Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

CONSERVATION COVER

CODE 327

(ac)

DEFINITION

Establishing and maintaining permanent vegetative cover

PURPOSE

This practice is used to accomplish one or more of the following purposes–

- Reduce sheet, rill, and wind erosion and sedimentation
- Reduce ground and surface water quality degradation by nutrients and surface water quality degradation by sediment
- Reduce emissions of particulate matter (PM), PM precursors, and greenhouse gases.)
- Enhance wildlife, pollinator and beneficial organism habitat
- Improve soil health

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all lands needing permanent herbaceous vegetative cover. This practice does not apply to plantings for forage production or to critical area plantings. This practice can be applied on a portion of the field.

CRITERIA

General Criteria Applicable to All Purposes

Select species that are adapted to the soil, ecological sites, and climatic conditions that are suitable for the planned purpose and site conditions. Periodic removal of some products such as high value trees, medicinal herbs, nuts, and fruits or emergency haying or grazing is permitted provided the conservation purpose is not compromised by the loss of vegetation or harvesting disturbance.

Inoculate legumes at planting time.

Choose seeding rates and planting methods that will be adequate to accomplish the planned purpose. Certified or Source Identified seed shall be used. Certified and source identified seed is defined by the Iowa Crop Improvement Association. See www.agron.iastate.edu/ICIA for more information.

Planting dates, planting methods and care in handling and planting of the seed or planting stock shall ensure that planted materials have an acceptable rate of survival. Vegetative planting material (e.g. sprigs, rhizomes, bulbs) shall be from a reliable supplier.

Establishment of Permanent Vegetative Cover

Seeding Periods

The dates listed in Table 1 of the specifications outlined in the Conservation Cover 327 IA Job Sheet are based on long-term averages and may be extended by two weeks on either end by the District Conservationist with concurrence by the Area Resource Conservationist. Extension of these planting dates shall be based on both favorable moisture and temperature for proper seed germination. Extension beyond this two-week window must be approved by the State Agronomist.

Fertilizer and Lime Requirements

Introduced Species

Soil fertility and pH level will be amended 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-Extension publication CROP-3108 “Taking a good soil sample to help make decisions.” Samples will be tested at state approved testing laboratory. Fertilizer recommendations will be based on pastureland according to ISU- Extension publication PM-869 “Fertilizing Pastures” Lime recommendations will be developed from Table 16 of ISU-Extension publication PM-1688 “General Guide for Crop Nutrient Recommendations in Iowa” for Conservation Cover establishment. When soil test results are 5.5 pH or lower lime will be applied to at least 6.0 pH.

Fertilizer and 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. This decision and reason is to be documented on the NRCS-CPA-4, Seeding Plan.

On Cropland fields that are being converted to Conservation Cover, soil tests that are less than 4 years old may be used to base fertilizer recommendations.

Soil tests will be required for introduced legumes interseeded into existing cool season stands. Introduced cool season firebreaks on native grass plantings are excluded from soil test/fertilizer requirements. Fertilizer and lime requirements may be waived at the discretion of the Conservation Planner with Job Approval Authority on a site where field practices, such as grassed waterways and when soil tests for adjacent cropland is at optimum or higher.

Native Species

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

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. Companion crop of spring cereal grain at the rate of one bushel/acre will be drilled or broadcasted. See Table 4 in the 327 Job Sheet for list of acceptable companion crops. The companion crop 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. Companion crop of spring cereal grain at the rate of one bushel/acre will be drilled or broadcasted. See Table 4 in the 327 Job Sheet for 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.

Seedbed Preparation and Seeding

Site preparation shall be sufficiently adequate to prepare a favorable seed bed and eliminate weed competition to enhance the establishment and growth of selected species. See specification for site preparation outlined in the Conservation Cover 327 IA Job Sheet.

Seed Quality
All seed shall comply with Iowa Seed and Weed Laws including Iowa Crop Improvement Association Guidance at www.agron.iastate.edu/ICIA and Iowa Noxious Weed Law.

All introduced and native species seeding rates are expressed in pounds/acre of Pure Live Seed (PLS) where PLS = (% germination + dormant seed) x % purity). Either the germination test or Tetrazolium (TZ) test is acceptable for determining PLS for native species.

