United States Department of Agriculture
Natural Resources Conservation Service

2013 Ranking Period 1

Soil Quality Enhancement Activity – SQL10 – Crop management system where crop land acres were recently converted from CRP grass/legume cover or similar perennial vegetation

Enhancement Description
Implement a prescriptive crop management system on crop land acres that have been recently converted from CRP grass/legume conservation cover or similar perennial vegetated cover to a rotation of annually planted crops. Note: this enhancement is limited to acres where the conversion event took place not more than 2 years prior (not including hayland).

Land Use Applicability
Cropland (excluding Hayland)

Benefits
CRP grass/legume covered acres or acres with similar perennial vegetated cover that have been recently converted to annually planted crop systems have the potential to lose some or all of the soil health improvements generated from the years of CRP conservation cover. Depending on the new management system being used, the recalcitrant carbon pool in the system could be stable or declining, especially if a form of full width or deep tillage is being used in the new management system. In order to prevent further degradation of the accumulated carbon pool, there is a necessity to implement a crop management system to stabilize or increase these sites as carbon sinks. Utilizing a crop management system on working lands that integrates residue management systems with high residue cover crops will create systems with net carbon inputs and greater conservation benefits than lands that are absent of some degree of residue management.

Conditions Where Enhancement Applies
This enhancement only applies to crop land use acres (excluding hayland) that have been converted from CRP grass/legume conservation cover or acres with similar perennial vegetated cover to a rotation of annually planted crops. Note: this enhancement is limited to acres where the conversion event took place not more than 2 years prior.

Criteria
Develop a crop rotation on the acres where this enhancement applies that implements each of the following components:

1. Sites where burning of any plant materials have occurred during the last year of the CRP contract or since the termination of the CRP contract, are NOT eligible for this enhancement.
2. For each crop rotation, the average annual Soil Tillage Intensity Rating (STIR) as determined by RUSLE2 must be $\leq$ 10,
3. All residues must be uniformly distributed over the entire field,

4. No full-width tillage is permitted regardless of the depth of the tillage operation,
5. Field(s) must have a soil loss at or below the one-half soil tolerance (0.5T) level as determined by approved tools for wind and/or water erosion for the crop rotation, and
6. Between each crop in the rotation, except double cropped situations, seed a high residue cover crop or mixture of high residue cover crops. Each cover crop or mixture shall meet the following requirements:
   a. Seed a cover crop or cover crop mixture at a rate and within a planting date range as determined or agreed to by the NRCS State Agronomist.
   b. Cereal grain cover crops or mixtures shall be top dressed with nitrogen at rates determined or agreed to by the NRCS State Agronomist.
   c. The cover crop or mixture shall reach a maturity level (i.e., growth stage) to ensure 100% soil coverage in the row middles for 3 months of the growing season. For example, cereal rye shall reach the soft dough stage before termination. The NRCS State Agronomist can determine a specified maturity level or desired residue quantity (dry matter basis) for the selected cover crop cultivar.
   d. Termination of all cover crops shall be accomplished by chemical methods, non-chemical methods (such as flail mowing or roller crimper), or a combination of both.

Adoption Requirements

The enhancement is considered adopted when all the criteria above has been fully implemented.

Documentation Requirements

Documentation for each field where this enhancement is applied:

1. Planned crop rotation showing cover crops that will be used after low residue crops,
2. Planting method used for each crop in the rotation (no-till, strip till, direct seeding),
3. List of all other potential ground disturbing farming operations,
4. Method of cover crop termination, e.g. chemical, flail mowing, roller crimper, or combination,
5. Dates for farming operations,
6. Map showing fields and acreage, and
7. Photographs of planted crops.

References

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Reicosky, D.C. 2004. Tillage-induced soil properties and chamber mixing effects on gas exchange. Proc. 16th Triennial Conf., Int. Soil Till. Org. (ISTRO).

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Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, coordinators. 1997. Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE). US Department of Agriculture, Agriculture Handbook No. 703.

Shaffer, M.J., and W.E. Larson (ed.). 1987. Tillage and surface-residue sensitive potential evaporation submodel. *In* NTRM, a soil-crop simulation model for nitrogen, tillage and crop residue management. USDA Conserv. Res. Rep. 34-1. USDA-ARS.

Skidmore, E.L. and N.P. Woodruff. 1968. Wind erosion forces in the United States and their use in predicting soil loss. USDA Agriculture Handbook No. 346.

Sustainable Agriculture Research and Education (SARE). 2010. Managing Cover Crops Profitably. 3rd ed. Handbook #9. College Park, MD.

USDA-NRCS. 2011. National Agronomy Manual. 190-V. 4th ed.

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IDAHO ADDENDUM 2013

Soil Quality Enhancement Activity – SQL10 – *Crop Management System where Cropland Acres were Recently Converted from CRP Grass/legume Cover or Similar Perennial Vegetation*

Additional guidance:

- Sites where plant materials have been recently burned are **NOT** eligible – see criteria on previous pages.
- **The proposed crop rotation and implements used (no full width tillage is permitted) must be approved in advance by the Idaho NRCS State Agronomist**.
- Review Idaho Agronomy Tech Note #56 (Cover Crops) for seeding rates of cover crop species. There are several examples listed for cover crop mixes. **Planting date and cover crop seeding must be approved by the Idaho NRCS State Agronomist**.
- A minimum of 2,500 lbs of dry biomass must be produced that provides adequate soil cover. Cover crop plots (irrigated) at the Plant Material Center in Aberdeen have demonstrated that cover crops planted in mid to late August can produce 1 to 3 tons of biomass which is adequate to suppress weeds.
- Crop rotation will be analyzed with RUSLE2 or WEPS that documents STIR values less than or equal to 10, which primarily allows the use of drills only. This STIR value criterion describes a no till type crop rotation. Cover crops can't be tilled into the soil. **All RUSLE2 or WEPS evaluations will be reviewed by the Idaho NRCS State Agronomist to assure that the criteria outlined on the previous pages are met.**
- Termination of cover crop will be by chemical or non-chemical methods (not tillage).

For more information, refer to:

Idaho NRCS, Agronomy Technical Note 56, *Cover Crops*. January 2012.
ftp://ftp-fc.sc.egov.usda.gov/ID/technical/technotes/agronomy/agronomy_tn56_0112.pdf

Sustainable Agriculture Research and Education (SARE). 2010. Managing Cover Crops Profitably. 3rd ed. Handbook #9. College Park, MD.

This activity may NOT be used with the following enhancement: ANM12, ANM21, ENR01, SOE05, WQL09

Potential Duplicate Practices:
328 – Conservation Crop Rotation, 329 – Residue and Tillage Management, No Till/strip till/direct seed, 340 – Cover Crop