

**Practice: 590 - Nutrient Management**

**Scenario: #1 - 590 Basic**

**Scenario Description:**

A basic nutrient management system is implemented on over 40 acres of cropland or hayland where there is no manure application. Implementation results in the proper rate, source, method of placement, and timing of nutrients. Typical installation involves soil testing, analysis, consultant services that provide nutrient recommendations and an associated nutrient budget, and record keeping. Nitrogen-urease inhibitors are used for surface applied urea products. The technical recommendations are based on land grant university recommendations or crop removal rates. Producer records demonstrating implementation of the 4 R's of the nutrient management criteria are required.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Integrated Pest Management (595).

**Before Situation:**

Cropland or hayland with no manure application either is not practicing any nutrient management or the practices do not meet the standard. Soil tests are not completed on a regular basis and fertilizer applications are not based on nutrient recommendations. Improper management has caused water quality degradation through excess nutrients transported through runoff and soil erosion to surface waters and/or to groundwater through leaching. Urea products are typically surface applied without inhibitors increasing losses. Soil quality may also be degraded by excess or inadequate nutrients.

**After Situation:**

A nutrient management system that meets the NRCS 590 standard is developed on over 40 acres of cropland or hayland. The development and implementation of a nutrient management plan benefits plant productivity and reduces off-site degradation by maximizing nutrient use efficiency by the crop and minimizing the potential of nutrient losses in leaching and runoff caused by over-application. A nutrient budget is developed for each field based on soil test analysis and land grant university or crop removal rates. Pre-plant soil tests are used to determine the annual nutrient budget and post-harvest soil and/or tissue tests are used to re-evaluate the adequacy of the plant's nutrient recommendations in meeting crop needs while minimizing phosphorus application and residual nitrogen. Post-harvest testing ensures proper utilization of nutrients thus reducing the potential for off-site impacts. Urease inhibitors are used for surface applications of urea products to reduce losses. The producer maintains records that are provided annually of the current soil tests, analysis, amount of application, and forms and rates of nutrients for each field, including post-harvest analysis. Management results in nutrient applications that minimize nutrient runoff and leaching, and/or the buildup of excess nutrient concentrations.

**Scenario Feature Measure:** Per acre of applied management

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$801.80

**Scenario Cost/Unit:** \$20.05

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$40.86	1	\$40.86
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	2	\$194.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4	\$81.16
<b>Materials</b>						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acre	\$11.44	40	\$457.60
Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	3	\$28.08

**Practice: 590 - Nutrient Management**

**Scenario: #2 - 590 Basic Organic**

**Scenario Description:**

A basic nutrient management system for organic production is implemented on over 40 acres of organic cropland or hayland. Implementation results in the proper rate, source, method of placement, and timing of organic nutrients. Typical installation involves soil and manure testing, analysis, consultant services that provide nutrient recommendations and an associated nutrient budget, and record keeping. The technical recommendations are based on land grant university recommendations or crop removal rates. Producer records demonstrating implementation of the 4 R's of the nutrient management criteria are required. Effective nutrient management enables organic producers to effectively utilize organic fertilizers, manure, and/or compost appropriately, which improves soil quality and minimizes runoff of nutrients from fields to surface water.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Integrated Pest Management (595).

**Before Situation:**

Nutrient management practices are either not observed or do not meet the standard on the organic cropland or hayland. Organic cropland or hayland either is not practicing any nutrient management or the practices do not meet the standard. Soil tests are not completed on a regular basis and organic fertilizer applications and amendments are not based on nutrient recommendations. Improper management has caused water quality degradation through excess nutrients transported through runoff and soil erosion to surface waters and/or to groundwater through leaching. Soil quality may also be degraded by excess or inadequate nutrients.

