



CONSERVATION ENHANCEMENT ACTIVITY

E511A

CONSERVATION STEWARDSHIP PROGRAM

Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape

Conservation Practice 511: Forage Harvest Management

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture, Range

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Harvest of crops (hay or small grains) using conservation measures that allow desired species to flush or escape (**See State Wildlife Action Plan for species list**). Conservation measures include timing of harvest, idling land during the nesting or fawning period, and applying harvest techniques that reduce mortality to wildlife.

Criteria

- Forage will be harvested at a frequency and height that optimizes the desired forage stand, plant community, and stand life. Follow State Cooperative Extension Service (CES) recommendations for forage harvest based on stage of maturity, moisture content, length of cut, stubble height, and harvest interval. The following criteria must be met:
 - Harvest forage at the stage of maturity that provides the desired quality and quantity without compromising plant vigor and stand longevity.
 - Harvest silage/haylage crops within the optimum moisture range for the type of storage method(s) or structure(s) being utilized. CES recommendations must be followed for optimum moisture content and levels, as well as methods and techniques to monitor and/or determine moisture content and



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levels. Avoid fermentation and seepage losses of digestible dry matter from direct cut hay crop silage (moisture content >70%) by treatment with chemical preservatives or addition of dry feedstuffs. For optimal dry hay quality, rake hay at 30% to 40% moisture and ted or invert swaths when moisture is above 40%. To preserve forage quality and quantity, bale field-cured hay at 15% to 20% moisture and bale force air-dried hay at 20% to 35% moisture.

- When harvested for ensilage, forage will be chopped to a size appropriate for the type of storage structure used and optimal effective fiber. The selected length of chop will allow adequate packing to produce the anaerobic conditions necessary to ensure the proper ensiling process. A shorter chop length on very dry silage may help to ensure good packing and adequate silage density.
- Cut forage plants at a height that will promote the vigor and health of the desired species. Cutting heights will provide adequate residual leaf area; adequate numbers of terminal, basal, or auxiliary tillers or buds; insulation from extreme heat or cold; and/or unsevered stem bases that store food reserves needed for full, vigorous recovery. Follow CES recommendations for proper stubble heights to avoid winterkill of forage species in cold climates.
- Forage shall not contain contaminants that can cause illness or death to the animal being fed or rejection of the offered forage. Check CES contaminant notices, cautions, and recommendations for the specific harvest site location and area.
- Appropriate harvest schedule(s), cover patterns, and minimum plant heights to provide suitable habitat for the desired wildlife species should be implemented and maintained (See State Wildlife Action Plan).
- Time harvests to benefit the desired wildlife species by following state guidelines.
- Producer will apply and maintain at least two of the following management actions specified to improve or protect grassland functions for the state-identified or targeted wildlife species:

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- Do not cut hay on at least 1/3 of the hay acres each year. Idle strips or blocks must be at least 30 feet wide.
- For at least 1/3 of the hay acreage, hay cutting must occur outside of the primary nesting or fawning seasons based on state-established dates for the targeted species.
- Increase forage heights after mowing to state-specified minimum heights for the targeted species on all hay acres.
- For all harvest activities that will occur during the nesting/fawning season, the producer will implement at least two of the following actions to flush wildlife during the harvest operation:
 - Attach a flush bar on the mower/harvest equipment.
 - Conduct all harvest/mowing during daylight hours.
 - Begin the harvest pattern either:
 - On one end of the field, working back and forth across the field or
 - In the center of the field, working outward.



Documentation and Implementation Requirements

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Participant will:

- Y Prior to implementation, develop a map delineating the fields selected for improving wildlife habitat and enrolled in the enhancement.
- Y Prior to implementation, develop a plan to harvest forage in a manner that protects stand longevity while maintaining or improving wildlife habitat. Plan must meet NRCS Conservation Practice Standard Forage Harvest Management (CPS 511) and the criteria for this enhancement. Coordinate the plan with NRCS Conservation Practice Standard Upland Wildlife Habitat Management (645), as applicable. At a minimum, plan must include the following for the forage harvest operations:
 - Goals, objectives, and specific purpose (improve wildlife habitat values)
 - At least two of the management actions specified for improving or protecting grassland functions for the state-identified target wildlife species
 - Implementation of at least two actions to flush wildlife during the harvest operation for all harvest activities that will be conducted during the nesting/fawning season
 - Forage species to be harvested
 - Details for each dominant forage species to be harvested:
 - Method of harvest
 - Harvest timing (stage of maturity, optimal harvest moisture content, length of cut)
 - Stubble height to be left
 - Harvest interval (including late harvest, if applicable)
 - Contaminant avoidance recommendations
- Y Prior to implementation, ensure forage harvesting tool/machinery is capable of cutting the forage at the height required to provide suitable habitat for the desired wildlife species without compromising plant vigor and stand longevity.



- Y Prior to implementation, review the State Wildlife Action Plan as it relates to implementing this enhancement and provide the following information:

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Wildlife Species of Concern	
Habitat Requirements, such as plant heights to provide suitable habitat	

- Y During implementation, keep the following documentation for each field:

Field	Forage species harvested	Harvest height (inches)	Harvest Date

- Y During implementation, time harvests to benefit the desired wildlife species.
- Y During implementation, take photographs of forage cutting heights with fields and date of harvest identified.
- Y During implementation, notify NRCS of any planned changes to ensure enhancement criteria are met.
- Y After implementation, make documentation and photographs of forage cutting heights available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- Y As needed, provide technical assistance to meet enhancement criteria.

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- Y Prior to implementation, verify a map has been developed delineating the fields that will have the enhancement implemented.
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standards Forage Harvest Management (Code 511) and Upland Wildlife Habitat Management (Code 645) as they relate to implementing this enhancement, including applicable state-specific job sheets.
- Y Prior to implementation, provide and explain the State Wildlife Action Plan as it relates to implementing this enhancement.
- Y Prior to implementation, provide technical assistance, as needed, to:
- Develop a plan to harvest forage in a manner that protects stand longevity, while also maintaining or improving wildlife habitat.
 - Develop specifications detailing the wildlife protection measures and habitat improvement.
- Y During implementation, evaluate any planned changes to ensure enhancement criteria are met.
- Y After implementation, review documentation and photographs of forage cutting heights to verify implementation of the enhancement.

NRCS Documentation Review:

I have reviewed all required participant documentation and determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

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**OHIO SUPPLEMENT TO
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E511A

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E511A the following additional criteria apply in Ohio:

- The targeted species are small mammals such as cottontail rabbit and grassland birds including northern bobwhite, ring-neck pheasant, bobolink, dickcissel, henslows sparrow, vesper sparrow and eastern meadowlark.
- The primary nesting season for grassland birds in Ohio is March 1 until July 15
- Minimum heights after cutting are 4 inches for cool season grasses and 8 inches for warm season grasses

Additional Documentation Requirements for Ohio

There are no additional documentation requirements that apply in Ohio.



CONSERVATION ENHANCEMENT ACTIVITY

E511B

CONSERVATION STEWARDSHIP PROGRAM

Forage harvest management that helps maintain wildlife habitat cover, shelter or continuity

Conservation Practice 511: FORAGE HARVEST MANAGEMENT

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture, Range

RESOURCE CONCERN ADDRESSED: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

The timely cutting and removal of forages from the field as hay, green chop, or ensilage in such a way, and in time frames, to optimize both forage yield/quality and wildlife cover and shelter and/or continuity between otherwise disconnected habitats.

Criteria

- Specify the wildlife species of concern on the state-approved NRCS Wildlife Habitat Evaluation Guide (WHEG). The species of concern must be one that is present for at least part of their life cycle in the geographical/physiographic region.
- The state's WHEG will be completed by a NRCS biologist or partner wildlife biologist. Cover and shelter or continuity habitat requirements for the wildlife species of concern must be specified on the WHEG. The total WHEG score after installation of this practice must be 0.60 or greater.
- Provide suitable habitat for desired wildlife species. This may require changes to harvest schedules, cover patterns, and minimal plant heights while managing the desired forage stand, plant community, and stand life.



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- Time harvest to benefit the desired wildlife species by following state guidelines. Whenever possible, avoid harvest during the primary nesting season, harvest during daylight hours, and harvest in patterns (e.g. - beginning on one end of the field and working back and forth across the field or beginning in the center of the field and working outward).
- Cut forage at a height that will promote the vigor while leaving minimal stubble heights required by the desired wildlife species and the Cooperative Extension Service recommendations to avoid winterkill in cold climates.
- Harvest forage without compromising plant vigor and stand longevity and at the stage of maturity that provides the desired quality and quantity to the degree possible while still providing suitable habitat for the desired wildlife species.
- Harvest silage/haylage within the optimum moisture range for the type of storage utilized. Follow Cooperative Extension Service recommendations for moisture content. For optimal dry hay quality, rake at 30% to 40% moisture and ted or invert swaths when moisture is above 40%. Bale field cured hay at 15% to 20% moisture.



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Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, ensure forage harvesting tool/machinery is capable of cutting the forage at the height required to provide suitable habitat for the desired wildlife species without compromising plant vigor and stand longevity.
- Y Prior to implementation, review the map delineating the fields selected for improving wildlife cover and shelter and enrolled in the enhancement.
- Y Prior to implementation, develop a plan to harvest forage in a manner that protects stand longevity and also maintains or improves wildlife habitat. Plan must include specifications detailing the wildlife protection measures, such as selecting time periods to avoid forage harvest to protect wildlife and ensuring that suitable wildlife habitat exists during critical nesting periods. Refer to NRCS Conservation Practice Standard Forage Harvest Management (Code 511).
- Y Prior to implementation, provide the forage harvest plan to NRCS for review to confirm it meets the criteria of the enhancement.
- Y During implementation, take photographs of forage cutting heights with fields and date of harvest identified.
- Y During implementation, notify NRCS of any planned changes to verify they meet the enhancement criteria.
- Y During implementation, keep the following documentation for each field:

Field	Forage species selected for harvest	Harvest height (inches)	Harvest Date



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- Y After implementation, make documentation and photographs of forage cutting heights available for review to NRCS to verify implementation of the enhancement.

NRCS will:

- Y As needed, provide technical assistance to meet the criteria of the enhancement.
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage and Biomass Planting (Code 512) as it relates to implementing this enhancement.
- Y Prior to implementation, an NRCS biologist or partner wildlife biologist will complete the state-approved NRCS WHEG. Specific species targeted will be notated on the WHEG, and total score after implementation must equal 0.60 or greater.

Wildlife Species of Concern	
Cover & Shelter Requirements	
Planned WHEG Score after implementation	

- Y Prior to implementation, verify a map has been developed delineating the hayfields that will have the enhancement implemented.
- Y Prior to implementation, NRCS will provide technical assistance, as needed to:
 - o Develop a plan to harvest forage in a manner that protects stand longevity, while also maintaining or improving wildlife habitat. Plan must meet requirements of NRCS Conservation Practice Standard Forage Harvest Management (Code 511).



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- Develop specifications detailing the wildlife protection measures, such as selecting time periods to avoid forage harvest to protect wildlife and ensuring that suitable wildlife habitat exists during critical nesting periods.
- Y During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- Y After implementation, verify the planned forage harvest was completed to specifications developed for the fields delineated.
- Y After implementation, review documentation and photographs of forage cutting heights to verify implementation of the enhancement.
- Y If changes were made after implementation, complete the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Wildlife Species of Concern	
Cover & Shelter Requirements	
WHEG Score after Implementation	



NRCS Documentation Review:

I have reviewed all required participant documentation and determined the participant has implemented the enhancement and met all criteria and requirements.

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Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO
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E511B

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E511B the following additional criteria apply in Ohio:

- The targeted species are grassland birds including northern bobwhite, ring-neck pheasant, bobolink, dickcissel, henslows sparrow, vesper sparrow and eastern meadowlark.
- The nesting season for grassland birds in Ohio is March 1 until July 15.
- Minimum heights after cutting are 4 inches for cool season grasses and 8 inches for warm season grasses.
- Use the Ohio Pasture/Hayland Wildlife Habitat Evaluation found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat Evaluation for the NRCS Wildlife Habitat Evaluation Guide (WHEG) required for completion.

