



CONSERVATION ENHANCEMENT ACTIVITY

E590B

CONSERVATION STEWARDSHIP PROGRAM

Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

CONSERVATION PRACTICE: 590 - NUTRIENT Management

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial)

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Precision application technology and techniques are utilized to plan and apply nutrients to improve nutrient use efficiency and reduce risk of nutrient losses.

Criteria

- Documentation of producer’s record of nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- Minimize soil surface disturbance during fertilizer placement.
- Development of site-specific geo-referenced maps using soils data, current soil test results, and a precision agriculture system recommended by the Land Grant University or industry. Data is used to diagnose low, medium, and high productivity areas (management zones).
- Nutrient rates of application (minimum N-P-K) are planned and applied according to management zone.
- Utilize variable rate technology for nutrient application to reduce nutrient loss risk and improve nutrient use efficiency; variable rate technology may be map-based, sensor-based (crop canopy sensors), or manual.

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Documentation and Implementation Requirements

Participant will:

- Prior to implementation, provide documentation for review by NRCS showing a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- Prior to implementation, develop site-specific maps and use them to develop management zones within the field.
- Prior to implementation, develop and document a planned nutrient budget, yield goal, and applications by management zone (pounds/acre active ingredient nutrients, must include at a minimum N-P-K). Develop planned variable and flat rate application layers (maps and/or tabular statistics).
- During implementation, utilize variable rate technology. Variable rate technology may be map-based, sensor-based (crop canopy sensors), or manual.
- During implementation, keep records to document as applied records of actual variable rate applications (maps and/or tabular statistics).
- During implementation, minimize soil surface disturbance during fertilizer placement.
- During implementation, notify NRCS of any planned changes to verify the planned system meets the enhancement criteria.
- After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- As needed, provide technical assistance to meet the criteria of the enhancement.
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Nutrient Management (CPS 590) as it relates to implementing this enhancement.

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- Prior to implementation, review documentation to verify a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- Prior to implementation, verify the development of site-specific maps used to develop management zones within the field.
- Prior to implementation, verify the development of a planned nutrient budget, yield goal, and planned nutrient applications by management zone.
- During implementation, evaluate any planned changes to verify the planned system meets the enhancement criteria.
- After implementation, review documentation and records to verify implementation of the enhancement.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

2024Alabama Supplemental Guidance for CSP Enhancement

ENHANCEMENT NUMBER AND TITLE: **E590B:** Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

Conservation Practice: **E590** – Nutrient Management

BRIEF DESCRIPTION OF ENHANCEMENT: This enhancement is designed to reduce risk of nutrient losses through utilization of precision application technology and techniques to plan and apply nutrients to improve nutrient use efficiency.

Important considerations:

- Use application equipment that utilizes rate controllers, GPS guidance, automatic section control or any combination of all 3 to improve application rate and placement of nutrients.
- Use variable-rate nitrogen application based on expected crop yields, soil variability, or chlorophyll concentration.
- Use variable-rate phosphorus, and potassium application rates based on site-specific variability in crop yield, soil characteristics, soil test values, and other soil productivity factors. Develop site-specific yield maps using a yield monitoring system.
- Use the data to further diagnose low and high- yield areas, or zones, and make the necessary management changes.
- See Title 190, Agronomy Technical Note (TN) 190.AGR.3, Precision Nutrient Management Planning.
- Use legume crops and cover crops to provide nitrogen through biological fixation and nutrient recycling. -CPS-7 NRCS, AL 590 February 2022
- When creating a new plan or modifying an existing plan soil test and other needed laboratory analysis should be taken within the past year.
- Use soil tests, plant tissue analyses, and field observations to check for secondary plant nutrient deficiencies or toxicity that may impact plant growth or availability of the primary nutrients.
- Use the adaptive nutrient management learning process to improve nutrient use efficiency on farms as outlined in the NRCS National Nutrient Policy in GM 190, Part 402, Nutrient Management.
- Potassium should not be applied in situations where an excess causes nutrient imbalance in crops or forages. Excess material should be collected and stored or field

PROVIDE REQUIRED DOCUMENTS AND IMPLEMENTATION REQUIREMENTS.

- Provide NRCS with the current and a suggested planned Nutrient Management Plan that includes a site-specific map to develop management zones, a planned nutrient budget, yield goal, and applications by management zone (pounds/acre active ingredient nutrients, must include at a minimum N-P-K).
- Develop planned variable and flat rate application layers (maps and/or tabular statistics).
- Results of soil test with recommendations.
- Results of applicable risk assessments, P index, N index
- Recommended nutrient application rates, application time, placement, and sources.

2024 Alabama Supplemental Guidance for CSP Enhancement

- Notify NRCS of any planned changes to verify the planned system meets the enhancement criteria,
- Provide maps of the area or location(s), digital images/photos of the area and indicate area on map, and dates of completed activity
- After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.

This Nutrient Management Plan Includes:

Table 1. Site specific information on the 4R's (right rate, right time, right source and right placement) needed to implement nutrient management. Right rate and right time information may be omitted from this table if information is included on the soil test report.

Track/Field	Crop/year(s)	Yield goal	N Index ^{1/}	Right Rate (lb/ac) ^{2/}			Right Time ^{2/}	Right Source ^{3/}	Right Placement ^{4/}
				N	P ₂ O ₅	K ₂ O			
			h						
			h						
			h						
			h						
			h						
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^{1/} N index is the nitrogen leaching index. The leaching potential of N is high (h) throughout the state as a result of high average rainfall. As a result all N applications must be within 30 days of planting a crop or within 30 days of an actively growing crop to minimize N leaching, maximize N use efficiency and meet the requirements of the nutrient management standard. For more information on N leaching see Alabama Agronomy Technical Note AI-73, "N Leaching Index for Alabama".

^{2/} Right time and right rate information may be included on the attach soil test results and recommendation, if so indicated see soil test in table 1.

^{3/} Indicated planned nutrient source, commercial or organic waste (manure/litter). If the source is manure/litter insure that all applications comply with all federal, state and local regulations including but not limited to ADEM requirements and setbacks as indicated on the conservation plan maps.

^{4/} Indicated planned nutrient placement to minimized nutrient loss and maximize nutrient use efficiency. For example, broadcast on spreadable area as indicated on conservation plan maps or broadcast N starter, P₂O₅ and K₂O and band sidedress N at the planned rate.

The attached documents support the full implementation of this Conservation Stewardship Enhancement.

CSP Participant Name

Date