Approved Plant Species and Seeding Rates.

1. Select combinations of plant species, or cultivars best adapted to site conditions including moisture regime and landscape preference to meet the intended purpose.
   Use specifications outlined in the Conservation Cover 327 IA Job Sheet or IA Native Seeding Calculator for approved plant species and seeding rates.

   Refer to Agronomy Technical Note 28, “Guidance for Seeding Natives on Prairie Reconstruction Sites” for more information on native cultivar selection.

2. Introduced Species.
   a. The seeding rate for Introduced species is shown in Table 2 in the specification in Conservation Cover 327 IA Job Sheet.
   b. To calculate seeding mixtures for introduced species, multiply desired mixture percentage by per acre PLS seed rate in Table 2 of the specifications outlined in the Conservation Cover 327 IA Job Sheet.
   c. Approved introduced plant species, allowable mixture composition, and the pure stand seeding rate are shown in Table 2 of the specifications outlined in the Conservation Cover 327 IA Job Sheet.
   d. Mixtures may include up to 20% native species. Use the criteria for the predominant species in the mixture for stand establishment.
3. Native Species.
   a. In a mixture calculate percentages by seeds per square foot for native species. See Iowa Native Seeding Calculator.
   b. Use the Iowa Native Seeding calculator to determine approved native plant species, mixture composition, and a pure stand seeding rate for native grasses, forbs and woody plants.
   c. For wildlife mixtures, not more than 4 seeds/sq. ft. of the total mixture will be composed of switchgrass or 8 seeds/sq. ft. of the total mix composed of Canada Wildrye. Some programs may be more restrictive.
   d. When developing seeding mixtures, except eastern gamma grass, use a minimum of 40 seeds/sq. ft. Grass and forb mixtures, use 10 to 30 seeds/sq. ft. for the grass component and a minimum of 10 to 30 seeds/sq. ft. for the forb component. The sum of the grasses and forbs/legumes total 40 seeds/sq. ft. Seeding mixes composed of 20 seeds/sq. ft. or less of grass may only be used on slopes of ≤5% unless a companion crop of spring cereal grain such as oats at a rate of 1 bu./ac is used or on any slope if the native seeding mix is no-tilled.
   e. For calculating eastern gamma grass, use 2 seeds/sq. ft. for pure grass stands.
   f. When using a grass/forb mixture, do not use all tall growth forms of grass species but rather use a mixture of tall, medium, and short species. This will allow for more light penetration to promote the forb component.
   g. Mixtures may include up to 20% introduced forbs of which no single introduced forb species may comprise more than 10% of the total mix. Percent is based on total grass and forb mix. Use stand establishment and seeding criteria for native plants when including introduced forbs. When native prairie restoration is the goal, use of introduced forbs is discouraged.
   h. Annual and biennial forbs/legumes are to be limited to no more than 20% by number of

seeds/sq. ft. of the forb/legume component.

i. For diverse prairie restorations and pollinator plantings with a minimum of 10 species or more, no more than 20% of the total mix can be comprised of a single species of grass and 10% of the total mix can be comprised 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.

j. Long-term prairie reconstruction (greater than 15 years) is restricted to local ecotype or local source identified seed. Refer to Technical Note 28, "Guidance for Seeding Natives on Prairie Reconstruction Sites."

k. Native seedings should be limited to local ecotypes or source identified (seed harvested from remnant site) when planting within one mile of an existing native prairie remnant.

l. Pure grass stands are only allowed in block planting as part of a wildlife habitat plan.

4. Seeding mixtures within 10% of required rate may be approved by District Conservationist with consultation of Area Resource Conservationist.

Weed Control During the Establishment Period
Weed control during the establishment period shall be provided to ensure survival of the new permanent seeding.

Mechanical, biological, or chemical control may be used to control undesirable vegetation.

For mechanical control, sites may be mowed just above the height of the seedling plants or no closer than eight inches for native species and no closer than four inches for introduced species. Mow early 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 about every two weeks throughout the first growing season.

Approved herbicides may be used on both introduced cool season and native plantings to control weed species.