Additional Documentation Requirements for Ohio

There are no additional documentation requirements that apply in Ohio.

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CONSERVATION ENHANCEMENT ACTIVITY

E511C

CONSERVATION STEWARDSHIP PROGRAM

Forage testing for improved harvesting methods and hay quality

Conservation Practice 511 Forage Harvest Management

APPLICABLE LAND USE: Perennial cropland (hayland) and Pasture

RESOURCE CONCERN: Animals, Plants

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Dry hay forage samples are collected and analyzed following LGU procedures. Analysis results are kept and used to improve harvest decisions to guide forage supplementation of on-farm livestock to meet nutritional needs and improve health and productivity.

Criteria

- This enhancement only applies to hay harvested on-farm.
- Develop a plan to harvest hay in a manner that protects stand longevity and maintains or improves forage quality. Plans must include specifications for harvest timing, handling prior to baling, and storage options to best preserve forage quality.
- At least **2 consecutive** cuttings will be required of the same forage type, but additional testing may be needed and should follow the Cooperative Extension or other specialist/nutritionists' recommendations and documented in the plan.
- Collect hay samples consistent with land grant university or accredited lab protocol for tissue sampling for each harvest cycle. Consult the National Forage Testing Association list of Certified Labs- <https://www.foragetesting.org/links> for more assistance.



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- Complete a record keeping document that will include all the following at a minimum for each cutting:
 - Date and time of harvest AND date of baling
 - Forage type
 - Maturity stage/description during harvest including harvest height
 - Curing and handling prior to baling (number of tedding, raking, and/or merging operations)
 - Moisture during harvest
 - Bale type (Large square, Round, Small Square)
 - Storage type (indoor, poly-wrapped, tubed, tarped, net wrapped, unprotected etc.)
 - Crude protein
 - Fiber (NDF/ADF)
 - Ash
 - Total Digestible Nutrients (TDN)
 - Relative feed value (RFV)
 - Additional recommended tests (where available): NDF-Digestibility (30-hour recommended) and nitrates.
- Provide record keeping documents and hay test results to NRCS office.
- Discuss results with local Cooperative extension educator or livestock nutritionist, provide any recommendations to NRCS office for all harvesting cycles.
- Use results to improve harvesting decisions.
- Use hay analyses to guide forage supplementation to on-farm livestock.



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Adoption Requirements

This enhancement is considered adopted when the criteria is met, and documentation records are provided.





Documentation and Implementation Requirements

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Participant will:

- ☐ Prior to implementation, develop a map delineating the fields selected for gathering the hay analysis and record keeping documentation.
- ☐ Prior to implementation, ensure forage harvesting tool/machinery is capable of cutting the forage at the desired residual height without compromising plant vigor and stand longevity.
- ☐ Prior to implementation, develop a plan to harvest hay in a manner that protects stand longevity and maintains or improves forage quality and maintains adequate stubble. Plans must include specifications for harvest timing, handling prior to baling, and storage options to best preserve forage quality. Refer to NRCS Conservation Practice Standard Forage Harvest Management (Code 511).
- ☐ Prior to implementation, provide the forage harvest and forage sampling plan to NRCS for review. Two consecutive cuttings of the same forage type will be evaluated, preferably on the same field, unless the first harvested species will be different than the second harvest on the same field, (for example cool season species fields that transition to warm season forage later in the season). The first cutting must be tested after harvest and is one of the two required. Management decisions must be made from the first test to determine how to improve forage quality for the next cutting. Record keeping should be completed for each cutting and a report completed. Additional testing may be needed and should follow the Cooperative Extension or other specialist/nutritionists' recommendations and documented in the plan.
- ☐ During implementation, collect the number of forage samples on mapped field/s during each harvest cycle and send to a land grant university or accredited lab for tissue analysis.
- ☐ During implementation, keep records including all items under criteria.
- ☐ During implementation, discuss results and implement technical recommendations from Cooperative Extension, nutritionist or NRCS.



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- ☐ During implementation, use analysis results and data to improve/adjust forage harvesting activities for the next harvest cycle.

Example: Ash content above internal sources

(calcium, magnesium, potassium, phosphorus); adjust cutting and/or rake heights to reduce external sources (dirt, bedding, etc.), use cutting heights and harvest timing to positively affect fiber level, change harvest timing to increase protein and NDF-d levels etc.

- ☐ During implementation use data collected from on-farm hay analysis to improve supplemental feeding periods for animals' health and productivity.
- ☐ After implementation, provide tissue analysis and all record keeping documentation to NRCS
- ☐ After implementation, provide technical recommendations from Cooperative Extension or other specialist/nutritionist to NRCS.
- ☐ After implementation, provide report on how the data enabled improvements to hay harvest and feed supplementation efficiency.

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage Harvest Management (Code 511) as it relates to this enhancement.
- ☐ Prior to implementation, verify map and crop/hayfields where enhancement will apply.
- ☐ Prior to implementation, provide assistance in determining the forage cutting to be sent for analysis in addition to the required first cutting.
- ☐ Prior to implementation, provide assistance in determining the planned number of hay samples above the required 2.



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- ☐ During implementation, verify management changes in harvest management have positively affected test values in the forage analysis results. Positive effects are but not limited to increases in crude protein levels, NDF-D and TDN values and/or lowering of NDF/ADF and Ash levels.
- ☐ After implementation, verify the hay harvest and hay analysis activities and record keeping meet the specifications of this enhancement.
- ☐ After implementation, review data driven report for hay harvest and supplemental feeding improvements.



CONSERVATION ENHANCEMENT ACTIVITY

E511D_

CONSERVATION STEWARDSHIP PROGRAM

Forage harvest management to improve terrestrial habitat for wildlife and invertebrates during critical over-winter periods

Conservation Practice 511: FORAGE HARVEST MANAGEMENT

APPLICABLE LAND USE: Crop (Perennial) RESOURCE CONCERN

ADDRESSED: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Eliminate or forgo the last fall cutting of hay or haylage to optimize wildlife cover and shelter during critical over-winter periods and lengthen late season bloom period for invertebrates. Allowing late season stand maturity increases stand life and reduces risks of frost and winter damage while providing valuable wildlife habitat and extended bloom periods.

Criteria

- Specify the wildlife species of concern on the state-approved NRCS Wildlife Habitat Evaluation Guide (WHEG). The species of concern must be one that is present for at least part of their life cycle in the geographical/physiographic region and benefit from the late season, over-winter standing hay/haylage crop.
- The state's WHEG must specify cover and shelter or continuity habitat requirements for the wildlife species of concern. The total WHEG score after installation of this practice must be 0.5 or greater.
- Eliminate or forgo the last scheduled fall cutting to provide suitable over-winter habitat for desired wildlife species and pollinators.



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- Eliminate or forgo the last fall harvest to benefit the desired wildlife species by following state guidelines. {State Specify last date hay cutting may occur}
 - Example: Hay cutting in SD will occur no later than September 1 of the given year to allow adequate regrowth before winter dormancy.
- Prior cuttings to the foregone harvest must result in stubble heights that will promote health and vigor of the hayland species (refer to Conservation Practice Standard (CPS) 511). The last cutting of the season must ensure minimum plant heights required by the identified wildlife species. Regrowth and taller stubble heights will reduce winter-kill in cold climates (as applicable) and provide additional wildlife benefits. Refer to Cooperative Extension Service recommendations where available.



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Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, identify typical date of last fall cutting. Provide the forage harvest plan and cutting dates to NRCS for review to confirm it meets the criteria of the enhancement.
- Y Prior to implementation, design the last cutting heights to meet WHEG criteria.
- Y Bales from the last cutting prior to the foregone cutting must be removed from the field for off-field storage to minimize predator impacts.
- Y Prior to implementation, review the map delineating the fields selected for improving wildlife cover and shelter and enrolled in the enhancement.
- Y During implementation, take photographs of the forage stand to verify final cutting was left standing in the field and plant heights meet state wildlife requirements for the identified species. Overwintering stubble heights and regrowth must be maintained during the dormant period to promote wildlife habitat.
- Y During implementation, notify NRCS of any planned changes to verify they meet the enhancement criteria.
- Y During implementation, keep the following documentation for each field:

Field	Forage species	Overwinter height (inches)	Last Harvest Date



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- Y After implementation, make documentation and photographs of forage cutting heights available for review to NRCS to verify implementation of the enhancement.

NRCS will:

- Y As needed, provide technical assistance to meet the criteria of the enhancement.
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard and specifications of Pasture and Hay Planting (Code 512) as it relates to implementing this enhancement.
- Y Prior to implementation, an NRCS biologist or partner wildlife biologist will complete the state-approved NRCS WHEG. Specific species targeted will be notated on the WHEG, and total score after implementation must equal 0.50 or greater.

Wildlife Species of Concern	
Cover & Shelter Requirements	
Planned WHEG Score after implementation	

- Y Prior to implementation, verify a map has been developed delineating the hayfields that will have the enhancement implemented.
- Y Prior to implementation, NRCS will provide technical assistance, as needed to:
 - o Develop a plan to harvest forage in a manner that protects stand longevity, while also maintaining or improving wildlife habitat. Plan must meet requirements of NRCS Conservation Practice Standard Forage Harvest Management (Code 511).



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- Develop specifications detailing the wildlife protection measures, such as selecting time periods to avoid forage harvest to protect wildlife and ensuring that suitable wildlife habitat exists during critical nesting periods.
- Υ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- Υ After implementation, verify the planned forage harvest was completed to specifications developed for the fields delineated.
- Υ After implementation, review documentation and photographs of forage cutting heights to verify implementation of the enhancement.
- Υ If changes were made after implementation, complete the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Wildlife Species of Concern	
Cover & Shelter Requirements	
WHEG Score after Implementation	



NRCS Documentation Review:

I have reviewed all required participant documentation and determined the participant has implemented the enhancement and met all criteria and requirements.

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Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

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E511D

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E511D the following additional criteria apply in Ohio:

- Provide a minimum of 30 days of rest prior to the first killing frost (<28 degrees F). Calculate the first/last frost by using <https://agacis.rcc-acis.org/> using Product First/Last Dates, Mean from Years 1980-2023, and Min Temp = 28 degrees F. Examples:

Station	Mean Last Killing Frost	Mean First Killing Frost
Findlay Airport	April 10 th	October 29 th
Wooster/Wayne Co Airport	April 3 rd	November 8 th
Zanesville Municipal Airport	March 12 th	November 11 th
Dayton International Airport	March 16 th	November 21 st
Chillicothe	March 20 th	November 15 th

- Forage heights should be a minimum of 6-8" at the first killing frost.
- The wildlife species of concern targeted with this enhancement are northern bobwhite, ringneck pheasant, and grassland nesting songbirds.

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E511D the following additional documentation requirements apply in Ohio:

- Use the Ohio Pasture/Hayland Wildlife Habitat Evaluation found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat Evaluation for the NRCS Wildlife Habitat Evaluation Guide (WHEG).
- Provide photos of each field showing forage height before winter and provide the information below (table optional):

Field ID, Tract & Field #	Acres	Date of Last Cutting



CONSERVATION ENHANCEMENT ACTIVITY

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Forage and biomass planting to reduce soil erosion or increase organic matter to build soil health

CONSERVATION PRACTICE: 512 - Pasture and Hay Planting

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Establishing adapted and compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can provide for reduced soil erosion, improving soil health. Species must be planted into existing perennial stands.

Criteria

- Select species from a minimum of two functional groups (cool season grasses, warm season grasses, legumes, other forbs) based on climatic conditions, soil condition, landscape position and resistance to disease and insects, that will provide ground cover and root mass needed to be sufficient to protect the soil from wind and water erosion.
- Recommendations for planting rates, methods, depths, and dates from land grant/research institutions, plant materials program, extension agencies, or agency field trials will be followed.
- Prior to planting, graze, or mow existing stands as needed to improve seedling competitiveness.
- Prepare seed bed for planting that does not restrict plant emergence or leave the site vulnerable to erosion. Minimize soil disturbance during planting operations.
- Planting will take place when soil moisture is adequate for germination and establishment.
- Federal, state, or local noxious species will not be planted.