**After Situation:**

An organic nutrient management system that meets the NRCS 590 standard and NOP regulations is developed on over 40 acres of organic cropland or hayland. The development and implementation of a nutrient management plan benefits plant productivity and reduces off-site degradation by maximizing nutrient use efficiency by the crop and minimizing the potential of nutrient losses in leaching and runoff caused by over-application. A nutrient budget is developed for each field based on soil test analysis and land grant university or crop removal rates. Pre-plant soil tests are used to determine the annual nutrient budget and post-harvest soil and/or tissue tests are used to re-evaluate the adequacy of the plant's nutrient recommendations in meeting crop needs while minimizing phosphorus application and residual nitrogen. Post-harvest testing ensures proper utilization of nutrients thus reducing the potential for off-site impacts. The producer maintains records that are provided annually of the current soil tests, analysis, amount of application, and forms and rates of nutrients for each field, including post-harvest analysis. Specialized training is required by attending annual workshops and/or conferences. Management results in nutrient applications that minimize nutrient runoff and leaching, and/or the buildup of excess nutrient concentrations.

**Scenario Feature Measure:** Per acre of applied management

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$691.98

**Scenario Cost/Unit:** \$17.30

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$40.86	2	\$81.72
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	4	\$388.20
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$33.20	2	\$66.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	2	\$40.58
<b>Materials</b>						
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	\$43.50	2	\$87.00
Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	3	\$28.08

**Practice: 590 - Nutrient Management**

**Scenario: #3 - 590 Small Farm Diversified**

**Scenario Description:**

A nutrient management system is implemented on a small/diversified farm such as community supported agriculture farms, truck farms, and market gardens, where numerous variable crops are grown on relatively small acreages (0.25 to 10 acres) and multiple harvests per year. Due to the variability of crops and small acreage, a more intensive and diversified management approach is necessary to ensure proper nutrient utilization. Implementation results in the proper rate, source, method of placement, and timing of nutrients. Typical installation involves soil testing, analysis, consultant services that provide nutrient recommendations and an associated nutrient budget, and record keeping. The technical recommendations are based on land grant university recommendations or crop removal rates. Producers typically attend one workshop to acquire the knowledge required to implement the practice. Producer records demonstrating implementation of the 4 R's of the nutrient management criteria are required.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Integrated Pest Management (595).

**Before Situation:**

Nutrient management practices are either not observed or do not meet the standard. Soil tests are not completed on a regular basis and fertilizer applications are not based on nutrient recommendations. Improper management has caused water quality degradation through excess nutrients transported through runoff and soil erosion to surface waters and/or to groundwater through leaching. Soil quality may also be degraded by excess or inadequate nutrients.

**After Situation:**

A nutrient management system that meets the NRCS 590 standard is developed on a small/diversified farm. Producer has acquired necessary technical knowledge to implement according to 590 standard. The development and implementation of a nutrient management plan benefits plant productivity and reduces off-site degradation by maximizing nutrient use efficiency by the crop and minimizing the potential of nutrient losses in leaching and runoff caused by over-application. A nutrient budget is developed for each field or "crop block" based on soil test analysis and land grant university or crop removal rates. The producer maintains records that are provided annually of the current soil tests, analysis, amount of application, and forms and rates of nutrients for each field or "crop block", including post-harvest analysis. Management results in nutrient applications that minimize nutrient runoff and leaching, and/or the buildup of excess nutrient concentrations.

**Scenario Feature Measure:** Per small/diversified farm

**Scenario Unit:** Each

**Scenario Typical Size:** 1

**Scenario Cost:** \$534.57

**Scenario Cost/Unit:** \$534.57

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	4	\$388.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	2	\$40.58
<b>Materials</b>						
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	\$43.57	1	\$43.57
Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	2	\$18.72
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	\$43.50	1	\$43.50

**Practice: 590 - Nutrient Management**

**Scenario: #4 - 590 Basic Manure**

**Scenario Description:**

A basic nutrient management system is implemented on over 40 acres of cropland or hayland where manure or compost is applied in addition to commercial fertilizer. Implementation results in the proper rate, source, method of placement, and timing of nutrients. Typical installation involves soil and manure testing testing, analysis, consultant services that provide nutrient recommendations and an associated nutrient budget, and record keeping. Nitrogen-urease inhibitors are used for surface applied urea products. The technical recommendations are based on land grant university recommendations or crop removal rates. Risk assessments including phosphorus index and nitrogen index are completed with applications of manure. Producer records demonstrating implementation of the 4 R's of the nutrient management criteria are required.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Integrated Pest Management (595).

