USDA

United States Department of Agriculture

Conservation Cover

Iowa Job Sheet

Natural Resources Conservation Service
Des Moines, Iowa

Iowa Conservation Practice 327
May 2017

Definition

Establishing and maintaining permanent vegetative cover.

Purpose

This practice may be applied to accomplish one or more of the following:

- Reduce soil erosion and sedimentation.
- Improve water quality.
- Improve air quality.
- Enhance wildlife, pollinator, and beneficial organism habitat.
- Improve soil quality.

Condition Where Practice Applies

This practice applies on all lands needing permanent vegetative cover. This practice does not apply to plantings for forage production or to critical area plantings.

Criteria for Conservation Cover

A. Seeding Periods

Permanent, perennial vegetative cover and/or shrubs will be established during the first recommended seeding or best planting period for the selected species or mixture. Planting dates are outlined on Table 1 of this job sheet.

B. Fertilizer and Lime Requirements

Soil fertility and pH level will be amended on introduced species to satisfy the needs of the specific plant species planned. Soil samples will be collected on the area to be seeded according to the protocol in ISU CROP 3108 "Take a good soil sample to help make decisions." Samples will be tested at a state approved testing laboratory.

- Introduced Species - Recommendations will be based on pastureland, according to ISU Extension publication PM 869 "Fertilizing Pastures for Conservation Cover Establishment." Lime recommendations will be developed from Table 16 of ISU PM 1688 "General Guide for Crop Nutrient Recommendations in Iowa." Soil tests that are less than four years old may be used to make recommendations.

Fertilizer or lime will not be used when establishing seeding in Hydrologic zones B, C, or D, including floodplain filter strips as outlined in Technical Note #27, Guidance on Seeding for Pothole, Floodplain, and Other Wetlands.

- Native Species - For native grass and forb establishment, no N, P, K, or lime is required.

C. Companion Crop

- Introduced Species - Companion crops are required on tilled fields and where slopes are >5%. Companion crops will not be required in fields that are no-tilled into existing residue, if the residue is adequate to reduce soil erosion. A Companion crop of spring cereal grain at the rate of 1 bushel/acre will be drilled or broadcasted. See Table 4 in the 327 Job Sheet for a list of acceptable companion crops. The companion

crops shall be clipped 4-6 inches high at the time of seed head emergence to promote growth of the new permanent cover. The use of the companion crop is not required when interseeding, and is optional for all other seeding periods outside the spring seeding period.

» Native Species - Companion crops are required on tilled fields, and where slopes are >5%. Companion crops will not be required in fields that are no-tilled into existing residue, if the residue is adequate to reduce soil erosion. A companion crop of spring cereal grain at the rate of 1 bushel/acre will be drilled or broadcasted. See Table 4 in the 327 Job Sheet for a list of approved companion crops. The companion crop will be clipped 8 inches high at the time of seed head emergence to promote growth of the new permanent cover.

D. Seedbed preparation and Seeding

1. Perennial vegetation must be killed prior to seeding.
2. Conventional seeding for spring, late summer, and dormant seeding periods where site conditions allow for safe operation of equipment.
   - » The seedbed shall be worked to a depth of 3", smooth, friable and firm before seeding. Native seedings will be rolled or cultipacked before and after seeding.
   - » All tillage operations shall be performed across the general slope of the land.
   - » Seeds shall be drilled uniformly over the area at a 1/8 - 1/4 inch depth depending on site conditions, or broadcast uniformly over the area and rolled/ harrowed into the seedbed. Native forbs will be seeded no deeper than 1/8-inch and must be rolled, not harrowed.
   - » Where erosion is a concern prepare a seedbed with tillage tool that will leave enough residue or mulch to provide adequate protection.
3. No-till seeding for spring, late summer and dormant seeding periods where site conditions allow for safe operation of equipment.
   - » Approved herbicides shall be applied to kill or suppress existing weed competition prior to planting, as necessary. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » A drill designed for no-till planting shall be used to plant the seed at a depth of 1/8 - 1/4-inch depending on site conditions. Native forbs will be seeded no deeper than 1/8-inch.
4. Dormant seeding is done after soil temperatures drop below what is needed for seeds to germinate in the fall (4-inch soil temperature is less than 50 degrees) and before frost is completely out in the spring. This generally occurs around Nov. 15.
   - » Seeding in cornstalks or sod can be done conventionally by preparing the seedbed with tillage, or no-tilled provided there is sufficient seed to soil contact.
   - » On tilled ground, soybean stubble, or corn fields that had residue (burned or removed), the seed may be broadcasted and rolled to provide seed to soil contact and prevent seed from blowing away from site. This shall be done when the top 1-2 inches are thawed to ensure good seed to soil contact.
5. Frost Seeding is done when the ground is frozen at night and thaws during the day. Seed is incorporated by the freezing and thawing. No additional incorporation is required.
   - » Species approved for frost seeding are shown in Table 2. Native species suitable for frost seeding are debeard or smooth coated species.
   - » Frost seeding is not recommended on corn stalks or high residue fields.
   - » Frost seeding cannot be done on ground with ice cover, crusted snow, or snow depth > 4 inches.