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- Plant nutrients and/or soil amendments for establishment purposes will be applied according to a current soil test. Legume seed will be pre-inoculated or inoculated with the proper viable strain of Rhizobia immediately before planting.
- Deep-rooted, perennial species or deep-rooted perennial and annual species mix will be selected that will contribute to maintaining or increasing underground carbon storage.
- New plantings will be monitored for water stress. Depending on the severity of drought, water stress may require reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands. Plantings will be protected from grazing until an adequate stand is established and meets the species specific, local standard for beginning grazing.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, select a deep-rooted perennial forage species or grassland mixture of deep-rooted perennials and annuals for establishment. *If livestock are included in the system, forage species selected will meet the desired level of nutrition for the kind and class of the livestock to be fed. (NRCS will provide technical assistance, as needed.)*

Species	Forage category (grass, legume, forb)

- ☐ Prior to implementation, select planting technique, seeding rates and timing appropriate for the site and climatic conditions. (NRCS will provide technical assistance, as needed.)

Planting date	
Planting method	
Seeding rate	

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- ☐ If livestock are included in the system, prior to implementation a grazing plan must be developed to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs and ensure adequate stubble heights remain to prevent erosion.
- ☐ During implementation, keep the following documentation:
 - Records and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
 - Documentation of seed rate basis (Pure Live Seed) and any fertilizer or soil amendments used for the implementation of the enhancement.
- ☐ If livestock are included in the grazing system, documentation, and photographs of turn in/turn out grazing records and stubble height residue for each field.
- ☐ If livestock are included in the grazing system, during implementation in areas where animals congregate, establish persistent species that can tolerate close grazing and trampling.
- ☐ After implementation, make the forage planting and grazing records and photos available for review by NRCS to verify implementation of the enhancement.

NRCS will:

Prior to implementation, use selected mixture and site information to calculate the before and after soil loss from water erosion using current NRCS wind and water erosion prediction technologies.

Soil erosion BEFORE _____ t/ac/year and AFTER _____ t/ac/year

As needed, prior to implementation, NRCS will provide technical assistance:

- Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512).
- Prepare specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

If livestock are included in the system, develop a grazing plan to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs and maintain adequate stubble heights to prevent erosion.



- ☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- ☐ After implementation, verify the planned grassland mixture was established to specifications developed for the site.

CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E512B

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E512B the following additional criteria apply in Ohio:

- Planners will utilize Appendix A located in section IV of eFOTG for planting rates, methods, dates, and mixes.

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E512B the following additional documentation requirements apply in Ohio:

Reports from the current NRCS wind and water erosion prediction technologies to document the soil erosion estimates (before and after) to show reduction in soil erosion.

If grazing livestock are included in the system, CPS 528 Prescribed Grazing or an associated E528 enhancement must be completed (existing or planned practice) so that a Grazing Management Plan is associated with this enhancement. If other livestock are included in the system (e.g., monogastrics, poultry), CPS 822 Nonruminant Livestock Outdoor Management of Vegetative Cover must be completed.

Prepared plans and specifications for the establishment planting for each site or management unit according to the Criteria, Considerations, and Operations and Maintenance described in Conservation Practice Standard 512. May be recorded on a site specific job sheet or in the narrative of a conservation plan. The following elements must be addressed in the plan to meet the intended purpose:

- o Site Preparation
- o Fertilizer Application (if applicable)
- o Seedbed/Planting Bed Preparation
- o Methods of Seeding/Planting
- o Time of Seeding/Planting

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CONSERVATION STEWARDSHIP PROGRAM

- o Selection of Species
- o Type of legume inoculant used (if applicable)
- o Seed/Plant Source
- o Seed Analysis
- o Rates of Seeding/Planting
- o Supplemental Water for Plant Establishment (if applicable)
- o Protection of Plantings (if applicable)
- o Grazing plan (if applicable)
- o Harvest plan (if applicable)



CONSERVATION ENHANCEMENT ACTIVITY

E512D

CONSERVATION STEWARDSHIP PROGRAM

Forage plantings that help increase organic matter in depleted soils

CONSERVATION PRACTICE: 512 - Pasture and Hay Planting

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Establishing adapted and compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can help improve soil quality of depleted sites through increase or conservation of the organic matter in the soil.

Criteria

- Select species from a minimum of two functional groups (cool season grasses, warm season grasses, legumes, other forbs) based on climatic conditions, soil condition, landscape position and resistance to disease and insects, that will provide ground cover and root mass needed to be sufficient to protect the soil from wind and water erosion.
- This enhancement is applicable where soils have been depleted of organic matter (typically from direct exposure to air through plowing or disking, and/or having little or no vegetation growing on the soil for a period. In these circumstances, organic matter can be increased through planting of deep-rooted perennial species or a mix of deep-rooted perennials and annual species with the capability of moving carbon into the soil horizons naturally, and then managing these plant communities for optimum production of above ground matter (forage).
- Recommendations for planting rates, methods, depths, and dates from land grant/research institutions, plant materials program, extension agencies, or agency field trials will be followed.



CONSERVATION STEWARDSHIP PROGRAM

- Prior to planting, graze or mow existing stands as needed to improve seedling competitiveness.
- Prepare seed bed for planting that does not restrict plant emergence or leave the site vulnerable to erosion. Minimize soil disturbance during planting operations.
- Planting will take place when soil moisture is adequate for germination and establishment.
- Federal, state, or local noxious species will not be planted.
- Plant nutrients and/or soil amendments for establishment purposes will be applied according to a current soil test and according to Land Grant University recommendations. Legume seed will be pre-inoculated or inoculated with the proper viable strain of Rhizobia immediately before planting.
- Inspect and calibrate equipment prior to use. Continually monitor during planting to ensure proper rate, distribution and depth of planting is maintained.
- Monitor new plantings for water stress. Depending on the severity of drought, water stress may require reducing weeds, early harvest of any companion crop, irrigating when possible, or replanting failed stands.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, select a deep-rooted perennial forage species or grassland mixture of deep-rooted perennials and annuals for establishment. If livestock are included in the system, forage species selected will meet the desired level of nutrition for the kind and class of the livestock to be fed. (NRCS will provide technical assistance, as needed.)

Species	Forage category (grass, legume, forb)

- ☐ Prior to implementation, select planting technique, seeding rates and timing appropriate for the site and climatic conditions. (NRCS will provide technical assistance, as needed.)



CONSERVATION STEWARDSHIP PROGRAM

Planting date	
Planting method	
Seeding rate	

- ☐ If livestock are included in the system, prior to implementation a grazing plan must be developed to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs and ensure adequate stubble heights remain to prevent erosion.
- ☐ During implementation, keep the following documentation:
 - Records and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
 - Documentation of seed rate basis (Pure Live Seed) and any fertilizer or soil amendments used for the implementation of the enhancement.
- ☐ If livestock are included in the grazing system, documentation, and photographs of turn in/turn out grazing records and stubble height residue for each field. If livestock are included in the grazing system, during implementation in areas where animals congregate, establish persistent species that can tolerate close grazing and trampling.
- ☐ After implementation, make the forage planting and grazing records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

As needed, prior to implementation, NRCS will provide technical assistance:

- Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512).
- Prepare specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.
- If livestock are included in the system, develop a grazing plan to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs and maintain adequate stubble heights to prevent erosion.



- ☐ During implementation, evaluate any planned changes to verify they meets the enhancement criteria.
- ☐ After implementation, verify the planned grassland mixture was established to specifications developed for the site.

CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E512D

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E512D the following additional criteria apply in Ohio:

- Planners will utilize Appendix A located in section IV of eFOTG for planting rates, methods, dates, and mixes.

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E512D the following additional documentation requirements apply in Ohio:

If grazing livestock are included in the system, CPS 528 Prescribed Grazing or an associated E528 enhancement must be completed (existing or planned practice) so that a Grazing Management Plan is associated with this enhancement. If other livestock are included in the system (e.g., monogastrics, poultry), CPS 822 Nonruminant Livestock Outdoor Management of Vegetative Cover must be completed.

- Prepared plans and specifications for the establishment planting for each site or management unit according to the Criteria, Considerations, and Operations and

Maintenance described in Conservation Practice Standard 512. May be recorded on a site specific job sheet or in the narrative of a conservation plan. The following elements must be addressed in the plan to meet the intended purpose:

- o Site Preparation
- o Fertilizer Application (if applicable)
- o Seedbed/Planting Bed Preparation
- o Methods of Seeding/Planting
- o Time of Seeding/Planting
- o Selection of Species

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CONSERVATION STEWARDSHIP PROGRAM

- ☐ Type of legume inoculant used (if applicable)
- ☐ Seed/Plant Source
- ☐ Seed Analysis
- ☐ Rates of Seeding/Planting
- ☐ Supplemental Water for Plant Establishment (if applicable)
- ☐ Protection of Plantings (if applicable)
- ☐ Grazing plan (if applicable)
- ☐ Harvest plan (if applicable)



CONSERVATION ENHANCEMENT ACTIVITY

E512I

CONSERVATION STEWARDSHIP PROGRAM

Establish pollinator and/or beneficial insect and/or Monarch habitat

CONSERVATION PRACTICE: 512 - Pasture and Hay Planting

APPLICABLE LAND USE: Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Establishing adapted and compatible species, varieties, or cultivars of herbaceous species that can provide nectar for Monarch butterflies and/or pollinators and forage and other habitat values for wildlife and livestock, particularly at times when targeted nectar, forage supply and quality, cover, and shelter are not available in other pastures. Species must be planted into existing perennial stands.

Criteria

- Select native, perennial plant species and their cultivars based on climatic conditions, soil condition, landscape position and resistance to disease and insects, and will meet the nectar needs of specified, pollinating insects (and/or Monarch butterflies) at times when they will be present and foraging. These plants need to also provide forage or other habitat values for wildlife and livestock.
- Recommendations for planting rates, methods, depths, and dates from land grant/research institutions, plant materials program, extension agencies, or agency field trials will be followed.
- Prior to planting, graze or mow existing stands as needed to improve seedling competitiveness.
- Seeding medium that does not restrict plant emergence will be provided, and planting will take place when soil moisture is adequate for germination and establishment. Minimize soil disturbances during planting operations.



CONSERVATION STEWARDSHIP PROGRAM

- Federal, state, or local noxious species will not be planted.
- Plant nutrients and/or soil amendments for establishment purposes will be applied according to a current soil test. Legume seed will be pre-inoculated or inoculated with the proper viable strain of Rhizobia immediately before planting.
- Plants will be selected that help meet nectar requirements for Monarch butterflies during times that the Monarch will be present. Plant selection will help to increase scores on the state's approved NRCS Monarch butterfly habitat evaluation.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, select a perennial forage species or grassland mixture for establishment. If livestock are included in the system, forage species selected will meet the desired level of nutrition for the kind and class of the livestock to be fed. (NRCS will provide technical assistance, as needed.)

Species	Forage category (grass, legume, forb)

- ☐ Prior to implementation, select planting technique, seeding rates and timing appropriate for the site and climatic conditions. (NRCS will provide technical assistance, as needed.)

Planting date	
Planting method	
Seeding rate	

- ☐ If livestock are included in the system, prior to implementation a grazing plan must be developed to keep grazing periods sufficiently short to allow for forages to recover before re- grazing occurs.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ If livestock are included in the grazing system, during implementation in areas where animals congregate, establish persistent species that can tolerate close grazing and trampling.
- ☐ During implementation, keep the following documentation:
 - Records and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
 - Documentation of seed (Pure Live Seed) and any fertilizer or soil amendments used for the implementation of the enhancement.
 - If livestock are included in the grazing system, documentation, and photographs of turn in/turn out grazing records for each field.
- ☐ After implementation, make the forage planting and grazing records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

Prior to implementation, complete the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Target Pollinator Species: _____

WHEG score before implementation: _____

WHEG score after implementation: _____

Prior to implementation, provide and explain NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512) as it relates to implementing this enhancement.

