1.1
	Runoff N (lbs/ac)	3.38	2.51	0.45	1.71	-2.93	86.7	-10.7
	Subsurface N (lbs/ac)	1.36	0.61	1.56	0.74	0.2	-14.7	0.7
	Tile Drain N (lbs/ac)	8.17	2.96	9.78	3.88	1.61	-19.7	5.9
☑	**Total P (lbs/ac)**	**1.95**	**1.46**	**1.05**	**0.83**	**-0.9**	**46.2**	**-3.3**
	Org P (lbs/ac)	0.96	0.74	0.5	0.35	-0.46	47.9	-1.7
	PO4_P (lbs/ac)	0.57	0.29	0.1	0.04	-0.47	82.5	-1.7
	Tile Drain P (lbs/ac)	0.43	0.43	0.44	0.44	0.01	-2.3	0
☐	**Total Flow (in)**	**14.6**	**3.37**	**14.5**	**3.32**	**-0.1**	**0.7**	**-0.4**
☐	**Other Water Information**	**7.8**	**1.61**	**7.93**	**1.66**	**0.13**	**-1.7**	**0.5**
☐	**Total Sediment (t/ac)**	**0.6526**	**0.51**	**0.5588**	**0.42**	**-0.09**	**14.4**	**-0.3**
☑	**Crop Yield**					**0**	**0**	**0**
☐	CORN Yield (bu/ac)	179	8.44	178	8.20	-1	0.6	-3.6
☐	SOYBEANS Yield (bu/ac)	57	1.15	57	1.17	0	0	0
☐	WINTER WHEAT Yield (bu/ac)	69	70.03	71	71.39	2	-2.9	7.3

(±) Confidence Interval

Results from site EOF-WGS842: “BASELINE” and “NUTRIENT SUBAPPLICATION” Scenarios

Select Type Field/Scenario ▾ **Field** EOF_WGS842 ▾ **First Scenario** Baseline ▾ **Second Scenario** BaselineSubApp ▾

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files* * To Download and Create PDF

Detail	Description	Baseline	±	BaselineSubApp	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**6.3**		**6.3**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**18.72**	**9.58**	**16.41**	**8.60**	**-2.31**	**12.3**	**-14.6**
	Org N (lbs/ac)	2.36	1.48	2.23	1.43	-0.13	5.5	-0.8
	Runoff N (lbs/ac)	4.53	3.90	0.49	1.95	-4.04	89.2	-25.5
	Subsurface N (lbs/ac)	1.21	0.53	1.37	0.64	0.16	-13.2	1
	Tile Drain N (lbs/ac)	10.63	3.68	12.31	4.58	1.68	-15.8	10.6
☑	**Total P (lbs/ac)**	**2.02**	**1.44**	**1.21**	**0.98**	**-0.81**	**40.1**	**-5.1**
	Org P (lbs/ac)	0.83	0.56	0.5	0.34	-0.33	39.8	-2.1
	PO4_P (lbs/ac)	0.62	0.30	0.11	0.05	-0.51	82.3	-3.2
	Tile Drain P (lbs/ac)	0.57	0.57	0.6	0.60	0.03	-5.3	0.2
☐	**Total Flow (in)**	**15.18**	**3.38**	**15.14**	**3.38**	**-0.04**	**0.3**	**-0.3**
☐	**Other Water Information**	**7.49**	**1.69**	**7.57**	**1.72**	**0.08**	**-1.1**	**0.5**
☐	**Total Sediment (t/ac)**	**0.5189**	**0.37**	**0.4917**	**0.36**	**-0.03**	**5.2**	**-0.2**
☑	**Crop Yield**					**0**	**0**	**0**
☐	CORN Yield (bu/ac)	182	8.83	182	8.96	0	0	0
☐	SOYBEANS Yield (bu/ac)	57	0.99	57	1.00	0	0	0
☐	WINTER WHEAT Yield (bu/ac)	73	60.26	76	62.24	3	-4.1	18.9