E. Seeding Stand Improvement

This includes any stand modification that maintains some vegetative component of the original stand.

1. Incorporation of grasses, forbs and/or legumes with light tillage:
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to suppress existing vegetation and to control weed competition. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » Use a disk, field cultivator, or similar tool to disturb 40-50% of the existing stand.
   - » Grasses, forbs and/or legumes shall be drilled uniformly over the area at 1/8 - 1/4-inch depth, or broadcast uniformly over the area and rolled into the seedbed. Native forbs will be seeded no deeper than 1/8-inch.

- » Harrow may be used to incorporate seed for introduced species only.
- » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.

2. Incorporation of grasses and/or legumes with no-tillage (interseeding) for spring, late summer and dormant seeding periods:
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to suppress existing vegetation and to control weed competition. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » Control weeds prior to seeding.
   - » Grasses, forbs and/or legumes shall be drilled uniformly over the area at 1/8 - 1/4-inch depth. Native forbs will be seeded no deeper than 1/8-inch.
   - » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.
3. Incorporation of grasses and/or legumes with frost seeding.
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to suppress existing vegetation and to control weed competition. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » Broadcast species only approved for frost seeding as shown in Table 2. Small, smooth (shiny) seeded species are best for incorporation into the soil during freezing and thawing.
   - » Frost interseeding is only allowed if existing stand is weak and less than 50 percent of the ground is covered with perennial vegetation.

F. Seed Quality

1. All seed shall be of high quality and comply with Iowa Seed and Weed Laws.
2. Cool season (introduced) grass and legume seeding rates are expressed in pounds/acre of Pure Live Seed (PLS) where PLS = (% germination + dormant seed) X % purity).
3. Native grass species seeding rates are expressed in PLS pounds/acre. Either the germination test or Tetrazolium (TZ) test is acceptable to determine PLS for native species.

G. Approved Plant Species and Seeding Rates.

Plant species and cultivars shall be selected based upon the adaptation to site conditions, including moisture regime and landscape preference. See the Native Seeding Calculator.

<u>Introduced Species</u>

The pure stand rates in table 2 of this Job Sheet are the minimum rates for planting a single species stand into well-prepared seedbed at the proper placement. The pure stand rates are decreased to a percentage of the desired stand when used to calculate a mixture of two or more species. Select combinations of plant species and cultivars best adapted to site conditions.

- » Approved introduced plant species, allowable mixture composition and the pure stand seeding rate are shown in Table 2.
- » A designed seeding mixture shall meet criteria specified in table 2 as to species composition and seeding rate.
- » For seedings used for erosion control, at least 50% of mixture shall be composed of grasses.
- » Tall Fescue shall not compose more than 10% of the mixture if the primary or secondary purpose is for wildlife.
- » Mixtures may include up to 20% native species. Use the criteria for the predominant species in the mixture for stand establishment.

<u>Native Species</u>

The Iowa Native Seeding Calculator will be used to develop the Native Seeding mixture. Approved native species are determined by county location, longevity of stand, and moisture regime. They are presorted when using the calculator. The user must select moisture regime, seeding type (prairie, savanna, wetland) and longevity.