As needed, prior to implementation, NRCS will provide technical assistance:

- Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512).
- Prepare specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.
- If livestock are included in the system, develop a grazing plan to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs.

During implementation, evaluate any planned changes to verify they meet the enhancement criteria.



- ☐ After implementation, verify the planned perennial grassland mixture was established to specifications developed for the site.

CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E512I

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E512I the following additional criteria apply in Ohio:

- Planners will utilize Appendix A (Forage Production and Erosion Control) or Appendix A – (Wildlife Habitat) located in section IV of eFOTG for planting rates, methods, dates, and mixes.
- The seed mix shall include at least 9 species of pollinator-beneficial species from the list on page 2. At least 3 species are required for each bloom period (early, mid, late). The seeding rate of all the forbs/legumes shall total at least 16 oz. per acre. Other pollinator-friendly species may be found in Appendix A (Wildlife Habitat)
- Use the Pollinator and Beneficial Insect Wildlife Habitat evaluation Guide (WHEG) on page 3 of this supplement to WHEG scores for this enhancement.
- If Monarch Butterfly is the target species, use the Monarch Butterfly WHEG found in Ohio FOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, Monarch Butterfly folder.

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CONSERVATION STEWARDSHIP PROGRAM

Species	Seeds/ounce	Bloom Period	Bloom Color
Eastern Columbine (<i>Aquilegia canadensis</i>)	25,000	Early	Red
Golden Alexanders (<i>Zizia aurea</i>)	12,000	Early	Yellow
Tall White Beardtongue (<i>Penstemon digitalis</i>)	115,000	Early	White
Wild Lupine (<i>Lupinus perennis</i>)	1,000	Early	Blue
Blue False Indigo (<i>Baptisia australis</i>)	1,600	Early	Purple
Culver's Root (<i>Veronicastrum virginicum</i>)	750,000	Late	White
Cow Parsnip (<i>Heracleum lanatum</i>)	3,000	Early	White
Golden Ragwort (<i>Senecio aureus</i>)	69,400	Early	Yellow
Northern Wild Senna (<i>Senna hebecarpa</i>)	1,400	Mid	Yellow
Wild Bergamot (<i>Monarda fistulosa</i>)	78,000	Mid	Pink
Purple Bergamot (<i>Monarda media</i>)	80,000	Mid	Red
Partridge Pea (<i>Chamaecrista fasciculata</i>)	3,800	Mid	Yellow
Illinois Bundleflower (<i>Desmanthus illinoensis</i>)	3,750	Mid	White
Brown-eyed Susan (<i>Rudbeckia triloba</i>)	31,250	Mid	Yellow
Black-eyed Susan (<i>Rudbeckia hirta</i>)	110,000	Mid	Yellow
Blue Vervain (<i>Verbena hastata</i>)	125,000	Mid	Purple
Swamp Milkweed (<i>Asclepias incarnata</i>)	6,375	Mid	Pink
Butterfly Milkweed (<i>Asclepias tuberosa</i>)	3,500	Mid	Orange
Canada Tick-Trefoil (<i>Desmodium canadense</i>)	4,500	Mid	Pink
Purple Coneflower (<i>Echinacea purpurea</i>)	7,187	Mid/Late	Purple
Joe-Pye Weed (<i>Eupatorium fistulosum</i>)	78,100	Mid	Pink
Lanceleaf Coreopsis (<i>Coreopsis lanceolata</i>)	13,812	Mid	Yellow
New England Aster (<i>Aster novae-angliae</i>)	76,000	Late	Purple
Smooth Blue Aster (<i>Aster laevis</i>)	48,000	Late	Blue
Gray-headed Coneflower (<i>Ratibida pinnata</i>)	25,200	Late	Yellow
Smooth Oxeye (<i>Heliopsis helianthoides</i>)	6,500	Late	Yellow
Blazingstar (<i>Liatris spicata</i>)	12,000	Late	Purple
Stiff Goldenrod (<i>Solidago rigida</i>)	41,000	Late	Yellow
Rough Goldenrod (<i>Solidago rugosa</i>)	92,500	Late	Yellow
Showy Goldenrod (<i>Solidago speciosa</i>)	105,000	Late	Yellow
Sneezeweed (<i>Helenium autumnale</i>)	142,000	Late	Yellow



United States Department of Agriculture

**POLLINATOR AND BENEFICIAL INSECT
WILDLIFE HABITAT EVALUATION GUIDE (WHEG)
E512I Pasture**

**CONSERVATION
STEWARDSHIP
PROGRAM**

1. Seasonal Abundance of Blooming Plants				
Select Only One	Score	Before	After	Treatment to Increase Score
At least 5 beneficial flowering plants present in each bloom period (early, mid, late)	10			
3-4 beneficial flowering plants present in each bloom period	6			
1-2 beneficial flowering plants present in each bloom period OR only 1 or 2 bloom periods have at least 3 beneficial flowering plants	3			
No beneficial flowering plants present in any bloom period	0			
2. Management				
Select Only One	Score	Before	After	Treatment to Increase Score
No insecticide use on pasture or within 30 feet during any bloom period AND management (haying, grazing, weed control) allows full bloom on at least 33% of area during each bloom period	10			
Infrequent pesticide use on no more than one bloom period per year AND management allows bloom on 10 - 33% of area	6			
Occasional insecticide use on area or within 30 feet and/or management allows bloom on <10% of area	3			
Regular insecticide use during bloom periods and/or management prevents blooming during all bloom periods	0			
3. Pasture in Pollinator/Beneficial Insect Cover				
Select Only One	Score	Before	After	Treatment to Increase Score
>25% with appropriate cover and management	5			
11 – 25%	3			
1 – 10%	1			
0%	0			
WHEG Summary and Score				
		Before	After	
Seasonal Abundance of Blooming Plants Score				
Management Score				
Pasture in Pollinator/Beneficial Insect Cover Score				
Total				
Index (total / 25)				



CONSERVATION STEWARDSHIP PROGRAM

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E512I the following additional documentation requirements apply in Ohio:

If grazing livestock are included in the system, CPS 528 Prescribed Grazing or an associated E528 enhancement must be completed (existing or planned practice) so that a Grazing Management Plan is associated with this enhancement. If other livestock are included in the system (e.g., monogastrics, poultry), CPS 822 Nonruminant Livestock Outdoor Management of Vegetative Cover must be completed.

Prepared plans and specifications for the establishment planting for each site or management unit according to the Criteria, Considerations, and Operations and

Maintenance described in Conservation Practice Standard 512. May be recorded on a site specific job sheet or in the narrative of a conservation plan. The following elements must be addressed in the plan to meet the intended purpose:

- Site Preparation
- Fertilizer Application (if applicable)
- Seedbed/Planting Bed Preparation
- Methods of Seeding/Planting
- Time of Seeding/Planting
- Selection of Species
- Type of legume inoculant used (if applicable)
- Seed/Plant Source
- Seed Analysis
- Rates of Seeding/Planting
- Supplemental Water for Plant Establishment (if applicable)
- Protection of Plantings (if applicable)
- Grazing plan (if applicable)
- Harvest plan (if applicable)

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CONSERVATION ENHANCEMENT ACTIVITY

E512J

CONSERVATION STEWARDSHIP PROGRAM

Establish wildlife corridors to provide habitat continuity or access to water

CONSERVATION PRACTICE: 512 - Pasture and Hay Planting

APPLICABLE LAND USE: Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Establishing adapted and compatible species, varieties, or cultivars of perennial, herbaceous species that can provide cover needed for wildlife species of concern to move from food/cover/water sources to other food/cover/water sources as needed for their life cycles, and/or to enhance the utility of underused wildlife habitat areas.

Criteria

- Select native, perennial, grass/forb/legume plant species and their cultivars based on climatic conditions, soil condition, landscape position and resistance to disease and insects, that meet the cover demand for movement by the wildlife species of concern.
- Select species that are compatible with existing stands or terminate corridor area with herbicide or tillage. Consult wildlife resources for corridor widths.
- Recommendations for planting rates, methods, depths, and dates from land grant universities (LGU), plant materials program, extension agencies, or agency field trials will be followed.
- Seeding medium that does not restrict plant emergence will be provided, and planting will take place when soil moisture is adequate for germination and establishment.
- Federal, state, or local noxious species will not be planted.
- Plant nutrients and/or soil amendments for establishment purposes will be applied according to a current soil test. Legume seed will be pre- inoculated or inoculated with the proper viable strain of Rhizobia immediately before planting.



CONSERVATION STEWARDSHIP PROGRAM

- Plant selection will be made and maintained based on the state's approved NRCS habitat evaluation procedure.
- Protection from grazing or other plant defoliation/biomass loss will be provided as needed to assure adequate corridor cover during the primary wildlife movement time frames.
- Grazing or other plant defoliation/biomass operations will be timed as needed to assure adequate corridor cover during the primary wildlife movement time frames.
- Wildlife species of concern for corridor utilization will be specified on the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, select a perennial forage species or grassland mixture for establishment. If livestock are included in the system, forage species selected will meet the desired level of nutrition for the kind and class of the livestock to be fed. (NRCS will provide technical assistance, as needed.)

Species	Species type (grass, legume, forb)

- ☐ Prior to implementation, select planting technique, seeding rates and timing appropriate for the site and climatic conditions. (NRCS will provide technical assistance, as needed.)

Planting Date	
Planting method	
Seeding rate	



CONSERVATION STEWARDSHIP PROGRAM

- ☐ If livestock are included in the system, prior to implementation a grazing plan must be developed to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs.
- ☐ If livestock are included in the grazing system, in areas where animals congregate, establish persistent species that can tolerate close grazing and trampling.
- ☐ During implementation, keep the following documentation:
 - Records and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
 - Documentation of seed (Pure Live Seed) and any fertilizer or soil amendments used for the implementation of the enhancement.
 - If livestock are included in the grazing system, documentation, and photographs of turn in/turn out grazing records for each field.
- ☐ During implementation, ensure that the forage/biomass is protected from grazing or other plant defoliation/biomass loss.
- ☐ After implementation, make the forage planting and grazing records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

As needed, provide technical assistance to meet the criteria of the enhancement.

Prior to implementation, provide and explain NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512) as it relates to implementing this enhancement.

Prior to implementation, complete the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Species of concern: _____

WHEG score before implementation: _____

WHEG score after implementation: _____

As needed, prior to implementation, NRCS will provide technical assistance:

- Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Pasture and Hay Planting (512).
- Prepare specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ *If livestock are included in the system*, develop a grazing plan to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs.
- ☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- ☐ After implementation, verify the planned perennial grassland mixture was established to specifications developed for the site.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E512J

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E512J the following additional criteria apply in Ohio:

- The wildlife species of concern targeted with enhancement are northern bobwhite, ringneck pheasant and grassland nesting songbirds.
- Planners will utilize Appendix A (Wildlife Habitat) or Appendix A (Forage Production and Erosion Control) located in section IV of eFOTG for planting rates, methods, dates, and mixes.
- All species used in the seed mix shall be species native to Ohio. At least 80% of the grass mix shall be composed of two or more the following wildlife-friendly native grasses: switchgrass, big bluestem, little bluestem, indiagrass, eastern gamagrass. Native forbs and legumes shall be selected from those listed as beneficial for wildlife; these are listed in the Ohio Wildlife Habitat Instructions found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat Evaluation.

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E512J the following additional documentation requirements apply in Ohio:

- Use the Ohio Pasture/Hayland Wildlife Habitat Evaluation found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat Evaluation for the NRCS Wildlife Habitat Evaluation Guide (WHEG).
- Document water body/water source to which access is being provided by this activity.

