United States Department of Agriculture
Natural Resources Conservation Service 2010 Ranking Period 2

Soil Quality Enhancement Activity – SQL06 – Conversion of cropped land to grass-based agriculture for biomass or forage production and wildlife habitat

Enhancement Description
Conversion of cropped land to grass-based agriculture for biomass or forage production and wildlife habitat supports establishment and management of a mixture of high biomass producing perennial species on cropland where annually-seeded cash crops have been grown in monocultures. Perennial species are selected based on species compatibility, dry matter production, biofuel conversion or forage quality potential, and beneficial effects for wildlife. Management of grassland for wildlife includes idling land or timing harvest to avoid periods when upland wildlife are nesting or fawning, leaving a residual plant height after harvest that is favorable to wildlife nesting and fawning the following year, and applying harvesting techniques that reduce mortality of wildlife. Grassland is mechanically harvested; it is not grazed.

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 they are managed with no/limited physical disturbance of the soil. High plant biomass production contributes to increased soil organic matter accumulation. Plant mixtures provide diversity in plant structure and soil cover that moderate 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.

Criteria

Cropland conversion to Grass-based Agriculture

1. Establish high biomass producing, wildlife-friendly, 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; use no-till planting methods to minimize soil disturbance when applicable
2. Use seeding mixtures of at least three perennial grasses and/or perennial forbs
3. 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)

Use one of the following techniques (A or B) to protect wildlife during harvesting activities.

A. **Defer harvest.** The producer *will apply and maintain at least two of the following* management actions to improve or protect grassland functions for the state identified targeted wildlife species.

1. Do not harvest plant biomass on at least 1/3 of the acres each year; idled acres will not be disturbed during the primary nesting or fawning seasons based on state established dates for the targeted species; idle strips or blocks must be at least 30 feet wide
2. Harvest is allowed on all acres each year; however, for at least 1/3 of the acreage, harvest must be either before and/or after, not during, the primary nesting or fawning seasons based on state established dates for the targeted species
3. Allow time in the growing season for an increase in plant height after the last harvest to state specified minimum heights for wildlife on all harvested acres; or when harvest is conducted at the end of the summer growing season, harvest at the greater of the recommended height for the plant species or the state specified height for wildlife

B. **Flush wildlife.** For all harvest activities that will be conducted during the nesting/fawning season the producer will implement *at least two of the following* to protect wildlife during the harvesting operation:

1. Attach a flush bar on biomass/forage harvesting equipment
2. Harvest only during daylight hours
3. Begin all harvesting activities at one end of the field and work back and forth across the field, or begin harvest in the center of the field and work outward; avoid trapping wildlife in cover that remains in the center of a field when the harvest pattern starts at the outside and works inward

Documentation Requirements for Conversion of Cropped Land to Grass-based Agriculture for Biomass or Forage Production and Wildlife Habitat

1. Provide a map showing the location of the field(s) that was/were converted from cropland to grassland; list the species that were included in the planting mix for each field
2. 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
3. Provide a photo showing
    - Option A – stubble height of plants after harvest for each harvest period
    - Option B – flush bar attachment on the tractor

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IDAHO ADDENDUM 2010

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Plants listed on the table below are recommended perennial grasses, forbs and legumes for forage or biomass production on converted cropland in Idaho. Choose at least three from this list. **The recommended mix is at least two grasses and one forb.**

Common Name	Longevity	Seedling Growth	Character	Seeds/Lb	1 lb/acre Seeds/ft^2	Precip	Soil	Depth	PLS Rate
GRASSES									
Brome, Meadow	Long	Med-Rapid	Bunch	93,000	2	+14	c-sl	¼ - 1/2	10
Foxtail, Creeping	Long	Low	Sod	750,000	17	+18	wet-c-l	1/8 - 1/4	3
Orchardgrass	Long	Medium	Bunch	540,000	12	+16	c-sl	¼ - 1/2	4
Timothy	Long	Medium	Bunch	1,230,000	28	+18	c-sl	1/8 - 1/4	3
Wheatgrass, Intermediate	Long	Rapid	Sod	80,000	2	+13	cl-sl	¼ - 1/2	10
Wheatgrass, Newhy	Long	Medium	Sod	139,000	3	+14	saline	¼ - 1/2	8 (12 saline)
Wheatgrass, Pubescent	Long	Rapid	Sod	80,000	2	+11	l-s	¼ - 1/2	10
Wheatgrass, Tall	Long	V. Rapid	Bunch	78,000	2	+14	saline	¼ - 3/4	10 (15 saline)
Wildrye, Russian	Long	Low	Bunch	170,000	4	+8	c-sl	¼ - 1/2	6 (9 saline)
FORBS-LEGUMES									
Alfalfa	Medium	Medium	Erect	200,000	5	+14	Sil-sl	1/8 – 1/2	5
Burnet, Small	Medium	Medium	Erect	42,000	1	+14	c-sl	¼ - 1/2	20
Clover, Alsike	Short	Medium	Erect	700,000	16	+18	wet	1/8 – 1/4	3
Clover, Red	Short	Medium	Erect	275,000	6	+18	Sil-cl	¼ - 1	6
Clover, White	Med-Long	Medium	Erect	800,000	18	+18	Wet/cl-sil	1/8 – 1/4	4
Milkvetch, Cicer	Long	Low	Erect	130,000	3	+15	c-l	¼ - 1/2	7
Sanfoin	Medium	Medium	Erect	18,500	0.4	+14	Sil-s	¼ - 3/4	34
Trefoil, Birdsfoot	Long	Low	Erect	375,000	9	+19	c-s	¼ - 1/2	3

Soil: vfsl = very fine sandy loam; fsl = fine sandy loam; sl = sandy loam; l = loam; sil = silty; lfs = loamy fine sand; ls = loamy sand; cl = clay loam; s = sand; c = clay; sc = sandy clay; sic = silty clay; wet = saturated; moist = moist-well drained; limy = high calcium content; rocky = 2" plus rock; gravel = 1/8-2" rock.

This list is modified from Plant Materials Tech Note 24 - Table 1.

For harvesting activities using Option A, idled acres and/or harvested acres (at least one third) **will not be disturbed during the nesting/fawning season, April 1 through August 1.**

For additional information, refer to the following:

Idaho NRCS Plant Materials Technical Note 10, *Pasture and Range Seedings*. ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/tn10_pasture.pdf

Idaho NRCS Plant Materials Technical Note 11, *Pasture – Species Selections and Grazing Management Guidelines.* *ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/tn11_pasture.pdf*

Idaho NRCS Plant Materials Technical Note 24, *Grass, Grass-like, Forb, Legume and Woody Species for the Intermountain West.* ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/tn24_seed_species.pdf

Idaho NRCS Plant Material Technical Note 24 Supplement: *Intermountain Planting Guide*, USDA-ARS Forage and Range Research Lab/Utah State Extension, AG 510. ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/tn24supplement.pdf

University of Idaho Bulletin 547, *Idaho Forage Handbook*. http://info.ag.uidaho.edu/forage/index.html

This activity may NOT be used with the following enhancements:
AIR03, AIR06, ANM12, ANM21, ANM22, ANM23, WQL08, WQL10, WQL16, WQL17, WQL20, CCR99

Potential duplicate practices:
645 – Upland wildlife habitat management, 512 – Pasture and hayland planting, 327 – Conservation cover