**Before Situation:**

Cropland or hayland with manure or compost application either is not practicing any nutrient management or the practices do not meet the standard. Soil and manure tests are not completed on a regular basis and fertilizer applications are not based on nutrient recommendations. Improper management has caused water quality degradation through excess nutrients transported through runoff and soil erosion to surface waters and/or to groundwater through leaching. Urea products are typically surface applied without inhibitors increasing losses. Soil quality may also be degraded by excess or inadequate nutrients.

**After Situation:**

A nutrient management system that meets the NRCS 590 standard is developed on over 40 acres of cropland or hayland. The development and implementation of a nutrient management plan benefits plant productivity and reduces off-site degradation by maximizing nutrient use efficiency by the crop and minimizing the potential of nutrient losses in leaching and runoff caused by over-application. A nutrient budget is developed for each field based on soil test analysis and land grant university or crop removal rates. Pre-plant soil tests are used to determine the annual nutrient budget and post-harvest soil and/or tissue tests are used to re-evaluate the adequacy of the plant's nutrient recommendations in meeting crop needs while minimizing phosphorus application and residual nitrogen. Post-harvest testing ensures proper utilization of nutrients thus reducing the potential for off-site impacts. Pre side-dress soil nitrogen tests or pre-top dress tissue tests are used prior to the rapid biomass growth of the plant to assist the producer in evaluating the mineralization nitrogen from manures in providing adequate nitrogen to meet the crop requirements. Urease inhibitors are used for surface applications of urea products to reduce losses. The producer maintains records that are provided annually of the current soil tests, analysis, amount of application, and forms and rates of nutrients for each field, including post-harvest analysis. Management results in nutrient applications that minimize nutrient runoff and leaching, and/or the buildup of excess nutrient concentrations.

**Scenario Feature Measure:** Per acre of applied management

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$1,157.44

**Scenario Cost/Unit:** \$28.94

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$40.86	2	\$81.72
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	4	\$388.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4	\$81.16
<b>Materials</b>						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acre	\$11.44	40	\$457.60
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	\$43.57	2	\$87.14
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	\$11.18	3	\$33.54

**Materials**

Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	3	\$28.08
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**Practice: 590 - Nutrient Management**

**Scenario: #5 - 590 Advanced Manure**

**Scenario Description:**

An advanced nutrient management system is implemented on over 40 acres of a conventional cropping system where either no nutrient management or only a basic nutrient management plan is being practiced and manure is applied as a nutrient source along with commercial fertilizer. An advanced nutrient management system includes split applications and multiple nutrient concentration tests. Methods that more concisely account for manure mineralization and enable scheduling of appropriate fertilizer applications are used. Typical installation involves soil testing, plant tissue tests, nutrient concentration tests, analysis, consultant services that provide nutrient recommendations and an associated nutrient budget, and record keeping. The technical recommendations are based on land grant university recommendations or crop removal rates. Producer records demonstrating implementation of the 4 R's of the nutrient management criteria are required.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Pest Management (595).

**Before Situation:**

A conventional operation either is not practicing nutrient management or only a basic nutrient management plan is being practiced. Soil and manure tests are not completed on a regular basis and fertilizer applications are not based on nutrient recommendations. Nutrient applications, including manure and amendments, are completed annually based on traditional methods and not based on the proper rates or timing to have the most beneficial effect. Improper management has caused water quality degradation through excess nutrients transported through runoff and soil erosion to surface waters and/or to groundwater through leaching. Soil quality may also be degraded by excess or inadequate nutrients. Traditional methods, forms, and amounts of nutrient applications often result in inefficient energy use.