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If grazing livestock are included in the system, CPS 528 Prescribed Grazing or an associated E528 enhancement must be completed (existing or planned practice) so that a Grazing Management Plan is associated with this enhancement. If other livestock are included in the system (e.g., monogastrics, poultry), CPS 822 Nonruminant Livestock Outdoor Management of Vegetative Cover must be completed.

CONSERVATION STEWARDSHIP PROGRAM

Prepared plans and specifications for the establishment planting for each site or management unit according to the Criteria, Considerations, and Operations and

Maintenance described in Conservation Practice Standard 512. May be recorded on a site specific job sheet or in the narrative of a conservation plan. The following elements must be addressed in the plan to meet the intended purpose:

- Site Preparation
- Fertilizer Application (if applicable)
- Seedbed/Planting Bed Preparation
- Methods of Seeding/Planting
- Time of Seeding/Planting
- Selection of Species
- Type of legume inoculant used (if applicable)
- Seed/Plant Source
- Seed Analysis
- Rates of Seeding/Planting
- Supplemental Water for Plant Establishment (if applicable)
- Protection of Plantings (if applicable)
- Grazing plan (if applicable)
- Harvest plan (if applicable)

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E512L

CONSERVATION STEWARDSHIP PROGRAM

Diversifying forage base with interseeding forbs and legumes to increase pasture quality

Conservation Practice 512 (L): Pasture and Hay Planting

APPLICABLE LAND USE: Pasture, Associated Ag Land

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Establishing adapted and compatible species, varieties, or cultivars of perennial, herbaceous species that increases the diversity to enhance livestock, forage supply and quality, not available in other pastures.

Criteria

- Select perennial, forbs and legume plant species and their cultivars based on compatibility with established forage species, climatic conditions, soil condition, landscape position and resistance to disease and insects.
- Recommendations for planting rates, methods, depths, and dates from land grant universities (LGU), plant materials program, extension agencies, or agency field trials will be followed
- Prior to planting, graze or mow existing stands as needed to improve seedling competitiveness.
- Utilize seed and planting materials that will meet State quality standards. Inter-seeding method will not restrict plant emergence or leave the site vulnerable to erosion. Minimize soil disturbance during planting operation
- When planting legumes, use pre-inoculated seed, inoculum coated seed, or inoculate with the proper viable strain of rhizobia immediately before planting.



E512L

CONSERVATION STEWARDSHIP PROGRAM

- Select plants that will help meet livestock forage demand during times that normal forage production is not adequate.
- Use forage species that will meet the desired level of nutrition (quantity and quality) for the kind and class of livestock to be grazed or fed.
- Select species mixtures with similar palatability to avoid selective grazing.
- Select species with low or not toxic effects on grazing livestock. If two species for consideration provide similar forage quality, with one providing added benefit to wildlife and pollinator species, the wildlife beneficial species should be selected.
- In areas where animals congregate, consider establishing persistent species that can tolerate close grazing and trampling.
- Refer to NRCS Conservation Practice Standard (CPS) Nutrient Management (Code 590) for details for managing nutrients.
- Plant nutrients and/or soil amendments for establishment purposes will be applied according to a current soil test. Legume seed will be pre-inoculated or inoculated with the proper viable strain of Rhizobia immediately before planting.

Documentation and Implementation Requirements

Participant will:

- Prior to implementation, select a perennial forb and/or legume mixture for establishment. *If livestock are included in the system, forage species selected will meet the desired level of nutrition for the kind and class of the livestock to be fed.* (NRCS will provide technical assistance, as needed.)

Species	Species type (grass, legume, broadleaf)

- Prior to implementation, select planting technique, seeding rates and timing appropriate for the site and climatic conditions. (NRCS will provide technical assistance, as needed.)

Planting Date	
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E512L

CONSERVATION STEWARDSHIP PROGRAM

Planting Technique	
Seeding rates	

- *Prior to implementation when livestock are included in the system, modify the grazing plan that maintains grazing periods sufficiently short to allow for forages to recover before re-grazing occurs.*
- *Prior to implementation, a current (within 3 years of the proposed planting date) soil sample analysis is required when soil amendments will be added.*
- *During implementation, exclude livestock until the overseeded species are well established and have reached the full start grazing heights or recommended cutting heights before the first grazing or cutting begins. Refer to Conservation Practice Standards (CPS) 511 Forage Harvest Management and (CPS) 528 Prescribed Grazing for more information.*
- During implementation, keep the following documentation:
 - Records, seed tags and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
 - Documentation of seed rate basis (Pure Live Seed) and any fertilizer or soil amendments and rates used for the implementation of the enhancement.
- *During implementation where livestock are included in the grazing system, documentation and photographs of turn in/turn out grazing records for each field are required.*
- As needed, provide technical assistance to meet the criteria of the enhancement.
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512) and all supporting implementation requirements and specifications as it relates to implementing this enhancement.
- *Prior to implementation where livestock are included in the system, modify the grazing*

E512L – Diversifying forage base with interseeding forbs and legumes to increase pasture quality	May 2024	Page 3
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E512L

CONSERVATION STEWARDSHIP PROGRAM

plan to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs and maintain sufficient height to protect from soil erosion.

- As needed, prior to implementation, NRCS will provide technical assistance:
 - Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Pasture and Hay Planting (512).
- During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- After implementation, verify the planned perennial forbs/ legumes or mixture was established to specifications developed for the site.

NRCS Documentation Review:

E512L – Diversifying forage base with interseeding forbs and legumes to increase pasture quality	May 2024	Page 4



United States Department of Agriculture

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

CONSERVATION STEWARDSHIP PROGRAM

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO

CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E512L

Diversifying forage base with interseeding forbs and legumes to increase pasture quality

Additional Criteria for Ohio

- Select species from table 13, Appendix A (Forage Production and Erosion Control)
- When inter-seeding forbs and/or legumes into an existing grass stand use a proportional seeding rate of at least 50%.
- Seeding rates and plant dates must be consistent with Table 13, Appendix A (Forage Production and Erosion Control)
- If grazing livestock are included in the system, CPS 528 Prescribed Grazing or an associated E528 enhancement must be completed (existing or planned practice) so that a Grazing Management Plan is associated with this enhancement. If other livestock are included in the system (e.g., monogastrics, poultry), CPS 822 Nonruminant Livestock Outdoor Management of Vegetative Cover must be completed.



CONSERVATION ENHANCEMENT ACTIVITY

E512M

CONSERVATION STEWARDSHIP PROGRAM

Forage plantings that improve wildlife habitat cover and shelter or structure and composition

CONSERVATION PRACTICE: 512 - Pasture and Hay Planting

APPLICABLE LAND USE: Pasture; Associated Ag Land

RESOURCE CONCERN: Plants, Animals

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Establishing adapted and compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can provide cover and shelter or structure and composition for wildlife. Species must be planted into existing perennial stands

Criteria

- Wildlife species of concern for cover and shelter will be specified on the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG) and will be a species that would be present for at least part of their life cycle in the geographical/physiographic region.
- The state's WHEG will be completed by an NRCS or partner wildlife biologist. Cover and shelter habitat requirements for the wildlife species of concern will be specified on the WHEG. The total WHEG score after installation of this practice will be 0.60 or greater.
- Select native, perennial, grass/forb/legume plant species (all species must be native) and their cultivars based on climatic conditions, soil condition, landscape position and resistance to disease and insects, which meet the cover and shelter needs for wildlife species of concern when they will be present.
- Prior to planting, graze or mow existing stands as needed to improve seedling competitiveness.



CONSERVATION STEWARDSHIP PROGRAM

- Recommendations for planting rates, methods, depths, and dates from land grant/research institutions, plant materials program, extension agencies, or agency field trials will be followed.
- Seeding medium that does not restrict plant emergence will be provided, and planting will take place when soil moisture is adequate for germination and establishment. Minimize soil disturbance during planting operations.
- Federal, state, or local noxious species will not be planted.
- Plant nutrients and/or soil amendments for establishment purposes will be applied according to a current soil test. Legume seed will be pre-inoculated or inoculated with the proper viable strain of Rhizobia immediately before planting.
- Plants will be selected that help meet cover and shelter habitat requirements for specified wildlife species during times that normal farm/ranch forage production is inadequate. Plant selection will help to increase scores on the state's approved NRCS habitat evaluation procedure for the wildlife species of concern.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, select a perennial species or grassland mixture for establishment. (NRCS will provide technical assistance, as needed.)

Species	Forage category (grass, legume, forb)

- ☐ Prior to implementation, select planting technique, seeding rates and timing appropriate for the site and climatic conditions. (NRCS will provide technical assistance, as needed.)

Planting Date	
Planting method	
Seeding rate	



CONSERVATION STEWARDSHIP PROGRAM

- ☐ If livestock are included in the grazing system, prior to implementation a grazing plan must be developed to keep grazing periods sufficiently short to allow for plants to recover before re-grazing occurs.
- ☐ During implementation, keep the following documentation:
 - Records and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
 - Documentation of seed (Pure Live Seed) and any fertilizer or soil amendments used for the implementation of the enhancement.
 - If livestock are included in the grazing system, documentation, and photographs of turn in/turn out grazing records for each field.
- ☐ After implementation, make the forage planting and grazing records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

Prior to implementation, complete the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Targeted Species: _____

WHEG score before implementation: _____

WHEG score after implementation: _____

As needed, prior to implementation, NRCS will provide technical assistance:

- Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Pasture and Hay Planting (Code 512).
- Prepare specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.
- If livestock are included in the system, develop a grazing plan to keep grazing periods sufficiently short to allow for forages to recover before re-grazing occurs.

During implementation, evaluate any planned changes to verify they meets the enhancement criteria.

After implementation, verify the grassland mixture was established to specifications developed for the site.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION STEWARDSHIP PROGRAM

OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY **E512M**

Additional Criteria for Ohio

In addition to the criteria specified in the National job Sheet E512M the following criteria apply to Ohio:

- If grazing livestock are included in the system, CPS 528 Prescribed Grazing or an associated E528 enhancement must be completed (existing or planned practice) so that a Grazing Management Plan is associated with this enhancement. If other livestock are included in the system (e.g., monogastrics, poultry), CPS 822 Nonruminant Livestock Outdoor Management of Vegetative Cover must be completed.
- Pasture and Hay Planting (512): When using *Native Warm Season Grasses*: minimum of two (2) or more species required.
- Suitable forage compatible forbs and legumes best suited for Ohio are below, but not limited to:

Legumes

- Illinois Bundleflower (*Desmanthus illinoensis*)
- Roundhead Lespedeza (*Lespedeza capitata*)
- Tickclovers (*Desmodium canadense*)
- Purple Prairieclover (*Dalea purpurea*)
- White Prairieclover (*Dalea candida*)
- Partridge Pea (*Chamaecrista fasciculata*)
- Leadplant (*Amorpha canescens*)

Forbs

- Purple Coneflower (*Echinacea sp.*)
- Sneezeweed (*Helenium autumnale*)
- Lanceleaf Coreopsis (*Coreopsis lanceolata*)
- Rigid Sunflower (*Helianthus rigidus*)
- False Sunflower (*Heliopsis helianthoides*) (same as Oxeye sunflower)
- Ashy Sunflower (*Helianthus mollis*)
- Maximilian Sunflower (*Helianthus maximiliani*)
- Cup Plant (*Silphium perfoliatum*)
- Rosinweed (*Silphium terebinthinaceum*)
- Compassplant (*Silphium laciniatum*)
- Rattlesnake Master (*Eryngium yuccifolium*)
- Blazing Star (*Liatris spicata*)



CONSERVATION STEWARDSHIP PROGRAM

Establishment Scenarios

Conversion of Cool Season Grasses to Native Warm Season Grasses and Legumes

Establishment recommendations are assuming the fields to be established are currently in cool season grass pasture. If fields are dominated with nonnative shrubs or noxious weeds, more site preparation will be required.

Establishment time periods for each option are based on the time of pulling livestock off of CSG pasture to turning them back out on the newly established NWSG/forbs pasture with the majority of the warm season grasses being well established (having at least one full year of growth).

