



CONSERVATION ENHANCEMENT ACTIVITY

E590118Z-Colorado

CONSERVATION STEWARDSHIP PROGRAM

Improving nutrient uptake efficiency and reducing risk of nutrient losses to surface water

Conservation Practice 590: NUTRIENT Management

APPLICABLE LAND USE: Crop (annual & mixed); Crop (perennial)

RESOURCE CONCERN ADDRESSED: Water Quality Degradation

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized 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 non-point source pollution of surface and groundwater (includes running N and P Index).
- For Nitrogen, Phosphorus, and Potassium (N-P-K), rates of application are to be agronomic application rate (based on soil test and yield goal).
- Minimize soil surface disturbance during fertilizer placement.
- **Utilize two or more nutrient use efficiency strategies or technologies** to reduce nutrient loss risk and improve nutrient use efficiency. Select two or more of the strategies and technologies below:



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- Use Enhanced Efficiency Fertilizer (EEF) products with 1 or more nutrient applications.
 - Nitrogen or phosphorous EEF products recommended by Colorado State Department of Agriculture and Colorado State University (CSU) on all treatment acres to supply at least 50% of the pre-emergent and early post emergent LGU recommended nitrogen or phosphorous requirements for the crop(s) grown.
 - Nitrification inhibitors
 - Urease Inhibitors
 - Polymer Coated Urea
 - Sulfur Coated Urea
 - Urea-Formaldehyde Products
 - Isobutylidene Dirurea
 - Triazone
 - There are currently no enhanced efficiency phosphorus products recognized in Colorado.
- Use in-season soil nitrate sampling.
 - Use pre-sidedress soil nitrate test (PSNT) to determine the need and/or amount of additional nitrogen to be applied during sidedress/topdress N application. Conduct a PSNT on a selected crop (e.g. corn) to test if additional N fertilizer is needed.
- Use in-season plant tissue sampling and analysis as a complement to soil testing.
 - Follow local CSU and/or laboratory guidelines for interpretations of the results and appropriate adjustments in the application of N and other nutrients. *End of season stalk nitrate testing is not applicable if the enhancement is only contracted for one year, as results must be used to evaluate and adjust nutrient management in the following year, as needed.*
- Split nutrient applications.
 - Apply no more than 50% of total crop nitrogen needs within 30 days prior to planting (or in the case of hay or pasture after green up of dormant grasses). Apply the remaining nitrogen after crop emergence (or green up).
 - Post emergent nitrogen may be reduced based on crop scouting, in-season soil sampling/analysis, or plant tissue sampling/analysis.
- Time nutrient application timing to match nutrient uptake timing.
 - Apply nutrients no more than 30 days prior to planting date of annual crops.
- Nutrient application placement below the soil surface
 - Fertilizer is injected or incorporated



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Additional Information for Colorado:

- All Enhanced Efficiency Fertilizer (EEF) are listed by the Colorado Department of Agriculture (CDA), Inspection and Consumer Services Division, Fertilizer Program, is responsible for registering fertilizers, soil conditioners and plant amendments for use in Colorado. Contact Laurel Hamling, CDA Fertilizer Program Administrator at laurel.hamling@state.co.us or 303-867-9221, for information regarding Enhanced Efficiency Fertilizer products registered for use in Colorado. CDA Fertilizer Program Home Page http://www.colorado.gov/cs/Satellite/ag_ICSCBON/1251622219169
- For this enhancement, the term tissue test refers to the plant analysis procedures described in CSU Extension Fact Sheet No. 0.116, Plant Analysis. <http://extension.colostate.edu/topic-areas/agriculture/plant-analysis-0-116/>
- Link for BMPs in Colorado for Nitrogen, visit [Best Management Practices for Agricultural Nitrogen Management in Colorado](#)
- Link for BMPs in Colorado for Phosphorus, visit: [Best Management Practices for Agricultural Phosphorus Management in Colorado](#)
- Link for BMPs in Colorado for Manure Utilization, visit: [Best Management Practices for Manure Utilization](#)



Documentation and Implementation Requirements

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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 and document a planned nutrient budget, yield goal, and applications (pounds/acre active ingredient, nutrients must include at a minimum N-P-K).
- Prior to implementation, select two or more of the nutrient use efficiency strategies or technologies. **Selections:** _____
- During implementation, keep records to document actual nutrient applications (pounds/acre active ingredient, nutrients must include at a minimum N-P-K).
- 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.
- During implementation, additional record keeping requirements for specific strategy or technology:
 - In-season soil nitrate sampling. Records and documentation must include results (including reference strips) and adjustments in nutrient management based on results.
 - In-season plant tissue sampling and analysis. Records and documentation must include type of test used (stalk, leaf, chlorophyll, infrared, or other plant tissue), results (including reference strips), and adjustments in nutrient management based on results.
 - Nutrient application placement below soil surface. Records and documentation must include method of injection or incorporation and depth.
- After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.



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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.
- 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 a planned nutrient budget, yield goal, and planned nutrient applications.
- Prior to implementation, verify the selection of two or more nutrient use efficiency strategies or technologies.
- 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

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