



CONSERVATION ENHANCEMENT ACTIVITY

E328G

CONSERVATION STEWARDSHIP PROGRAM

Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement

Conservation Practice 328: Conservation crop rotation

APPLICABLE LAND USE: Crop (Annual & Mixed)

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Crop rotation on acres converted, no more than 2 years prior, from CRP grass/legume cover to annual crops. Diverse rotation with living roots and residue cover throughout year and minimal disturbance. Enhancement not applicable on hayland.

Criteria

- This enhancement is limited to acres where the conversion of CRP grass/legume conservation cover to annual crops took place not more than 2 years prior to enrollment in CSP. This enhancement is not applicable on hayland.
- Crops must be grown in a planned sequence as outlined in plan. The crop rotation must include a minimum of four different crops. For purposes of these criteria a cover crop is considered a different crop.
- Where applicable, plan suitable crop substitutions when the planned crop cannot be planted due to weather, soil conditions, or other local situations.

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- Grow crops that will produce a positive trend in the Organic Matter (OM) subfactor value over the life of the rotation, as determined by the Soil Conditioning Index. (management SCI value)
- The crop rotation includes at least 2 years of high residue crops and/or cover crops per 3 years of the rotation. **(See STATE list of high residue crops)**
- For crop diversity, the planned crop sequence of at least 4 different crops should contain at least 3 different crop types; for example a mix of the following: warm season grass; warm season broadleaf; cool season grass; cool season broadleaf.
- Leave crop residue on the soil surface throughout the year.
- Keep a living root system established as much as practical for the given soil, cropping system, and climate area. Maximize root growth periods by planting the next crop or cover crop as soon as practical after the harvest and/or utilize perennial crops in the rotation. Aim to have living roots at least 90% of available growing days. **(See STATE provided guidance of options to maximize living root systems in local climate and cropping systems; determine available growing days and period of no growth, such as frozen periods in the north)**. Show before and after management files from current NRCS wind and water erosion prediction technologies to document benchmark and planned crop rotation to show increase in living root periods.
- Minimize all types of soil disturbance. No more than one crop-year in the rotation will have a Soil Tillage Intensity Rating (STIR) value greater than 20 and the rotation will have a positive trending SCI.

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Documentation and Implementation Requirements

Participant will:

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

Current Management – Crop Rotation

Field	Acres	Planned Crops (in sequence)	Length of Crop Rotation (years)	Crop Type (Warm Grass-WG, Cool Grass-CG, Warm Broadleaf-WB, Cool Broadleaf-CB)

Current Management – Field Operations

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

Planned Management – Crop Rotation *(Crop rotation must include at least 4 different crops from 3 of the different crop types. The rotation must also include 2 years of high residue crops and/or cover crops per 3 years of the rotation. Use STATE list of high residue crops.)*

Field	Acres	Planned Crops (in sequence)	Length of Crop Rotation (years)	Crop Type (Warm Grass-WG, Cool Grass-CG, Warm Broadleaf-WB, Cool Broadleaf-CB)



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Planned Management – Field Operations

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

- During implementation, notify NRCS of any planned changes in crops, crop rotation, or field operations to verify the planned system meets the enhancement criteria.
- During implementation, leave crop residue on the soil surface throughout the year.
- During implementation, take dated pictures with field indicated at least every 3 months to show residue or growing crops.
- After implementation, if changes to the rotation were made, complete the tables above to document the applied Conservation Crop Rotation for the contract period and provide to NRCS.
- After implementation, provide for review pictures showing residue or growing crops throughout the year.

NRCS will:

- As needed, provide technical assistance in selecting crop rotations or substitute crops that would meet the criteria of the enhancement.
- Prior to implementation, verify the enhancement is planned for acres where the conversion from CRP grass/legume conservation cover to annual cropland took place no more than 2 years prior to enrollment in CSP. **Conversion Date:** _____
- Prior to implementation, verify the enhancement is not planned on hayland.