- » A designed seeding mixture shall meet criteria specified in the Iowa Native Seeding Calculator as to species composition and seeding rate. At least 25 percent by # of seeds/sq. ft. (10 seed/sq. ft.) of the mixture shall be composed of grasses. For wildlife mixtures not more than 4 seeds/sq. ft. of the total mixture will be composed of switchgrass and not more than 8 seeds/sq. ft. of Canada wild rye. Some programs may be more restrictive.
- » When developing seeding plans, except eastern gramma grass, use 40 seeds/sq. ft. for pure grass stands. Grass and forb mixtures use 10-30 seeds/sq. ft. for the grass component and a minimum of 10-30 seeds/sq. ft. for the forb component. (The sum of the grass and forb mixtures total 40 total

seeds/sq. ft.) Seeding mixtures composed of 20 seeds/sq. ft. or less may only be used on 5 percent slopes or less, unless a nurse crop of 1 bu/ac is used, or on any land if the mix is no-tilled.

» When using a grass/forb mixture, develop a mix of tall, medium and short species. This allows for more light penetration to promote the forb component.

» For diverse prairie restorations and pollinator plantings with a minimum of 10 species or more, no more than 20% of the total mix can comprise of a single species of grass and 10% of the total mix can comprise of a single species of forb. No more than 33% of the stand can be comprised of early successional species. Early successional species is defined as a species with a Coefficient of Conservatism (CC) ≤ 3.

» Mixtures may include up to 20 percent introduced forbs, of which no single introduced forb species may comprise more than 10 percent of the mix. The percentage is based on the total grass and forb mix. Use stand establishment and seeding criteria for native plants when including introduced forbs. Although introduced legumes are allowed in native mixtures, it is not recommended for prairie restoration efforts.

» Annual and biannual forbs/legumes are to be limited to no more than 20% by # of seeds/sq. ft. of the forb/legume component, and no more than 20% of any one species of total mix.

» For long-term prairie reconstruction, use local source identified seed. Refer to Technical Note 28, "Guidance for Seeding Natives on Prairie Reconstruction Sites."

» When planting within one mile of an existing native prairie remnant, the native seeding will be a local ecotype or source identified (seed harvested from remnant sites). Refer to Technical Note 28, "Guidance for Seeding Natives on Prairie Reconstruction Sites."

<u>Additional Criteria for Enhancing Wildlife Habitat</u>

» Grasses, forbs, shrubs, and/or legumes shall be planted in a diverse mix to promote biodiversity and meet the needs of the targeted species of wildlife.

» Tall fescue shall not compose more than 10% (or 4 seeds/sq. ft.) of the mixture if the primary or secondary purpose is wildlife.

» When developing seeding plans for wildlife, restoration or reconstruction of pothole, floodplain, and other wetland ecosystems, consider the soils, moisture regimes, and topography of the site to develop seeding mixtures to meet the site characteristics. See Agronomy Technical Note 27, "Guidance on Seeding For Pothole, Floodplain, and other Wetlands."

» Any mowing after seeding establishment, except for noxious weed control will be done outside primary nesting season, May 15 to Aug. 1, to protect nesting wildlife.

» Annual mowing of an entire field is not permitted.

» For pollinator and monarch habitat, refer to appropriate Job Sheet or habitat guide.

H. Management during the Establishment Year

Weed control during the establishment year shall be provided to ensure survival of the new permanent seeding.

1. To manage weed competition, native species may be mowed no closer than 8 inches and introduced species no closer than 4 inches. Mow to allow for sunlight to get down to young seedlings and reduce the amount of thatch from covering the stand. Mowing should start before vegetation reaches a height of 18 inches, and continue about every two weeks throughout the first growing season. Mow at least once in the second season. Additional mowing beyond that will be based on the amount of weed pressure.
2. Approved herbicides may be used on both cool and native plantings to control weed species.
3. When establishing forbs with warm season grasses, the cover will be suppressed by mowing, grazing, chemicals or burning in the second season to avoid grasses or weeds from shading out the forbs.

I. Establishment of Temporary Cover

Temporary cover may be required to reduce potential weed and erosion problems where one of the following conditions exists:

1. Fields with herbicide carry over.
2. Where planting is delayed due to unavailability of seed.
3. The normal planting period has passed.
4. Delayed planting to ensure previous perennial vegetation is terminated.