Option 1 – Winter forage with optional summer forage (1 year 9 months)

1. Graze cool season grasses (CSG) till Sept. 15th
2. Herbicide application (glyphosate) Oct.
3. No-till seed winter forage (i.e. cereal rye) Oct.
4. Graze/harvest winter forage (April-May)
5. Herbicide application May (glyphosate and imazapic)
6. No-till seed native warm season grasses (NWSG) excluding switchgrass (Scenario 512#7)
 - a. Option: Include annual warm season grass (WSG) as a nurse/forage crop. Note: Consider herbicide (step 5) compatibility if seeding a WSG annual
7. Maintenance mow if needed (Jul. – Aug.)
8. Herbicide application for broadleaf control (2- 4D/other)
9. Dormant seeding of legumes, switchgrass, and other forbs.
10. Monitor in spring/summer, control problem weeds, and prescribed grazing



CONSERVATION STEWARDSHIP PROGRAM

Option 2 – Optional summer forage (1 year 9 months)

1. Graze CSG till Sept. 15th
2. Herbicide application (glyphosate) Oct.-Nov.
3. Herbicide application May (glyphosate and imazapic)
4. No-till seed NWSG excluding switchgrass
 - a. Option: Include annual WSG as a nurse/forage crop. Note: Consider herbicide (step 3) compatibility if seeding WSG annual
5. Maintenance mow if needed (Jul. – Aug.)
6. Herbicide application for broadleaf control (2-4D/other)
7. Dormant seeding of legumes, switchgrass, and other forbs
8. Monitor in spring/summer, control problem weeds, and prescribed grazing

Option 3 – Summer forage with optional summer forage (2 years 9 months)

1. Graze CSG till Sept. 15th
2. Herbicide application (glyphosate) Oct.-Nov.
3. Herbicide application May (glyphosate)
4. Seed WSG annual(s)
5. Graze/harvest summer annual (s)
6. Fall herbicide application Oct. (glyphosate)
7. Spring herbicide application May (glyphosate)
8. No-till seed NWSG excluding switchgrass (Option: Include annual WSG as a nurse/forage crop)
9. Maintenance mow
10. Fall broadleaf control
11. Dormant seeding of legumes, switchgrass, and other forbs.
12. Monitor in spring/summer, control problem weeds, and prescribed grazing



CONSERVATION STEWARDSHIP PROGRAM

Option 4 – Winter and summer forage with optional summer forage (2 years 9 months)

1. Graze CSG till Sept. 15th
2. Herbicide application (glyphosate) Oct.
3. Plant winter forage (i.e. cereal rye) Oct.
4. Graze/harvest winter forage (April-May)
5. Herbicide application May (glyphosate)
6. No-till seed WSG annual(s)
7. Graze/harvest WSG annual(s)
8. Fall herbicide application Oct. (glyphosate)
9. Spring herbicide application May (glyphosate and imazapic)
10. Seed NWSG after herbicide application in May
 - a. Option: Include annual WSG as a nurse/forage crop. NOTE: Consider herbicide (step 9) compatibility if seeding WSG annual
11. Maintenance mow
12. Fall broadleaf control
13. Dormant seeding of legumes, switchgrass, and other forbs
14. Monitor in spring/summer, control problem weeds, and prescribed grazin



CONSERVATION STEWARDSHIP PROGRAM

Option 5 – Organic (2 years 9 months)

1. Graze (aggressively) or hay CSG in May
2. Till sod (best to moldboard plow) soon after grazing/haying
3. Allow soil to dry and work down to prep for seeding
4. Seed WSG annual(s) May/June
5. Graze/harvest warm season annual(s) throughout growing season
6. Leave residue for cover going into winter
7. Till sod (best to moldboard plow) when soil conditions are fit in April/May
8. Allow soil to dry and work down to prep for seeding
9. Seed WSG annual and perennial grasses and forbs May/June
10. Monitor, control problem weeds, and graze or hay as prescribed during 1st growing season
11. Monitor, control problem weeds, and graze or hay as prescribed during 2nd growing season



CONSERVATION STEWARDSHIP PROGRAM

Option 6 – No-till with cover crops

1. Graze areas to be seeded to remove residue and stress cool season grasses (September)
 - a. The sooner this can be grazed and recover, the sooner cover crop can be seeded
2. Herbicide application (Glyphosate (2,4-D optional)) (October)
 - a. After green-up from grazing pressure
 - b. Ensure full coverage of leaf surfaces
3. Seed cover crop of cereal rye or other winter annual (October)
 - a. Allow for rye to develop into grazable forage
 - b. Graze in late winter/early spring (maintain vegetative growth/do not allow rye to mature to boot stage - ryegrass can have an allelopathic effect in its roots once it reaches the boot stage of growth, that may affect seedling establishment)
4. Herbicide application (glyphosate (2,4-D is optional depending on site)) (March-April)
 - a. After 2-4 inches of spring green-up
 - b. Apply at recommended rates for Canada thistle
 - c. Ensure full coverage of leaf surfaces
5. Herbicide application (imazapic) (April-May)
 - a. Apply right before seeding native warm season grasses
6. No-till seed NWSG that are tolerant to imazapic (April-May)
 - a. Big Bluestem, Little Bluestem, Indiangrass
 - b. Firm seedbed, drill at ¼ inch deep (the most common mistake of seeding native grasses is drilling them too deep)
7. Maintenance mow 10-12 inches (no less than 8 inches) (July-August)
 - a. This reduces the amount of competition for sunlight and reduces seed production of annual and perennial noxious weeds
 - b. Repeat this step as much as needed throughout the first growing season
8. Herbicide application for broadleaf control (July-August)
 - a. Apply 2,4-D product or other broadleaf herbicide
 - b. Ensure native grass seedlings have adequately matured to survive application (per herbicide label)
9. Dormant seeding of legumes, forbs, (switchgrass - optional) (December-February)
 - a. Use native grass drill or broadcast if enough exposed soil
 - b. Firm seedbed, drill at ¼ inch deep (the most common mistake of seeding native grasses is drilling them too deep)
10. Monitor in spring/summer, control problem weeds, and prescribed grazing.



CONSERVATION ENHANCEMENT ACTIVITY

E528A

CONSERVATION STEWARDSHIP PROGRAM

Maintaining quantity and quality of forage for animal health and productivity

CONSERVATION PRACTICE: 528 - Prescribed Grazing

APPLICABLE LAND USE: Pasture; Range; Associated Ag Land

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Managing the harvest of vegetation with grazing and/or browsing animals for the purposes of maintaining desired plant composition/plant vigor and improving/maintaining quantity and quality of forage for the animals' health and productivity. Follow the recommendations of a qualified professional, as detailed in the documentation and implementation requirements.

Criteria

- A written plan matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- Removal of herbage will be in accordance with site production limitations, rate of plant growth, the physiological needs of forage plants, and the nutritional needs of the animals.
- Deferments will be planned and implemented for critical periods of plant needs (such as post-planting or renovation, severe drought, etc.).
- Manage grazing and/or browsing animals to maintain adequate cover on sensitive areas (such as riparian areas, wetlands, habitats of concern, karst areas, etc.).
- Manage livestock movements based on rate of plant growth, available forage, and allowable utilization target. Develop and follow contingency plans to deal with episodic disturbance events.



CONSERVATION STEWARDSHIP PROGRAM

- Plan grazing and/or browsing to match forage quantity and quality goals of the producer within the capability of the resource to respond to management. Plan the intensity, frequency, timing, and/or browsing to reduce animal stress and mortality from toxic and poisonous plants.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- The qualified professional's provided recommendations (see documentation requirements) will be based on the National Research Council's Nutrient Requirements of Domestic Animals.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, make initial target livestock performance goals and mediation actions taken available to NRCS; including reasons for no action.
- ☐ Prior to implementation, obtain a written plan for collecting samples, sample analysis, and corresponding management recommendations as developed and provided by a Certified Range Management Consultant, Certified Professional in Range Management, Certified Forage and Grassland Professional, NRCS Technical Service Provider certified for development of a DIA 159, or a non-affiliated consultant with a bachelor or higher level degree in forage agronomy, range science, animal science, animal nutrition or other closely-related plant science discipline or a minimum of three years' experience in grazing lands conservation planning and grazing animal nutrition.
- ☐ During implementation, keep records to annually document prescribed grazing requirements are met.
- ☐ After implementation, make available documentation of protein and energy of consumed forages/browse based on a land grant university laboratory analysis, including corresponding management recommendations. The analysis be based on collected sample of the forage available to the livestock or fecal samples analyzed with appropriate Near-infrared spectroscopy (NIRS). ON FOREST LAND USE, fecal samples can only be analyzed in Arizona and New Mexico at this time. This analysis needs to illuminate shortfalls and/or excessive amounts of protein and energy. **Samples must be submitted in a timely manner to allow for appropriate adjustments in management and/or supplementation.**



- ☐ After implementation, make grazing and supplementation records available for review by NRCS.

CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ Prior to implementation, assist the participant with development of a grazing plan if requested to do so.
- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions, as it relates to sample analysis results.
- ☐ After implementation, review forage or fecal sampling schedule and corresponding management actions taken to determine if a supplementation plan was reasonably followed.
- ☐ After implementation, annually review documentation provided indicating that prescribed grazing specifications have been met and to verify the enhancement has been implemented.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO
CONSERVATION ENHANCEMENT ACTIVITY**

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E528A

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E528A the following additional criteria apply in Ohio:

- Native warm season forages should not be grazed less than 6 inches
- Cool season forages should not be grazed less than 3-4 inches

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E528A the following additional documentation requirements apply in Ohio:

- NRCS Grazing Management Plan to include a drought contingency plan
- Record-keeping of grazing activities
- Soil test results (including organic matter and biological soil test)
- Plant heights on start dates and removal dates on grazing
- Use pasture forage measuring sticks for appropriate pounds of dry matter/acre/inch, before grazing and after grazing

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Species	Start Grazing	Start Grazing Regrowth	Remove Livestock Height	Rest Period	When to Cut for Hay, Silage or Balage	Over- Wintering Height	Approximate Date to begin Rest for Winter Protection ³	
	(inches)	(inches)	(inches)	(days)		(inches)	(North)	(South)
Kentucky Bluegrass, Perennial	4-6	4-5	2-3	14-30	Boot	2-3	N/A	N/A
Orchardgrass, and other non- jointed grasses	6-8	6-8	3-4	14 spring 30--45 summer	Boot & Peak re-growth	3-4	4	4
Tall Fescue (See restrictions in General and Fish & Wildlife Criteria								
Smooth brome, Timothy, and other jointed	8	8	4	14 spring 30--45 summer	Boot & Peak re- growth	5-6	9/1-10/1	9/20-10/20
Reed Canarygrass (See restrictions in General and Fish & Wildlife Criteria before using)								



CONSERVATION STEWARDSHIP PROGRAM

Alfalfa	12	8-10	3-4	24-32	Late bud to early bloom	6	9/1-10/1	9/20-10/20
Birdsfoot Trefoil	10-12	10-12	5-6	24--45	¼ bloom to full bloom	5	9/1-10/1	9/20-10/20
White Clover	6-10	8-10	2	24-32	Early to ½ bloom	4	9/1-10/1	9/20-10/20
Red & Alsike Clover	10-12	8-10	3-4	24-45	Early to ½ bloom	5	9/1-10/1	9/20-10/20
Sudangrass	18-20	18	8-10	14-30	Boot	N/A	N/A	N/A
Sorghum-Sudangrass	24-30	24	8-10	14-30	Boot	N/A	N/A	N/A
Pearl Millet	8-10	8-10	4-6	14-30	Boot	N/A	N/A	N/A
Japanese Millet	12-18	12-18	4-6	14-30	Boot	N/A	N/A	N/A
Small Grains	8-10	8	2-3		Early head	4-6	10/15-11/1	11/1-11/15
Switchgrass, Big Bluestem and Indiangrass	12-18	12-18	8 ¹	21--45	Boot to early head	8-12	9/1-10/1	9/20-10/20
Little Bluestem & Sideoats Grama	12-14	12-14	6-8 ^{1,5}	21--45	Boot to early head	6-10	9/1-10/1	9/20-10/20
Brassicas	12-14	12	4-6	14--45	N/A	N/A		
Annual Lespedeza	6-8	6-8	3-4	14-30	Early bloom	²	9/1-10/1	9/20-10/20
N/A – Not Applicable								
¹ Leave an 8-10 inch stubble at end of season until after killing frost.								
² Allow to set seed during season.								
³ Protection from fall grazing is recommended. WSG's can have limited grazing after killing frost when applicable.								
⁴ No restrictions with fescue and orchardgrass.								
⁵ 4 inches above lowest node best indicator.								