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

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

The temporary cover shall be seeded as specified in Table 3 of the Conservation Cover 327 IA Job Sheet.

Additional Criteria to Reduce Soil Erosion and Sedimentation
Determine and maintain the amount of plant biomass and cover needed to reduce wind and water erosion to the planned soil loss objective by using the current approved wind and/or water erosion prediction technology.

Additional Criteria to Reduce Emissions ofParticulate Matter (PM), PM Precursors, and greenhouse gases
In perennial crop systems such as orchards, vineyards, berries and nursery stock, establish vegetation to provide full ground coverage in the alleyway during mowing and harvest operations to minimize generation of particulate matter.

Additional Criteria to Enhance Wildlife, Pollinator and Beneficial Organism Habitat

Plant a diverse mixture of grass and forb species to promote bio-diversity and meet the needs of the targeted species using approved habitat appraisal guides, evaluation tools, and appraisal worksheets for Iowa.

Pollinator stands will consist of a minimum of 10 species including at least three flowering species from each of the three bloom periods (spring, summer, and fall). The stand should also include a minimum of one legume species and a minimum of one bunchgrass (big bluestem, little bluestem, etc.) or clump-forming sedge (Tussock sedge, etc.).

Locate habitat plantings to reduce pesticide exposures that could harm wildlife, pollinators, and other beneficial organisms.

Tall Fescue shall not compose more than 10% or 4 seeds/sq. ft. of the total mixture if the primary or secondary purpose is for wildlife.

When developing seeding plans for wildlife purposes of 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 “Seeding Guidance For Pothole, Riverine, and other Wetland Related Long-term Easements.”

Any mowing after seeding establishment (except for noxious weed control) will be done after August 1 to protect nesting wildlife.

Annual mowing, haying, grazing or burning of entire field will not be permitted.

Additional Criteria to Improve Soil Health

To maintain or improve soil organic matter, select plants that will produce high volumes of organic material. The amount of biomass needed will be determined using the current soil conditioning index procedure found in the current approved erosion prediction tool.

Additional Criteria to Manage Plant Pests

In organic systems and perennial crop systems such as orchards, vineyards, berries and nursery stock; permanent vegetative cover shall be established and managed according to Land Grant University Integrated Pest Management (IPM) recommendations for the target pest species.

CONSIDERATIONS

If the establishment of native cover is intended to promote the forb component, consider decreasing the grass component to 10-20 seeds per sq. ft., increase the forb component to at least 20-30 seeds per sq. ft. Increase the seeding rate of short and intermediate grass species and reduce the seeding rate to $\leq$2 seeds per sq. ft. of large, aggressive grasses (indiangrass, switchgrass, big bluestem) to reduce competition and shading of forbs.

Use a diverse mix of forb species that bloom at different times and provide a sequence of bloom throughout the year (e.g., plant at least three flowering species from each of the three bloom periods (spring, summer, and fall).

This practice may be used to promote the conservation of wildlife species in general, including threatened and endangered species.

Where applicable this practice may be used to conserve and stabilize archeological and historic sites.

Consider rotating management and maintenance activities (e.g. mow only one- fourth or one-third of the area each year) throughout the managed area to maximize spatial and temporal diversity.

Where wildlife management is an objective, the food and cover value of the planting can be enhanced by using a habitat evaluation procedure to aid in selecting plant species and by providing or managing for other habitat requirements necessary to achieve the objective. Encouraging plant species diversity and establishing plantings that result in multiple structural levels of vegetation within the conservation cover will maximize wildlife use.

Where pollinator and wildlife habitat are primary purposes, consider reducing the tall grass seeding rates as long as soil loss is within tolerable soil loss limits.

To provide habitat for natural enemies of crop pests, select a mix of plant species that provide year round habitat and food (accessible pollen or nectar) for the desired beneficial species. Consider habitat requirements of predatory and parasitic insects, spiders, insectivorous birds and bats, raptors, and terrestrial rodent predators. Consult Iowa State University Integrated Pest Management recommendations for beneficial habitat plantings to manage the target pest species.

Where practical, use native species that are appropriate for the identified resource concern and management objective. Consider trying to re-establish the native plant community for the site.

