USDA United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

E328P

CONSERVATION STEWARDSHIP PROGRAM

Low Nitrogen Requirement Annual Crop Rotation

CONSERVATION PRACTICE: 328 - Conservation Crop Rotation

APPLICABLE LAND USE: Crop (Annual & Mixed)

RESOURCE CONCERN: Soil, Water

ENHANCEMENT LIFE SPAN: 1 years

Enhancement Description

Design a planned annual crop rotation which requires less average annual nitrogen fertilizer than the current (benchmark) crop rotation. This is accomplished by replacing high N-requirement annual crops with low N-requirement annual crops. Examples include replacing high N-requirement small grain crops such as spring wheat, with low N-requirement small grain crops (oats or malt barley) or annual legumes. The crop rotation will reduce fertilizer N application, decrease the potential for nitrates to leach to groundwater, maintain soil organic matter, and slow the effects of soil acidification.

Criteria

- Both the benchmark and planned rotation will be grown in a planned sequence and must have a minimum of two different crops. A cover crop is considered a different crop.

- The planned crop rotation must produce a Soil Conditioning Index (SCI) value of greater than or equal to zero, as calculated by the current NRCS wind and water erosion prediction technologies.

- Sufficient residues must be left on the soil surface to prevent potential erosion issues. Use the current NRCS wind and water erosion prediction technologies to calculate residue requirements.

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- Use Land Grant University guidance and average county crop yields for the past 5 years to determine the N-requirement of each crop in both the benchmark and planned rotations.

- Design the crop sequence to provide sufficient diversity in plant family and species as well as timing and type of field operations to suppress pest(s) of concern, which may include weeds, insects, and pathogens. Use Land Grant University or industry standards to determine a suitable crop sequence.

- Select crops, varieties of crops, and the sequences of crops based on local climate patterns, soil conditions and irrigation water availability. Plan for rotation substitutions, for planting delays, or crop failures.

- Perennials are allowed in both the benchmark and planned rotation; however, they cannot be included in the average annual N-requirement calculation to meet the enhancement criteria.

- Fallow periods are allowed in both the benchmark and planned rotation; however, they cannot be included in the average annual N-requirement calculation to meet the enhancement criteria.

Documentation and Implementation Requirements

Participant will:

☐ Provide NRCS with the current (benchmark) and a suggested planned annual crop rotation.

☐ During implementation, notify NRCS of any planned changes in crops, crop rotation, or field operations to verify the planned system meets the enhancement criteria.

NRCS will:

☐ As needed, provide technical assistance in selecting crop rotations or substitute crops that would meet the criteria of the enhancement.

☐ Calculate the 5-year average county yield for each crop in both the benchmark and planned rotation. If this information is not available, consult with LGU personnel to make an informed decision.

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- ☐ Calculate the average annual LGU nitrogen requirement for the benchmark and planned rotations based on the crops and their 5-year county yield averages. Fill in the tables below with this information.
- ☐ Verify that the average annual nitrogen requirement of the planned rotation is less than the average annual nitrogen requirement of the benchmark rotation.
- ☐ Prior to implementation, verify that both the benchmark and planned crop rotation include at least two different crops.
- ☐ Prior to implementation, use the information provided from the participant to calculate the average annual erosion and Soil Conditioning Index (SCI) using current NRCS wind and water erosion prediction technologies. The planned crop rotation must produce an SCI value of greater than or equal to 0, and the average annual erosion must be at or below T.

Average Annual Erosion (ton/ac/yr) = _____ SCI value = _____

Benchmark Rotation and N Requirement

Field: _____ Acres: _____

Current Annual Crops (in sequence) (Do not include fallow or perennial crops)	**5-year County Average Yield**	**LGU Nitrogen Requirement (lb/ac)**
Total Rotation N Requirement		
AVERAGE ANNUAL N REQUIREMENT (Total/Rotation Years)		

North Dakota Sideboards:

Payments will be made on acres seeded to low nitrogen requirement crops in planned rotation replacing high nitrogen requirement crops in benchmark rotation.

Planned Rotation and N Requirement

Field: _____ Acres: _____

Planned Annual Crops (in sequence) (Do not include fallow or perennial crops)	**5-year County Average Yield**	**LGU Nitrogen Requirement (lb/ac)**
Total Rotation N Requirement		
AVERAGE ANNUAL N REQUIREMENT (Total/Rotation Years)		

☐ During implementation, evaluate planned changes in crops, crop rotation, or field operations to verify the planned system meets the enhancement criteria.

☐ After implementation, if the applied crop rotation is different than the planned crop rotation, use the information provided from the participant to re-calculate the average annual N requirement, average annual erosion, and SCI values to document that the applied rotation met the enhancement criteria.

Re-calculated Average Annual Erosion (ton/ac/yr) = _____ SCI value = _____

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