CONSERVATION ENHANCEMENT ACTIVITY

E528B

CONSERVATION STEWARDSHIP PROGRAM

Grazing management that improves Monarch butterfly habitat

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Range, Pasture, Forest

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Implement a grazing management plan that will increase the abundance and diversity of monarch nectar-producing perennial forbs, including milkweed, while maintaining ecosystem benefits for other wildlife and livestock.

Criteria

- Evaluate habitat in the enhanced, delineated Monarch areas with the state NRCS Monarch Butterfly Wildlife Habitat Evaluation Guide (WHEG) and manage delineated Monarch areas to improve the WHEG score at least one category (e.g. from poor to fair, or from good to excellent).
- Enhance diversity of rangeland plants to optimize delivery of nutrients to domestic grazing animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - Clear objectives,
 - A resource inventory with ecological site description or reference sheet and structural improvements and existing resource conditions,
 - Grazing plan,



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- A contingency plan, and
 - Monitoring and needed adjustments for Monarchs, domestic grazing animals, and other wildlife (including pollinators).
- Defer, rest, or graze the enhanced, delineated Monarch areas to meet the nectar-producing forbs, including milkweed, needs of Monarch Butterflies when the Monarchs will be migrating through the area (e.g. spring and fall for the southern Great Plains, summer and fall for the Midwest, northern Great Plains and east, and spring through fall for the west.
 - Delineate Monarch area(s) within the planned enhancement area/acres, comprising at least 5 acres or at least 5% of the planned enhancement area/acres, whichever is most.
 - A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife will be followed.
 - Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.



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Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, develop a map delineating the areas where the Monarch habitat will be implemented.
- Y Prior to implementation, obtain a written grazing plan (NRCS can provide assistance as needed). Plan must include:
 - Clear goals and objectives of the plan, including identification of the specie(s) of concern and the plant functional groups providing structure and composition.
 - Map identifying all permanent pastures, water sources, and any riparian area or watershed drainage locations improved or maintained by this management.
 - Forage inventory
 - Forage-animal balance sheet
 - A grazing plan narrative describing the basis for when livestock movement or rotation will occur, including deferment plans.
 - Contingency plans for forage shortfalls and for events that trigger adverse results.
 - Monitoring locations, key species, and monitoring techniques.
- Y Prior to implementation, work with NRCS to complete an assessment of the site using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).
- Y During implementation, keep the following documentation:
 - Livestock herd management records with seasonally important phenological stages of plant growth relative to species of concern.
 - Annually complete a forage utilization worksheet, such as NRCS Conservation Practice Standard Prescribed Grazing (Code 528) job sheet.
 - Grazing intensity records for all key grazing areas that accommodate the criteria.
- Y During implementation, defer, rest, or graze the enhanced, delineated Monarch areas to meet the nectar-producing forbs, including milkweed, needs of Monarch Butterflies when the Monarchs will be migrating through the area (e.g. spring and fall for the



CONSERVATION STEWARDSHIP PROGRAM

southern Great Plains, summer and fall for the Midwest, northern Great Plains and east, and spring through fall for the west.

- Y During implementation, consult with NRCS to adjust and adapt the grazing plan to current conditions to verify the changes meet enhancement criteria. Changes to the grazing plan will be documented in writing.
- Y After implementation, make all records available for review by NRCS to verify implementation of the enhancement.
- Y After implementation, complete an assessment of the site with NRCS using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

NRCS will:

- Y As needed, provide technical additional assistance to the participant as requested.
- Y Prior to implementation, verify there are at least two delineated Monarch areas within the enrolled area, comprising at least 5 acres or 5% of the enrolled area, whichever is most.
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement, including any state approved job sheets or work sheets.
- Y Prior to implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG). Minimum score after implementation will be one category higher than initial score when specifically rated for Monarch Butterflies.

WHEG score before implementation: _____

WHEG score after implementation: _____

- Y Prior to implementation, assist the participant with development of a grazing plan, if requested. If NRCS does not assist with plan development, the plan(s) will be reviewed by NRCS for approval prior to implementation to confirm the written objectives meet the criteria of the enhancement.
- Y During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.



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Y After implementation, review grazing plan, records, and documentation to verify the enhancement was implemented to meet the criteria.

Y After implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG). Minimum score after implementation will be one category higher than initial score when specifically rated for Monarch Butterflies. **WHEG score after implementation:** _____

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO CONSERVATION
ENHANCEMENT ACTIVITY**

**CONSERVATION
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528B

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E528B the following additional criteria apply in Ohio:

- Habitat conditions will be evaluated using the NRCS Monarch WHEG: Midwest Edition found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, Monarch Butterfly.

Additional Documentation Requirements for Ohio

There are no additional documentation requirements that apply in Ohio.



CONSERVATION ENHANCEMENT ACTIVITY

E528C

CONSERVATION STEWARDSHIP PROGRAM

Incorporating wildlife refuge areas in contingency plans for wildlife

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture; Range; Forest

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

A prescribed grazing plan that includes 12 month (or longer) rest (non-grazing period equal or greater than one year) of a grazing unit that consists of native grasses and/or legumes and/or perennial forbs for the purpose of meeting the needs for drought/disaster contingency plans that will also provide wildlife habitat or wildlife access to water for a period of time.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife will be followed.
- Enhance diversity of rangeland plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - o Clear objectives,
 - o A resource inventory of structural improvements, existing resource conditions, and forage inventory.
 - o Grazing plan, and



CONSERVATION STEWARDSHIP PROGRAM

- A contingency plan
 - A monitoring plan
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- Identify wildlife species of concern in the objectives of the prescribed grazing plan.
- An area that constitutes at least 15% of the planned enhancement acreage (or a minimum of ten acres, whichever is larger) that is predominantly native grasses and/or legumes and/or perennial forbs will be rested from all harvest by livestock or prescribed burning for a period of 12 months or longer.
- The rested area must be a grazing unit (or located in a grazing unit) that scores a minimum of 0.5 on the state NRCS Wildlife Habitat Evaluation Guide (WHEG).
- The rested area can be used to stockpile forages to build reserves for livestock forage after the 12-month rest period.
- In the event the designated refuge area gets utilized by livestock during a drought/disaster emergency or other contingency situation, during the life of the contract, it must be restored or let recover or another pasture designated and rested for 12 months following the emergency utilization.
- Water must be made available for the wildlife species of concern designated in the grazing plan in the refuge area or nearby where the refuge provides needed cover for water access.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, review NRCS Conservation Practice Standards Prescribed Grazing (Code 528) and Upland Wildlife Habitat Management (Code 645), including any state approved job sheets or work sheets.
- ☐ Prior to implementation, work with NRCS to complete an assessment of the site using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).
- ☐ Prior to implementation, provide locations of water access.
- ☐ Prior to implementation, obtain grazing/wildlife habitat management plan specifying what species the enhancement is targeting and how grazing management is being modified to benefit that species. The written grazing plan must describe the management and harvest of vegetation with grazing and/or browsing animals, what conditions create the need to implement a contingency plan, and what monitoring method(s) will be used.
 - ☐ The grazing plan will include a minimum of a 12-month rest period on 15% of enrolled acres incorporated into grazing strategy. Supporting documentation identifying baseline conditions will be based on state NRCS Conservation Practice Standard Prescribed Grazing (Code 528) specifications.
- ☐ During implementation, keep actual use records (dates, time, and number of head).
- ☐ During implementation, maintain water in the refuge area or nearby where the refuge provides needed cover for water access.
- ☐ During implementation, collect monitoring data used to determine contingency activation such as precipitation, drought, fire, and flooding or forage availability.
- ☐ During implementation, consult with NRCS to adjust and adapt the plan to current conditions to verify the changes meet enhancement criteria. Changes to the plan will be documented in writing.
- ☐ After implementation, make the follow items available for review by NRCS to verify implementation of the enhancement:
 - ☐ Grazing/wildlife habitat management plan.
 - ☐ Monitoring data and actual use records.



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- o Any documented changes to the plan as result of contingency or monitoring data.

NRCS will:

- ☐ As needed, provide technical additional assistance to the participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standards Prescribed Grazing (Code 528) and Upland Wildlife Habitat Management (Code 645) as they relate to implementing this enhancement, including any state approved job sheets or work sheets.
- ☐ Prior to implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Species of Concern: _____

WHEG score before implementation: _____

WHEG score after implementation: _____

- ☐ Prior to implementation, assist the participant with development of a grazing plan, if requested. If NRCS does not assist with plan development, the plan(s) will be reviewed by NRCS for approval prior to implementation to confirm the written objectives meet the criteria of the enhancement.
- ☐ After implementation, review actual use and monitoring data used to implement grazing strategy and provide recommendations for adjustments, or additional practices to facilitate future improvements in wildlife habitat.
- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.
- ☐ After implementation, review grazing plan, records, and documentation to verify the enhancement was implemented to meet the criteria.
- ☐ After implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

WHEG score after implementation: _____



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E528C

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E528C the following additional criteria apply in Ohio:

- Use the Ohio Pasture/Hayland Wildlife Habitat Evaluation found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat evaluation for the NRCS Wildlife Habitat Evaluation Guide (WHEG).
- Livestock will not be grazed in the forest land use in Ohio.

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E528C the following additional documentation requirements apply in Ohio:

- NRCS Grazing Management Plan to include a drought contingency plan and monitoring plan
- Record-keeping of grazing activities
- Soil test results (including organic matter and biological soil test)
- Plant heights on start dates and removal dates on grazing
- Use pasture forage measuring sticks for appropriate pounds of dry matter/acre/inch, before grazing and after grazing

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CONSERVATION ENHANCEMENT ACTIVITY

E528D

CONSERVATION STEWARDSHIP PROGRAM

Grazing management for improving quantity and quality of food or cover and shelter for wildlife

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Range, Forest

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will provide the plant structure, density and diversity needed for improving the quantity and quality of cover, shelter and food for the desired wildlife species of concern.