(±) Confidence Interval

NTT Results from site DF-22: “CS_NOTILL” and “CS_NOTILL_NO TILE” Scenarios

Select Type: Field/Scenario | Field: DF-22 | First Scenario: Tillage CB | Second Scenario: CB NT NP

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files*

Detail	Description	Tillage CB	±	CB NT NP	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**61.48**		**61.48**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**16.82**	**3.37**	**28.38**	**9.03**	11.56	-68.7	710.7
	Org N (lbs/ac)	1.59	0.56	13.2	2.30	11.61	-730.2	713.8
	Runoff N (lbs/ac)	3.67	1.38	13.44	6.30	9.77	-266.2	600.7
	Subsurface N (lbs/ac)	0.81	0.21	1.74	0.44	0.93	-114.8	57.2
	Tile Drain N (lbs/ac)	10.76	1.22	0	0.00	-10.76	100	-661.5
☑	**Total P (lbs/ac)**	**1.91**	**1.33**	**17.19**	**3.43**	15.28	-800	939.4
	Org P (lbs/ac)	0.33	0.11	11.99	2.50	11.66	-3533.3	716.9
	PO4_P (lbs/ac)	0.45	0.08	5.21	0.93	4.76	-1057.8	292.6
	Tile Drain P (lbs/ac)	1.14	1.14	0	0.00	-1.14	100	-70.1
☐	**Total Flow (in)**	**14.28**	**1.15**	**8.62**	**1.79**	**-5.66**	**39.6**	**-348**
☐	**Other Water Information**	**6.78**	**0.47**	**0.65**	**1.04**	**-6.13**	**90.4**	**-376.9**
☐	**Total Sediment (t/ac)**	**0.2542**	**0.09**	**6.1676**	**1.34**	5.91	-2326.3	363.3
☑	**Crop Yield**					**0**	**0**	**0**
☐	SOYBEANS Yield (bu/ac)	81	1.29	9	7.84	-72	88.9	-4426.6
☐	CORN Yield (bu/ac)	197	3.00	1	0.63	-196	99.5	-12050.1

NTT Results from site DF-22: “CS_TILL”, “CS_TILL_1/2 P APPLIVATION RATE”, and “CS_TILL_NO P APPLICATION” Scenarios

Select Type: Field/Scenario | Field: DF-22 | First Scenario: Tillage CB | Second Scenario: Tillage_CB_1/2P | Third Scenario: Tillage_CB_NP

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files* | * To Download and Create PDF you need to disable pop-up blocker

Detail	Description	Tillage CB	±	Tillage_CB_1/2P	±	Difference	Reduction (%)	Total Area	Tillage_CB_NP	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**61.48**		**61.48**		**0**	**0**	**0**	**61.48**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**16.82**	**3.37**	**16.33**	**3.44**	**-0.49**	**2.9**	**-30.1**	**23.07**	**6.22**	**6.25**	**-37.2**	**384.3**
	Org N (lbs/ac)	1.59	0.56	1.66	0.62	0.07	-4.4	4.3	2.84	1.43	1.25	-78.6	76.9
	Runoff N (lbs/ac)	3.67	1.38	3.7	1.39	0.03	-0.8	1.8	5.84	3.12	2.17	-59.1	133.4
	Subsurface N (lbs/ac)	0.81	0.21	0.78	0.21	-0.03	3.7	-1.8	1.12	0.25	0.31	-38.3	19.1
	Tile Drain N (lbs/ac)	10.76	1.22	10.2	1.22	-0.56	5.2	-34.4	13.28	1.42	2.52	-23.4	154.9
☑	**Total P (lbs/ac)**	**1.91**	**1.33**	**1.72**	**1.21**	**-0.19**	**9.9**	**-11.7**	**0.84**	**0.53**	**-1.07**	**56**	**-65.8**
	Org P (lbs/ac)	0.33	0.11	0.33	0.12	0	0	0	0.43	0.18	0.1	-30.3	6.1
	PO4_P (lbs/ac)	0.45	0.08	0.37	0.07	-0.08	17.8	-4.9	0.11	0.04	-0.34	75.6	-20.9
	Tile Drain P (lbs/ac)	1.14	1.14	1.03	1.03	-0.11	9.6	-6.8	0.3	0.30	-0.84	73.7	-51.6
☐	**Total Flow (in)**	**14.28**	**1.15**	**14.27**	**1.15**	**-0.01**	**0.1**	**-0.6**	**14.42**	**1.42**	**0.14**	**-1**	**8.6**
☐	**Other Water Information**	**6.78**	**0.47**	**6.79**	**0.48**	**0.01**	**-0.1**	**0.6**	**6.1**	**0.49**	**-0.68**	**10**	**-41.8**
☐	**Total Sediment (t/ac)**	**0.2542**	**0.09**	**0.267**	**0.10**	**0.01**	**-5**	**0.6**	**0.5012**	**0.27**	**0.25**	**-97.2**	**15.4**
☑	**Crop Yield**					**0**	**0**	**0**			**0**	**0**	**0**
☐	SOYBEANS Yield (bu/ac)	81	1.29	81	1.29	0	0	0	66	1.29	-15	18.5	-922.2
☐	CORN Yield (bu/ac)	197	3.00	197	3.02	0	0	0	157	3.02	-40	20.3	-2459.2

