

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 ≤ 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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Natural Resources Conservation Service

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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.

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**CSP 2013-1
State Supplement
SQL 10**

**MS-ECS-340-01 (JS)
Cover and Green Manure Crop (Ac.)**

Species	Seeding Date	Seed/lb	Pure Stand Seeding Rates		Proportional Seeding Rates for Mixtures				Planting Depth (Inches)	Fert (lbs/ac) N-P-K
		(x 1000)	(seeds/ft)	(lb/A)	3/4	1/2	1/3	1/4		
		lb/A								
Suggested Cover Crops for Recycling Nutrients										
Cover crop species will be selected for their ability to take up large amounts of nutrients from the rooting profile of the s										
Oats	Sept.-Nov.	15	20	60-120	49	33	22	16	1	80-40-80
Oilseed Radish	Sept.-Nov.	140	19	6	4.5	3	2	1.5	1/2	60-40-60
Sorghum/Sudan Grass	April-June	28	13	20	15	10	7	5	1	120-40-80
Cereal Rye	Sept.-Nov.	18	18	60-120	49	33	22	16	1	80-40-80
Winter Wheat	Sept.-Nov.	15	40	60-120	60	40	27	15	1	80-40-80
Pearl Millet	April-June	82	30	25	19	13	8	6	1/2	120-40-80
Suggested Cover Crops for Fixing Nitrogen										
1. Only Legume or Legume-grass mixtures will be established as cover crops										
2. Legume seed will be inoculated with the appropriate rhizobium bacteria										
Alfalfa (annual)	Sept.-Nov.	227	80	15	12	8	5	4	1/2	0-80-200
Alsike Clover - Ladino Clover	Sept.-Nov.	700-800	50	4	3	2	1.3	1	1/2	0-80-200
Austrian Winter Pea	Sept.-Nov.	18	14	35	26	17	11.5	9	1	0-80-80
Hairy Vetch	Sept.-Nov.	20	6	25	9	6	4	3	1	0-80-80
Red Clover	Sept.-Nov.	275	51	8	6	4	2.5	2	1/4	0-80-200
Soybeans	April-June	4	5	45	34	4	15	11	1	0-80-80
Arrowleaf Clover	Sept.-Nov.	400	50	8	6	4	2.5	2	1/2	0-80-200
Crimson Clover	Sept.-Nov.	150	50	25	19	13	8	6	1/4	0-80-200
Suggested Cover Crops for High Residue										
1. Termination of high residue crops shall be accomplished by chemical methods, non-chemical methods (such as flail mower or) a combination of both.										
Sorghum/Sudan Grass	April-June	28	13	20	15	10	7	5	1	120-40-80
Cereal Rye	Sept.-Nov.	18	18	60-120	49	33	22	16	1	80-40-80
Winter Wheat	Sept.-Nov.	15	40	60-120	60	40	27	15	1	80-40-80
Pearl Millet	April-June	82	30	30	19	13	8	6	1/2	120-40-80
Suggested Deep Rooted Cover Crops for Soil Compaction										
1. Legume seed will be inoculated with the appropriate rhizobium bacteria										
Alfalfa (annual)	Sept.-Nov.	227	80	15	12	8	5	4	1/2	0-80-200
Alsike Clover - Ladino Clover	Sept.-Nov.	700-800	50	4	3	2	1.3	1	1/2	0-80-80
Austrian Winter Pea	Sept.-Nov.	18	14	35	26	17	11.5	9	1	0-80-80
Hairy Vetch	Sept.-Nov.	20	6	12	9	6	4	3	1	0-80-80
Red Clover	Sept.-Nov.	275	51	8	6	4	2.5	2	1/4	0-80-80
Soybeans	April-June	4	5	45	34	4	15	11	1	0-80-80
Arrowleaf Clover	Sept.-Nov.	400	50	8	6	4	2.5	2	1/2	0-80-80
Crimson Clover	Sept.-Nov.	150	50	25	19	13	8	6	1/4	0-80-80
Oilseed Radish	Sept.-Nov.	140	19	6	4.5	3	2	1.5	1/2	60-40-60
Brassicas	Sept.-Nov.	190	13	3	0	0	0	1	1/2	60-40-60
Ryegrass	Sept.-Nov.	228	84	25-40	15	10	7	5	1/2	180-80-20
Suggested Cover Crops for Additional Forage										
1. Species will have desired forage traits and not interfere with production of subsequent crop.										
2. Forage provided by cover crop may be hayed or grazed as long as sufficient biomass is left for resource protection.										
Oats	Sept.-Nov.	15	20	60-120	49	33	22	16	1	80-40-80
Oilseed Radish	Sept.-Nov.	140	19	6	4.5	3	2	1.5	1/2	60-40-60
Sorghum/Sudan Grass	April-June	28	13	35	0	0	0	0	1	120-40-80
Cereal Rye	Sept.-Nov.	18	18	60-120	0	0	0	0	1	80-40-80
Winter Wheat	Sept.-Nov.	15	40	60-120	0	0	0	0	1	80-40-80
Pearl Millet	April-June	82	30	30	0	0	0	0	1/2	120-40-80
Brassicas	Sept.-Nov.	190	13	3	0	0	0	1	1/2	60-40-60
Ryegrass	Sept.-Nov.	228	84	25-40	18	12	8	6	1/2	180-80-20