**After Situation:**

The development and implementation of an advanced Nutrient Management Plan with manure will benefit plant productivity and reduce off-site movement of nutrients. The use of advanced soil tests and tissue test will assist with the development of the annual nutrient budget in accordance with Land Grant University fertilizer guides. The NMP will stress the use of the four R's (Right Source of Nutrients, Right Time of Application, Right Rate, and Right Method of Application). These include practices such as use of split applications, slow release nutrients, nitrogen inhibitors, proper timing of application, more appropriate formulations, banding, etc. Additional nutrient tests including PSNT (pre-sidedress nitrogen test), CSNT (corn stalk nitrate test), and PPSN (pre-plant soil nitrate test), chlorophyll meters, spectral analysis, etc., may be used to further refine nutrient applications. Record keeping will document application of nutrients based on the 4 R's. Use of a post-harvest soil test or tissue tests (interpreted by a crop consultant) will help establish the adequacy of the plan in meeting crop needs while minimizing P application rate and residual N, thus reducing the potential for off-site impacts. Further minimization of risk is accomplished by identifying the variability across the field(s) by using soil survey maps or other simple techniques to establish zones, along with zonal soil testing. Nutrients are applied at rates based on soil test zone analyses. Typical treatment area is 40 acres. Soil testing is completed according to LGU recommendations. Analysis are completed at least once every three years for N-P-K, and for N annually. A nutrient budget is developed for each field or section of field annually. Application of nutrients via fertilizers, and/or manures applied in a manner that minimizes nutrient runoff and leaching. Application rates of all sources of nutrients are based upon soil tests and either LGU recommendations, crop removal rates, or industry standard.

**Scenario Feature Measure:** Per acre of applied management

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$1,994.76

**Scenario Cost/Unit:** \$49.87

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$40.86	2	\$81.72
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acre	\$11.89	40	\$475.60
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$33.75	2	\$67.50
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	6	\$582.30

**Labor**

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4	\$81.16
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**Materials**

Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	3	\$28.08
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acre	\$11.44	40	\$457.60
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	\$11.18	3	\$33.54
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	\$43.57	2	\$87.14
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	\$25.03	4	\$100.12

**Practice: 590 - Nutrient Management**

**Scenario: #6 - 590 Advanced No Manure**

**Scenario Description:**

This scenario describes the implementation of advanced nutrient management system on cropland where manure is not used. The planned NM system will meet the current 590 standard. Payment for implementation is to defray the costs of soil testing, tissue testing, analysis, consultant services that provide nutrient recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, recordkeeping, and monitoring on an advanced level. Records demonstrating implementation of the 4 R's of at the NM plan will be required. This scenario goes beyond the basic NM system by using technologies that improve efficiency and effectiveness of nutrient management by utilizing advanced testing, modeling, and precision application techniques and tools. Advanced nutrient mgmt techniques ensure that the right rate, proper timing, and proper placement of nutrients minimize non-point source pollution and provide proper amounts of nutrients to the crop where it is needed and not applying where it is not needed.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Pest Management (595).

**Before Situation:**

In this geographic area, a fertility program is already in place, however, applied nutrients are applied across large acreages based on a lack of representative soil samples and/ or tissue analyses. The current NM system may or may not meet 590 standards, however, could be improved by reducing energy inputs. Because whole fields are fertilized with the same rate, excess nutrients may be applied in some areas while inadequate amounts of nutrients are applied in other areas. Due to the mono-application rate, excess nutrients are transported to surface waters through runoff or erosion or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Applications do not consider the detrimental affects of improper timing or improper rates. Whole fields with like crops and rotation are fertilized the same.

**After Situation:**

Advanced soil and tissue testing is completed in a fashion that provides a representative assessment of nutrient concentrations in each field or management zone. An application rate (prescription) is developed for each zone or field based on representative soil and tissue analysis that accounts for actual plant nutrient status. Nutrient applications are based on LGU recommendations with adjustments based on advanced testing and modeling. Soil testing is completed annually for N and at least once every three years for P-K. A nutrient budget is developed for each field annually. Application of nutrients is completed so that non-point source pollution is minimized. Nutrients are applied based on realistic yield expectations. Records are maintained for all nutrient applications and soil testing. Record keeping will include all soil tests, analysis, zone maps, nutrient prescriptions and budgets, and as-applied applications.