NTT Results from site DF-22: “CS_TILL”, “CS_NOTILL”, AND “CS_NOTILL_SUBAPPLICATION” Scenarios

Select Type: Field/Scenario | Field: DF-22 | First Scenario: Tillage CB | Second Scenario: CB NT | Third Scenario: CB_NT_INC

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files* | * To Download and Create PDF you need to disable pop-up blockers

Detail	Description	Tillage CB	±	CB NT	±	Difference	Reduction (%)	Total Area	CB_NT_INC	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**61.48**		**61.48**		**0**	**0**	**0**	**61.48**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**16.82**	**3.37**	**12.71**	**2.30**	**-4.11**	**24.4**	**-252.7**	**14.85**	**2.52**	**-1.97**	**11.7**	**-121.1**
	Org N (lbs/ac)	1.59	0.56	0.51	0.27	-1.08	67.9	-66.4	0.65	0.38	-0.94	59.1	-57.8
	Runoff N (lbs/ac)	3.67	1.38	0.61	0.45	-3.06	83.4	-188.1	0.17	0.50	-3.5	95.4	-215.2
	Subsurface N (lbs/ac)	0.81	0.21	0.96	0.24	0.15	-18.5	9.2	1.09	0.25	0.28	-34.6	17.2
	Tile Drain N (lbs/ac)	10.76	1.22	10.63	1.33	-0.13	1.2	-8	12.94	1.39	2.18	-20.3	134
☑	**Total P (lbs/ac)**	**1.91**	**1.33**	**1.83**	**1.61**	**-0.08**	**4.2**	**-4.9**	**1.71**	**1.60**	**-0.2**	**10.5**	**-12.3**
	Org P (lbs/ac)	0.33	0.11	0.09	0.04	-0.24	72.7	-14.8	0.11	0.06	-0.22	66.7	-13.5
	PO4_P (lbs/ac)	0.45	0.08	0.22	0.05	-0.23	51.1	-14.1	0.07	0.02	-0.38	84.4	-23.4
	Tile Drain P (lbs/ac)	1.14	1.14	1.52	1.52	0.38	-33.3	23.4	1.53	1.53	0.39	-34.2	24
☐	**Total Flow (in)**	**14.28**	**1.15**	**13.68**	**0.96**	**-0.6**	**4.2**	**-36.9**	**13.67**	**0.97**	**-0.61**	**4.3**	**-37.5**
☐	**Other Water Information**	**6.78**	**0.47**	**8.2**	**0.59**	**1.42**	**-20.9**	**87.3**	**8.15**	**0.59**	**1.37**	**-20.2**	**84.2**
☐	**Total Sediment (t/ac)**	**0.2542**	**0.09**	**0.0337**	**0.02**	**-0.22**	**86.7**	**-13.5**	**0.0444**	**0.03**	**-0.21**	**82.5**	**-12.9**
☑	**Crop Yield**					**0**	**0**	**0**			**0**	**0**	**0**
☐	SOYBEANS Yield (bu/ac)	81	1.29	80	1.38	-1	1.2	-61.5	81	1.38	0	0	0
☐	CORN Yield (bu/ac)	197	3.00	194	2.80	-3	1.5	-184.4	198	2.80	1	-0.5	61.5

