



CONSERVATION ENHANCEMENT ACTIVITY

E328118Z Colorado

CONSERVATION STEWARDSHIP PROGRAM

Conservation crop rotation to reduce water quality degradation by utilization and removal of excess soil nutrients with forage harvest

Conservation Practice 328: Conservation Crop Rotation

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

RESOURCE CONCERN ADDRESSED: Water Quality Degradation

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Establish a forage crop (single species or mix of two or more species) following a primary annual crop to take up excess soil nutrients (nitrogen or phosphorous). Select a forage crop for the ability to effectively utilize and scavenge nutrients. The forage crop shall be harvested for forage (hay/balage/haylage) as late as practical to maximize plant biomass production and nutrient uptake. The forage crop shall not be grazed or burned. *This enhancement is applicable on field where excess soil nutrients cause or increase water quality degradation concerns.*

Criteria

- This enhancement is applicable on fields where excess soil nutrients cause or increase water quality degradation concerns. Presence of excess nutrients must be identified in recent soil tests or increased risk to water quality documented by risk assessment tool. **<REFER TO STATE SPECIFIC GUIDANCE>**
- Forage species, seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with applicable local criteria and soil/site conditions. **<REFER TO STATE SPECIFIC LISTS>**

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- Select forage crop (single species or mix of two or more species) and planting dates which will not compete with the other crop(s) yield or harvest. ***If legumes are part of the forage mix, consider that this may add nutrients to the system.***
- Select forage crop that is compatible with other components of the crop rotation and for its ability to efficiently scavenge and utilize excess soil nutrients, specifically nitrogen or phosphorous, whichever is identified as a potential risk to water quality. Nutrient uptake only occurs when a crop is actively growing. Therefore, it is imperative that the crops in rotation be planted as soon as possible after forage crop harvest (hay/balage/haylage/etc.) to maximize nutrient cycling and minimize offsite transport of nutrients.
- Determine method and timing of forage crop harvest to meet client objectives. Harvest the forage crop as late as practical to maximize plant biomass production and nutrient uptake.
- Ensure any herbicides used in the crop rotation are compatible with forage crop selections.
- Do not burn forage or residue.
- Do not graze forage crop.
- Reduce or maintain soil erosion from water and wind to below soil tolerance (T) level (average annual soil loss).

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Documentation and Implementation Requirements

Participant will:

- Prior to implementation, provide NRCS with the current and planned crop rotation and field operation(s) used for each crop.

Document excess nutrients identified in soil tests. *Soil tests should be taken as close to production crop harvest as possible.*

Field	Soil Test Date	Nutrient (Nitrogen or Phosphorus)	Soil Test Nutrient Result (ppm or lbs/ac)

Current Management Rotation

Field	Current Crops (in sequence)	Planting Date	Harvest Date

Current Field Operations for Each Crop

Field	Crop	Field Operation	Timing of Field Operation (month/year)



Planned Management Rotation including Forage Crop

Field	Planned Crops/Forage Crop (in sequence)	Planting Date	Harvest Date

Planned Field Operations for Each Crop

Field	Crop	Field Operation	Timing of Field Operation (month/year)

Planned Forage Crop and Seeding Rate *(forage crop may be single species or mix of two or more species)*

Species	Variety	Seed Size	Typical Seeding Depth	Seeding Rate (PLS lbs/acre)	Percent of Mix (%)



Forage Crop Establishment and Management Considerations:

- Establish forage crop mix as soon as practical prior to or after harvest of the production crop.
- During implementation, forage crop must not be grazed or burned.
- During implementation, notify NRCS of any planned changes in forage crop mix or crop rotation, or management to verify the planned system meets the enhancement criteria.
- After implementation, if changes were made, update the tables above to document the applied crop rotation for the contract period and provide to NRCS.

After implementation, complete the table below and provide to NRCS

Task	Provide information and details
Seedbed Preparation	
Seeding Date	
Seeding Depth	
Seeding Method	
Fertilizer, as needed	
Weed Management, as needed	
Harvest Date (window)	
Harvest Method	

NRCS will:

- As needed, provide technical assistance in selecting forage crop for the crop rotation or substitute species that would meet the criteria of the enhancement. Forage crop may consist of a single species or mix of two or more species.
- As needed, provide additional assistance to the participant as requested.
- Prior to implementation, verify the enhancement is being planned on fields where excess soil nutrients cause or increase water quality degradation concerns. Presence of excess nutrients must be identified in recent soil tests or increased risk to water quality documented by risk assessment tool. **<REFER TO STATE SPECIFIC GUIDANCE>**



- Prior to implementation, use information provided from the participant to calculate the average annual soil erosion value (water and wind) for each field using NRCS erosion prediction technologies.

Benchmark Management Soil Loss = _____ tons/acre/year

Planned Management Soil Loss = _____ tons/acre/year

- During implementation, evaluate any planned changes in forage crop selected, timing in crop rotation, management, or field operations to verify the new system meets the enhancement criteria.
- After implementation, if there were any changes to planned rotation or management evaluate the applied crop rotation using information provided from the participant to calculate average annual erosion value to document that the applied rotation meets the enhancement criteria.

Applied Management Soil Loss = _____ tons/acre/year

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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