United States Department of Agriculture
Natural Resources Conservation Service

2012 Ranking Period 1

Soil Quality Enhancement Activity – SQL09 – Conversion of cropped land to grass-based agriculture

Enhancement Description
Conversion of cropped land to grass-based agriculture is the establishment of mixtures of perennial grasses, forbs and legume species on cropland where annually-seeded cash crops have been grown in monocultures. Select perennial species based on species compatibility, forage quality potential, improvements to soil quality, beneficial effects for wildlife and/or production of biomass.

Landuse Applicability
Cropland

Benefits
Perennial plants maintain a living root system throughout the year that provides habitat and organic exudates (food) for soil biota responsible for decomposition and nutrient cycling. Perennials provide soil cover for most of the year, and are managed with little or no physical disturbance of the soil. High plant biomass production contributes to increased soil organic matter accumulation. Plant mixtures provide diversity in plant structure, soil cover that moderates soil temperature extremes, rooting depths that improve soil structure and residue quality that stimulates microbial activity. The combination of these factors results in improved soil quality, reduced runoff and erosion and improved water quality.

Many species of birds and animals, including song birds, quail, turkey, pheasants, deer and rabbits, use grasslands as cover and nesting areas, to find food and to rear their young. Managing grassland harvesting techniques can be beneficial to the survival of ground nesting birds and other wildlife species. Altering harvesting patterns can provide escape routes for hens, hens with broods, and hiding fawns. Delaying harvest or leaving portions of a field unharvested can provide nesting habitat. When grassland management and harvesting schedules are planned to alleviate man-made pressures on wildlife, high biomass producing, perennial species can provide desirable habitat for wildlife populations.

Conditions Where Enhancement Applies
This enhancement applies to cropland that is currently in annual crop production. It does not apply to cropland that is currently in a permanent perennial crop such as permanent hay, orchards or vineyards.

Criteria
1. Establish perennial grassland species (e.g., switchgrass, big bluestem, indiangrass, eastern gamagrass, etc.) on cropland according to the NRCS Pasture and Hay Planting (512) conservation practice standard.

2. Minimize soil erosion and disturbance when establishing perennials by using techniques such as no-till planting, use of nurse crops that germinate quickly and/or the use of suitable erosion control practices.
3. Use seeding mixtures of at least three perennial grasses, perennial forbs and/or legumes.
4. Use plant density observations from multiple areas in the field(s) to confirm successful establishment two years from the planting date; compare the actual to the recommended plant density for the seeding mix and region (e.g., at least 10 plants of the seeded mixture per square yard).
5. If the field will be grazed, a grazing management plan that meets CSP eligibility requirements must be developed and followed.

Adoption Requirements

This enhancement is considered adopted on each acre when the annually planted cropland acre has been successfully established to the chosen perennial grass species mix.

Documentation Requirements

1. Provide a map showing the location of the field(s) that were converted from cropland to grassland,
2. List the species that were included in the planting mix for each field,
3. Provide a record of plant density by species (seeded and volunteer; number of plants/sq yd for each species present) for multiple areas in the field(s) prior to harvest each year, and
4. Grazing management plan (as applicable).

Michigan Supplement

SQL09

- Utilize the Forage and Biomass Planting (512) Standard in planning the seeding mix to be planted.
    - Land converted from cropland to grass based agriculture will be seeded to a mix of at least three perennial grasses, forbs or legumes.
    - Plant density evaluations will be completed using the protocol in the Michigan Technical Note Biology #15- Herbaceous Stand Evaluation.

- For land that will be grazed, a grazing management plan that meets the Prescribed Grazing (528) Standard will be developed. MI Technical Note Grazing #3 can be used to assist in development of the plan.

TABLE 4 - Seed Mixtures for Pasture
Seeding Rates of Pure Live Seed Per Acre 1/

Legume Seed (if one legume only use high rate)				Grass Seed (in mixes use lower rate)3/						
Primary Legume		**Secondary Legume**		**Orchard Grass**	**Tall Fescue 2/**	**Smooth Brome grass**	**Reed Canary grass**	**Timothy**	**Kentucky Bluegrass**	**Perennial Ryegrass**
Alfalfa	8-10			4-6	6-8	4-6		2-4		
Alfalfa	12-18	(hayland only)								
Alfalfa	6-8	Red Clover	2-4	4-6	6-8	5-7		2-4		
Alfalfa	4-6	Red Clover	2	4						4
Alfalfa	6-8	Ladino Clover	1/4	4-6	6-8	5-7		2-4		
Red clover	6-8			4-6	8-10	5-7		2-4		
Red clover	4-6	Ladino Clover	1/4	4-6	8-10	5-7		2-4		
Red clover	6-8				8-10					
Red clover	6-8	Alsike Clover	2	4-6	8-10	5-7	3-5	2-4		
Alsike clover	3-5	Ladino Clover	1/4	4-6	8-10	5-7	3-5	2-4		
Birdsfoot trefoil 5/	5			2-4		4-6	6-8	2-4	2-4	
Red Clover	6-10	Ladino Clover	1/2	4-6		4-6		2-4		
Alfalfa 4/	4	Red Clover	2	3						
Birdsfoot Trefoil 5/	3	Alsike Clover	2	4						
One Grass Only3/				16		10	14 6/			15-20

1/ Make sure the minimum adequate drainage and area planting dates for the specific site are correct for the species chosen (Table 4). Most certified and licensed Michigan seed companies selling cool season grasses and legumes have documented > 95 percent purity and > 95 percent germination for all species sold. In these cases, use their bulk rates as equal to PLS.

2/ Endophyte free or novel endophyte varieties.

3/ Additional grass seed species may be added to these first choices of grass seed species if determined by the conservation planner. If this is done, use the lower rate of PLS of the additional species but no lower than 50 percent.

4/ This is a special mix for droughty, sandy soils. Annual Ryegrass at 2 pounds PLS/acre can be added for quick forage in the seeding year OR Perennial Ryegrass can be added at 2 pounds PLS/acre for increased perennial forage quality.

5/ These mixes can be used on organic soils that are drained.

6/ For non-drained organic soils, use appropriate improved varieties of Reed Canarygrass.

GRAZING RECORDS							
NAME:				Total Pasture Acres**:**			
Farm or Tract:							
Management Unit		Livestock		Date In	Forage Height Inches	Date Out	Forage Height Inches
Key Forage	Acres	Type	Number				

Notes: