United States Department of Agriculture
Natural Resources Conservation Service

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# 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 Forage and Biomass Planting (512)

conservation practice standard. Plant species listed on the federal, state or local noxious or invasive species list shall not be selected for establishment or planted.
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 plus a mixture of three to six perennial forbs and/or perennial legumes. For the perennial forb-legume mixture, the mixture must include at least one perennial forb and one perennial legume.
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.
6. If the field will be harvested for hay or biomass, a harvest plan to enhance wildlife 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,
4. Grazing management plan (as applicable), and
5. Harvest plan (as applicable).

**References**

Jokela, B. and M. Russelle. 2010. Perennial Forages Benefit Soils, Other Crops, & Water Quality. Forage Focus. USDA-ARS. http://www.midwestforage.org/pdf/452.pdf.pdf

Magdoff, F. and H. van Es. Cover Crops. 2000. *In* Building soils for better crops. 2nd ed. Sustainable Agriculture Network Handbook Series. National Agriculture Library. Beltsville, MD. pp 87-96.

Wright, D., J. Marois, M. Vargas and P. Wiatrak. 2003. Perennial Grasses, Soil Organic Matter, And Crop Yield. Proc. of Sod Based Cropping Systems Conference. North Florida Research and Education Center-University of Florida. Quincy, FL.