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- Prior to implementation, verify the crop rotation includes at least 2 years of high residue crops and/or cover crops per 3 years of the rotation. (Use STATE list of high residue crops)
- Prior to implementation, verify the planned crop rotation includes at least 4 different crops and contains at least 3 different crop types; for example a mix of the following: warm season grass; warm season broadleaf; cool season grass; cool season broadleaf.
Planned number of crops: _____
Planned number of crop types: _____
- Prior to implementation, use information provided from the participant to calculate the management Soil Conditioning Index (SCI) value for each field using current NRCS wind and water erosion prediction technologies. Crop rotation must produce a positive trend in the Organic Matter (OM) subfactor value.
Management SCI Value = _____ **OM subfactor value =** _____
- 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 information provided from the participant to document that the applied rotation met the enhancement criteria.
Applied number of crops: _____
Applied number of crop types: _____
- After implementation, if the applied crop rotation is different than the planned crop rotation, use information provided from the participant to calculate SCI value to document that the applied rotation met the enhancement criteria.
Management SCI Value = _____ **OM subfactor value =** _____
- After implementation, review pictures showing residue or growing green crops throughout the year to verify the applied system meets the enhancement criteria.



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.

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Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature Date



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WASHINGTON SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

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Additional Criteria for Washington

- In addition to the criteria specified in the National job sheet E328 the following additional criteria apply in Washington:
 - High residue crops and cover crops provide more cover and are not as easily destroyed by tillage and decomposition. Alternatively low residue crops or crops with fragile residue provides less cover and is easily destroyed by tillage and decomposition. Known history of crop success needs to be acknowledged to have success of a high residue crop. Caution needs to be taken when developing cover crops in low rainfall areas to ensure successful establishment and growth to meet the objectives. If your desired high residue crop or cover crop is not identified within the below guidance, state technical specialist must approve selection.
 - High residue crops include: Corn, Wheat, Triticale, Sorghum, Sudan grass, Forage Sorghum and other summer forage crops and grains
 - High residue cover crops can be identified by using the PNW Cover Crop Selection Tool and a high residue mix can be developed with the help of state technical specialists to meet the enhancement objectives.
<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/technical/toolsdata/plant/?cid=nrcseprd894840>
 - Examples of low residue crops include: corn silage, legumes (peas, lentils, garbanzo beans), sunflowers, sugar beets, potatoes, onions, and oil crops
 - All planned cover crop termination dates must be consistent with most NRCS Cover Crop Termination Guidelines, version 3, September 2014 (or most current).



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https://efotg.sc.egov.usda.gov/references/public/WA/340_National_Termination_Guidelines_Ver_3_Sept_2014.pdf

- Maximize living root systems by growing long-season crops or a cover crop following a short-season crop, as much as possible during the growing season.
 - All planned cover crop termination dates must be consistent with most NRCS Cover Crop Termination Guidelines, version 3, September 2014 (or most current).
https://efotg.sc.egov.usda.gov/references/public/WA/340_National_Termination_Guidelines_Ver_3_Sept_2014.pdf
 - Use AgACIS Climate Data (or similar) to help identify timing and species of cover crops taking into consideration typical first and last frost events, growing degree days and precipitation. Every site should be evaluated for these condition and taken into consideration to ensure living roots are growing as much as possible to meet enhancement criteria. <http://agacis.rcc-acis.org/>

Additional Documentation Requirements for Washington

- In addition to the documentation requirements specified in the National job sheet E328 the following additional documentation requirements apply in Washington:
 - Prior to implementation, review documentation to verify a record of implementing Conservation Crop Rotation, meeting all NRCS CPS 328, Conservation Crop Rotation, general criteria. Verify records of existing Conservation Crop Rotation Implementation
 - Attach AgACIS (<http://agacis.rcc-acis.org/>) climate data reports that support planned crop rotation and amount of living roots. Minimum reports to be included: FROST (average date of the last temperature below three threshold temperatures of 24, 28, 32 degrees Fahrenheit in the spring and the average date of the first temperature below these thresholds in the fall) and TAPS (month by month summary and probability analysis of temperature, precipitation and GDD).