(±) Confidence Interval

NTT Results from site DF-22: “CS_NOTILL”, “CS_NOTILL_CC”, and “CS_NOTILL_CC_SUBAPPLICATION” Scenarios

Select Type: Field/Scenario | Field: DF-22 | First Scenario: CB NT | Second Scenario: CB NT CC | Third Scenario: CB_NT_CC_INC

Summary | By Soil | Graphs | Create PDF* | Download DnDc Files* * To Download and Create PDF you need to disable pop-up blockers

Detail	Description	CB NT	±	CB NT CC	±	Difference	Reduction (%)	Total Area	CB_NT_CC_INC	±	Difference	Reduction (%)	Total Area
☐	**Total Area (ac.)**	**61.48**		**61.48**		**0**	**0**	**0**	**61.48**		**0**	**0**	**0**
☑	**Total N (lbs/ac)**	**12.71**	**2.30**	**7.26**	**1.72**	**-5.45**	**42.9**	**-335.1**	**9.05**	**1.83**	**-3.66**	**28.8**	**-225**
	Org N (lbs/ac)	0.51	0.27	0.28	0.22	-0.23	45.1	-14.1	0.28	0.22	-0.23	45.1	-14.1
	Runoff N (lbs/ac)	0.61	0.45	0.34	0.37	-0.27	44.3	-16.6	0.1	0.36	-0.51	83.6	-31.4
	Subsurface N (lbs/ac)	0.96	0.24	0.48	0.13	-0.48	50	-29.5	0.59	0.16	-0.37	38.5	-22.7
	Tile Drain N (lbs/ac)	10.63	1.33	6.17	1.00	-4.46	42	-274.2	8.07	1.08	-2.56	24.1	-157.4
☑	**Total P (lbs/ac)**	**1.83**	**1.61**	**1.57**	**1.48**	**-0.26**	**14.2**	**-16**	**1.51**	**1.47**	**-0.32**	**17.5**	**-19.7**
	Org P (lbs/ac)	0.09	0.04	0.05	0.03	-0.04	44.4	-2.5	0.05	0.03	-0.04	44.4	-2.5
	PO4_P (lbs/ac)	0.22	0.05	0.12	0.04	-0.1	45.5	-6.1	0.05	0.02	-0.17	77.3	-10.5
	Tile Drain P (lbs/ac)	1.52	1.52	1.4	1.40	-0.12	7.9	-7.4	1.41	1.41	-0.11	7.2	-6.8
☐	**Total Flow (in)**	**13.68**	**0.96**	**12.54**	**0.88**	**-1.14**	**8.3**	**-70.1**	**12.53**	**0.89**	**-1.15**	**8.4**	**-70.7**
☐	**Other Water Information**	**8.2**	**0.59**	**7.88**	**0.63**	**-0.32**	**3.9**	**-19.7**	**7.87**	**0.63**	**-0.33**	**4**	**-20.3**
☐	**Total Sediment (t/ac)**	**0.0337**	**0.02**	**0.0158**	**0.01**	**-0.02**	**53.1**	**-1.2**	**0.0154**	**0.01**	**-0.02**	**54.3**	**-1.2**
☑	**Crop Yield**					**0**	**0**	**0**			**0**	**0**	**0**
☐	SOYBEANS Yield (bu/ac)	80	1.38	79	1.40	-1	1.3	-61.5	79	1.40	-1	1.3	-61.5
☐	CORN Yield (bu/ac)	194	2.80	190	2.77	-4	2.1	-245.9	196	2.77	2	-1	123

(±) Confidence Interval

Question and Comments

Thanks