If a native cover (other than what was planted) establishes, and this cover meets the intended purpose and the landowner's objectives, the cover should be considered adequate.

Consider landowner needs, specific program objectives and target wildlife species when planning vegetation.

Restoring permanent wildlife habitat to establish native multi-species grass and forb mixtures over introduced mixtures should be encouraged. Monocultures are discouraged.

Native plant species may benefit from periodic burning. Burning can stimulate growth by reducing unwanted competition from weedy or woody plants and removing excessive plant residue. Refer to Prescribed Burning, Practice Code 338, for recommendations.

When using herbicides to control weed competition:

- Read and follow all label directions and heed all precautions. Be aware of and adhere to the provisions of local, county, state, or federal laws and regulations concerning the use of agricultural chemicals.
- Refer to Integrated Pest Management, Practice Code 595, for additional information on pesticide use and safety.

For visual aesthetics consider selection of forbs/legumes that provide color and flowering periods to meet the landowner's objectives.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for the site.

Some programs may be more restrictive than this standard. If so follow program guidelines for vegetative establishment and maintenance.

Plans shall include, but are not limited to:

- recommended species,
- seeding rates and dates,
- establishment procedures,
- management actions needed to insure an adequate stand.

A job sheet, printout of Native Seeding Calculator and/or similar document shall be used to provide specifications for conservation cover to the land user.

When formal stand evaluation is needed, use Agronomy Technical Notice #19, “Guideline for Herbaceous Stand Evaluation.”

OPERATION AND MAINTENANCE

If wildlife habitat enhancement is a purpose, maintenance practices and activities shall not disturb cover during the reproductive period for the desired species. Exceptions should be considered for periodic burning or mowing when necessary to maintain the health of the plant community.

To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds shall be done on a “spot” basis to protect forbs and legumes that benefit native pollinators and other wildlife.

Re-vegetate bare spots.

Mow, burn, clip, or use approved herbicides to reduce competition from existing stand to improve survival of desired species during the establishment period.

After the establishment period, spot mowing, burn, or spot herbicide treatment shall be used to control noxious weeds and other undesirable plant growth.

If plant vigor declines in introduced species, maintenance levels of plant nutrients may be applied.

Where plant vigor declines in native plant species or where invasive species threaten native mix stands, burning may be appropriate.

Where conservation cover is grazed or hayed, refer to Prescribed Grazing, Practice Code 528, and Forage Harvest Management, Practice Code 511, for recommendations.

REFERENCES

Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool and D.C. Yoder. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE), Agricultural Handbook Number 703.

Revised Universal Soil Loss Equation Version 2 (RUSLE2) website:

These publications are available at County Extension Offices; Extension Distribution Center, Printing Building, Iowa State University, Ames, IA 50011; and several are available on the ISU Publications Home page at http://www.extension.iastate.edu/Pages/pubs/.

- ISU PM-1688 “General Guide for Crop Nutrient Recommendations in Iowa.”
- ISU PM-869 “Fertilizing Pasture.”

The following publications are available at the Iowa NRCS Home page at: http://www.ia.nrcs.usda.gov.

- Native Grass Seeding Calculator.
- Agronomy Technical Note 19 “Guideline for Herbaceous Stand Evaluation.”
- Agronomy Technical Note 27 “Guidance on Seeding Pothole, Floodplain, and Other Wetland.”
- Agronomy Technical Note 28 “Guidance for Seeding Natives on Prairie Reconstruction Sites.”
- NRCS Standard Prescribed Burning, Practice Code 338.
- NRCS Standard Forage Harvest Management, Practice Code 511.
- NRCS Standard Prescribed Grazing, Practice Code 528.
- NRCS Standard Nutrient Management, Practice Code 590.

- NRCS Standard Early Successional Habitat Management, Practice Code 647.
- NRCS Standard Pest Management, Practice Code 595.
- NRCS Job Sheet Pollinator Habitat.

http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/

Wind Erosion Prediction System (WEPS) website:
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/

Preventing or mitigating potential negative impacts of pesticides on pollinators using IPM and other conservation practices. Nat. Agron. Tech Note 9. Washington, DC. http://directives.sc.egov.usda.gov/