The temporary cover shall be seeded as specified in Table 3.

Table 1. Seeding dates for introduced and native species

Type of Seeding	Introduced Species[2] (Grasses and Legumes)	Native Species[3]
Spring	March 1 - May 15	April 1 - July 1
Late Summer	August 1 - September 15	Not Recommended
Dormant[1]	November 15 - March 1	November 15 - March 31
Frost[4]	February 1 - March 15	February 1 - March 31

1 Only if seed can be incorporated by drilling or cultipacking to ensure seed to soil contact can be obtained and reduce predation.
2 Includes all species generally considered introduced.
3 Includes all warm and cool season natives planted in mixture.
4 Refer to Table 2 for applicable Introduced plant species. Native species suitable are debeard or smooth coated.
"Seeding cannot be done on ground with ice cover, crusted snow, or snow depth greater than 4 inches."

Table 2. Seeding chart for introduced plant species

	% of Mixture (Range Allowed)		
Plant Species	**Grassland[2] & Wildlife**	**Trees and Shrubs**	**Seeding Rate PLS/acre**
Grasses			
Kentucky bluegrass	0-100	0-10	5
Orchardgrass	0-50	0-100	8
Smooth bromegrass	0-100	0	10
Tall fescue[1]	0-25	0	8
Timothy[1]	0-50	0-100	4
Red top[1]	0-50	0-100	3
Intermediate wheatgrass	0-25	0	10
Perennial rye[1]	0-25	0-50	10
Legumes			
Alfalfa[1]	0-100	0-50	10
Alsike clover[1]	0-50	0-50	4
Kura clover[1]	0-50	0-50	8
White clover[1]	0-50	0-50	3
Red clover[1]	0-50	0-50	8

1 Species suitable for frost seeding.
2 Mixtures may include 20% native grasses. See the Iowa Native Seeding Calculator for seeding rates. Use the criteria for the predominate species in the mixture for establishment.

Table 3. Temporary Seeding Recommendations

Fields with atrazine[1] carryover, lack suitable seed or late planting date	
Sudangrass	20 lbs./acre
Sorghum-Sudangrass hybrid	20 lbs./acre
Corn	2 bushels/acre
Fields where planting is delayed, due to lack of suitable seed or late planting date	
Oats	3 bushels/acre
Winter rye	2 bushels/acre
Spring or winter wheat	2 bushels/acre

1 For other carryover problems, check with the area office.

Table 4. Companion Crop Recommendations

Spring Grain	
Oats	1 bushel/acre
Spring Wheat	1 bushel/acre
Spring Barley	1 bushel/acre

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Seeding Plan

Name _____ **Date** _____ Tract No. _____

Field No. _____

Contract No. _____

Type of Seeding _____ **Prepared by** _____

To figure Pure Live Seed (PLS) rates, multiply the percent purity by the percent germination. Divide the seeding rate by the percent PLS to find the bulk seed needed per acre.

For example, 98% purity X 60% germination = 0.588% PLS
10 lbs./acre ÷ 0.588% = 17 lbs./acre

Species	Acres	lbs./acre	Total Needed
		Pounds	
		Pounds	
		Pounds	
		Pounds	
		Pounds	
		Pounds	

☐ ***Soil Amendments, based on recent soil test (less than 4 yrs. old)***

Apply amendments prior to seedbed preparation or before seeding, if a no-till drill is used.

Amendment	Rate/Acre	Acres	Total
Lime (ECCE)			
Nitrogen			
Phosphate (P_2O_5)			
Potash (K_2O)			

Establishment Method: No-Till ☐ Conventional ☐ Frost ☐ Dormant ☐

Recommended Seeding Date _____

Mulch/Companion Crop Needed _____

Additional Seeding Criteria _____

*Attach Map or Aerial Photo with area seeded marked.

Seeding Complete by _____
(Date)

_____ _____
(Producer's Signature) Date)

Field Office _____ **Certified by** _____

When seeding is completed, return the seeding plan to the USDA-NRCS office. For CRP projects, attach receipts for seed, fertilizer, lime, companion crop, and mulch. For Federal cost-share projects, return receipts to the Farm Service Agency (FSA).