**Scenario Feature Measure:** Per acre of applied management

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$1,670.56

**Scenario Cost/Unit:** \$41.76

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$40.86	1	\$40.86
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acre	\$11.89	40	\$475.60
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$33.75	2	\$67.50
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	5	\$485.25
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	2	\$40.58
<b>Materials</b>						
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	\$25.03	3	\$75.09
Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	3	\$28.08

**Materials**

Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acre	\$11.44	40	\$457.60
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**Practice: 590 - Nutrient Management**

**Scenario: #7 - Soil Health Assessment**

**Scenario Description:**

This scenario describes the implementation of an advanced soil health assessment used on agronomic and specialty cropland in conjunction with an existing nutrient management plan to improve the biological, physical, and chemical qualities of the soil. Includes labor for comprehensive soil sampling, including penetrometer readings, and labor to study soil health concepts, interpret soil health test results, and to develop new management strategies to improve soil health. Results will be used to evaluate nutrient use efficiency to adjust nutrient application rates going forward.

**Before Situation:**

This Scenario is typically installed on diversified vegetable and fruit farms. In this geographic area, a fertility program is already in place, however, resource concerns still exist; these resource concerns include low soil biological activity, soil compaction, soil crusting, nutrient leaching, nutrient runoff, low soil organic matter, decreased plant health, and decreased water quality from excessive nutrient application and poor nutrient use efficiency.

**After Situation:**

Soil is sampled and compaction is measured on different fields of the farm where the planner and client feel plant health is compromised and soil health is either poor or unknown; units for this scenario are "each" to enable flexibility for planning and sampling. Nutrients are applied according to a nutrient management plan; using the right sources, methods, timing, and rates. Nitrogen leaching and phosphorus runoff is minimized. Soil biological activity, compaction, and plant productivity are improved. Overall soil health is improved by incorporating a suite of conservation practices into a holistic cropping plan which may include Cover Crop, Conservation Crop Rotation, Residue Management; No Till, Integrated Pest Management, and Irrigation Water Management. Nutrient use efficiency is improved.

**Scenario Feature Measure:** Per test

**Scenario Unit:** Each

**Scenario Typical Size:** 1

**Scenario Cost:** \$102.58

**Scenario Cost/Unit:** \$102.58

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$40.86	0.5	\$20.43
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	0.75	\$72.79
<b>Materials</b>						
Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	1	\$9.36

**Practice: 590 - Nutrient Management**

**Scenario: #8 - 590 Adaptive Strip Trials**

**Scenario Description:**

The practice scenario is for the implementation of nutrient management on a small plot. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement various nutrient use efficiency improvement methods for timing, rate, method of application, or source of nutrients.

Associated practices: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Pest Management (595).

**Before Situation:**

The practice will be installed on cropland (small grain rotation or typical corn-soybean rotation) to address water quality degradation, air quality degradation and energy concerns. The scenario applies to non-organic and organic operations.

**After Situation:**

Installation of this scenario will result in adopting the four R's of nutrient management (right source, right rate, right timing and right placement) by following the procedures outlined in Agronomy Technical Note 7 - Adaptive Nutrient Management. Implementation involves establishing the replicated plots to evaluate one or more of the 4 R's. The plot will consist of 7 replicated plots designed, laid out, managed and evaluated with the assistance of technical service provider certified in nutrient management planning and implementation. Results are used to make nutrient application decisions to address water quality degradation issues and nutrient use efficiencies. Yields will be measured and statistically summarized following the procedures in Agronomy Technical Note 6 - Adaptive Nutrient Management. The yields for each plot will be adjusted to the appropriate moisture content.

**Scenario Feature Measure:** Per application

**Scenario Unit:** Each

**Scenario Typical Size:** 1

**Scenario Cost:** \$1,820.96

**Scenario Cost/Unit:** \$1,820.96

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	1	\$0.16
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$97.05	10	\$970.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	16	\$324.64
<b>Materials</b>						
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	\$11.18	14	\$156.52
Test, Soil Test, Standard	299	Includes materials, shipping, labor, and equipment costs.	Each	\$9.36	2	\$18.72
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	\$25.03	14	\$350.42