Criteria

- Must follow a written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife.
- Enhance diversity of rangeland plants, generally found on the Ecological Site Description or otherwise documented by measurement protocol, to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - o Clear objectives
 - o Resource inventory with ecological site description or reference sheet and structural improvements and existing resource conditions,
 - o Grazing plan, and



CONSERVATION STEWARDSHIP PROGRAM

- o A contingency plan.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- Identify species of concern in the objectives of the prescribed grazing plan.
- Plan intensity, frequency, timing and duration of grazing and/or browsing to provide for the development and maintenance of the plant structure, density and diversity needed for the identified wildlife species.
- Evaluate wildlife habitat with the state NRCS Wildlife Habitat Evaluation Guide (WHEG) and manage for a WHEG value of 0.60 or greater.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, obtain a written grazing plan (NRCS can provide assistance as needed). Plan must include:
 - ☐ Clear goals and objectives of the plan, including identification of the specie(s) of concern and the plant functional groups providing structure and composition.
 - ☐ Contingency plan for events that trigger adverse results.
 - ☐ Forage/Animal Balance.
 - ☐ A grazing plan narrative describing the basis for when livestock movement or rotation will occur, including deferment plans.
 - ☐ Contingency plans for forage shortfalls.
 - ☐ Monitoring locations, key species, and monitoring techniques.
 - ☐ Map identifying all permanent pastures, water sources, and any riparian area or watershed drainage locations improved or maintained by this management.
- ☐ Prior to implementation, work with NRCS to complete an assessment of the site using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).
- ☐ During implementation, keep the following documentation:
 - ☐ Livestock herd management records with seasonally important phenological stages of plant growth relative to species of concern.
 - ☐ Annually complete a forage utilization worksheet, such as NRCS Conservation Practice Standard Prescribed Grazing (Code 528) job sheet.
 - ☐ Grazing intensity records for all key grazing areas that accommodate the criteria.
- ☐ During implementation, consult with NRCS to adjust and adapt the grazing plan to current conditions to verify the changes meet enhancement criteria. Changes to the grazing plan will be documented in writing.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ After implementation, make all records available for review by NRCS to verify implementation of the enhancement.
- ☐ After implementation, complete an assessment of the site with NRCS using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

NRCS will:

- ☐ As needed, provide technical additional assistance to the participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement, including any state approved job sheets or work sheets.
- ☐ Prior to implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Species of Concern: _____

WHEG score before implementation: _____

WHEG score after implementation: _____

- ☐ Prior to implementation, assist the participant with development of a grazing plan, if requested. If NRCS does not assist with plan development, the plan(s) will be reviewed by NRCS for approval prior to implementation to confirm the written objectives meet the criteria of the enhancement.
- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.
- ☐ After implementation, review grazing plan, records, and documentation to verify the enhancement was implemented to meet the criteria.
- ☐ After implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

WHEG score after implementation: _____



United States Department of Agriculture

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
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Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO
CONSERVATION ENHANCEMENT ACTIVITY**

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E528D

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E528D the following additional criteria apply in Ohio:

- Use the Ohio Pasture/Hayland Wildlife Habitat Evaluation found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat evaluation for the NRCS Wildlife Habitat Evaluation Guide (WHEG).

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E528136Z1 the following additional documentation requirements apply in Ohio:

- NRCS Grazing Management Plan to include a contingency plan
- Record-keeping of grazing activities
- Soil test results (including organic matter and biological soil test)
- Plant heights on start dates and removal dates on grazing
- Use pasture forage measuring sticks for appropriate pounds of dry matter/acre/inch, before grazing and after grazing

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CONSERVATION ENHANCEMENT ACTIVITY

E528E

CONSERVATION STEWARDSHIP PROGRAM

Improved grazing management for enhanced plant structure and composition for wildlife

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture; Range; Forest; Associated Ag Land

RESOURCE CONCERN: Plants

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Managing the harvest of vegetation with grazing and/or browsing animals for the purpose of improving the quantity and quality of the structure and composition of the plant community that is available for wildlife.

Criteria

- Must follow a written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand.
- Removal of herbage will be in accordance with site production limitations, rate of plant growth, the physiological needs of forage plants, and the nutritional needs of the animals.
- Deferment (non-grazing period less than one year) and/or rest (non-grazing period equal or greater than one year) will be planned for critical periods of plant needs (such as post-planting or renovation, severe drought, etc.).
- Manage grazing and/or browsing animals to maintain adequate cover on sensitive areas (such as riparian areas, wetlands, habitats of concern, karst areas, etc.)



CONSERVATION STEWARDSHIP PROGRAM

- Manage livestock movements based on rate of plant growth, available forage, and allowable utilization target. Develop and follow contingency plans to deal with episodic disturbance events.
- Both the specie(s) of concern and the plant functional groups providing structure and composition will be identified in the objectives of the prescribed grazing plan.
- Plan the intensity, frequency, timing and duration of grazing and/or browsing to provide for the development and maintenance of the plant structure, density and diversity needed for the desired fish and wildlife species of concern.
- Manage the afore-mentioned aspects of grazing events to maintain a minimum score of 0.60 when evaluated with the state NRCS Wildlife Habitat Evaluation Guide (WHEG).



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, obtain a written grazing plan (NRCS can provide assistance as needed). Plan must include:
 - Clear goals and objectives of the plan, including identification of the specie(s) of concern and the plant functional groups providing structure and composition.
 - Contingency plan for events that trigger adverse results.
 - Forage/Animal Balance.
 - A grazing plan narrative describing the basis for when livestock movement or rotation will occur, including deferment plans.
 - Contingency plans for forage shortfalls.
 - Monitoring locations, key species, and monitoring techniques.
 - Map identifying all permanent pastures, water sources, and any riparian area or watershed drainage locations improved or maintained by this management.
- ☐ Prior to implementation, work with NRCS to complete an assessment of the site using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).
- ☐ During implementation, keep the following documentation:
 - Livestock herd management records with seasonally important phenological stages of plant growth relative to species of concern.
 - Annually complete a forage utilization worksheet, such as NRCS Conservation Practice Standard Prescribed Grazing (Code 528) job sheet.
 - Grazing intensity records for all key grazing areas that accommodate the criteria.
- ☐ During implementation, consult with NRCS to adjust and adapt the grazing plan to current conditions to verify the changes meet enhancement criteria. Changes to the grazing plan will be documented in writing.



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- ☐ After implementation, make all records available for review by NRCS to verify implementation of the enhancement.
- ☐ After implementation, complete an assessment of the site with NRCS using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

NRCS will:

- ☐ As needed, provide technical additional assistance to the participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement, including any state approved job sheets or work sheets.
- ☐ Prior to implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

Species of Concern: _____

WHEG score before implementation: _____

WHEG score after implementation: _____

- ☐ Prior to implementation, assist the participant with development of a grazing plan, if requested. If NRCS does not assist with plan development, the plan(s) will be reviewed by NRCS for approval prior to implementation to confirm the written objectives meet the criteria of the enhancement.
- ☐ Prior to implementation, explain the functionality of this enhancement with Enhancement E314A, if sequentially applicable.
- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.
- ☐ After implementation, review grazing plan, records, and documentation to verify the enhancement was implemented to meet the criteria.
- ☐ After implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

WHEG score after implementation: _____



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E528E

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E528E the following additional criteria apply in Ohio:

- Native warm season forages should not be grazed less than 6 inches
- Cool season forages should not be grazed less than 3-4 inches

Additional Documentation Requirements for Ohio

In addition to the documentation requirements specified in the National job sheet E528E the following additional documentation requirements apply in Ohio:

- Use the Ohio Pasture/Hayland Wildlife Habitat Evaluation found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, General Wildlife Habitat Evaluation for the NRCS Wildlife Habitat Evaluation Guide (WHEG).
- NRCS Grazing Management Plan to include a contingency plan
- Record-keeping of grazing activities
- Soil test results (including organic matter and biological soil test)
- Plant heights on start dates and removal dates on grazing
- Use pasture forage measuring sticks for appropriate pounds of dry matter/acre/inch, before grazing and after grazing

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Species	Start Grazing	Start Grazing Regrowth	Remove Livestock Height	Rest Period	When to Cut for Hay, Silage or Balage	Over- Wintering Height	Approximate Date to begin Rest for Winter Protection ³	
	(inches)	(inches)	(inches)	(days)		(inches)	(North)	(South)
Kentucky Bluegrass, Perennial	4-6	4-5	2-3	14-30	Boot	2-3	N/A	N/A
Orchardgrass, and other non- jointed grasses	6-8	6-8	3-4	14 spring 30--45 summer	Boot & Peak re-growth	3-4	4	4
Tall Fescue (See restrictions in General and Fish & Wildlife Criteria								
Smooth brome, Timothy, and other jointed	8	8	4	14 spring 30--45 summer	Boot & Peak re- growth	5-6	9/1-10/1	9/20-10/20
Reed Canarygrass (See restrictions in General and Fish & Wildlife Criteria before using)								



CONSERVATION STEWARDSHIP PROGRAM

Alfalfa	12	8-10	3-4	24-32	Late bud to early bloom	6	9/1-10/1	9/20-10/20
Birdsfoot Trefoil	10-12	10-12	5-6	24--45	¼ bloom to full bloom	5	9/1-10/1	9/20-10/20
White Clover	6-10	8-10	2	24-32	Early to ½ bloom	4	9/1-10/1	9/20-10/20
Red & Alsike Clover	10-12	8-10	3-4	24-45	Early to ½ bloom	5	9/1-10/1	9/20-10/20
Sudangrass	18-20	18	8-10	14-30	Boot	N/A	N/A	N/A
Sorghum-Sudangrass	24-30	24	8-10	14-30	Boot	N/A	N/A	N/A
Pearl Millet	8-10	8-10	4-6	14-30	Boot	N/A	N/A	N/A
Japanese Millet	12-18	12-18	4-6	14-30	Boot	N/A	N/A	N/A
Small Grains	8-10	8	2-3		Early head	4-6	10/15-11/1	11/1-11/15
Switchgrass, Big Bluestem and Indiangrass	12-18	12-18	8 ¹	21--45	Boot to early head	8-12	9/1-10/1	9/20-10/20
Little Bluestem & Sideoats Grama	12-14	12-14	6-8 ^{1,5}	21--45	Boot to early head	6-10	9/1-10/1	9/20-10/20
Brassicas	12-14	12	4-6	14--45	N/A	N/A		
Annual Lespedeza	6-8	6-8	3-4	14-30	Early bloom	²	9/1-10/1	9/20-10/20
N/A – Not Applicable								
¹ Leave an 8-10 inch stubble at end of season until after killing frost.								
² Allow to set seed during season.								
³ Protection from fall grazing is recommended. WSG's can have limited grazing after killing frost when applicable.								
⁴ No restrictions with fescue and orchardgrass.								
⁵ 4 inches above lowest node best indicator.								



CONSERVATION ENHANCEMENT ACTIVITY

E528F

CONSERVATION STEWARDSHIP PROGRAM

Stockpiling cool season forage to improve structure and composition or plant productivity and health

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture; Associated Agricultural Land; Crop (Perennial); Crop (Annual and Mixed)

RESOURCE CONCERN: Plants

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will stop grazing events of selected paddock(s) to allow pasture forages to grow to maximum vegetative biomass accumulation before the end of the growing season.

Criteria

Additions to the current Prescribed Grazing Plan must include:

- A record of designated paddocks and acreages to exclude grazing for a stated specified time period.
- The acreage needed for stockpiled forage will be predetermined.
- Stockpiled acreage will be supplied nutrients according to a land grant university approved soil test to achieve adequate forage growth at the beginning of the stockpiling period.
- Stockpile will be grazed in a manner that maintains specified minimum forage heights in the grazing plan to avoid damage to soil or forage.

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- Do not allow livestock to access previously grazed stockpiled areas when spring regrowth begins until recommended forage heights exist.
- The NRCS Conservation Practice Standard Prescribed Grazing (Code 528) must be followed on all pasture each year this enhancement is in effect. Note - leaving recommended residual forage heights, even though plants are dormant, are needed for erosion control and wildlife.
- Certification recorded that practice requirements have been met after grazing of stockpiled forages is complete before the new growing season begins.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, develop a prescribed grazing plan including a plan map that delineates where forage stockpiling will occur. Make these materials available to NRCS for review.
- ☐ After implementation, make grazing records and photo documentation of stockpiling and level of use available to NRCS.

NRCS will:

- ☐ Prior to implementation, review grazing plan and maps provided by participant.
- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.
- ☐ After implementation, review records and photos provide to confirm adequate stockpiling and acceptable levels of grazing use.



CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528G

CONSERVATION STEWARDSHIP PROGRAM

Improved grazing management on pasture for plant productivity and health with monitoring activities

CONSERVATION PRACTICE: 528 - Prescribed Grazing

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN: Plants

ENHANCEMENT LIFE SPAN: 1 years

Enhancement Description

Managing the harvest of vegetation with grazing and/or browsing animals as adjusted when following recommendations of a qualifying professional, as detailed in the enhancement criteria, generated through Pasture Condition Scoring (PCS).

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- Removal of herbage will be in accordance with site production limitations, rate of plant growth, the physiological needs of forage plants, and the nutritional needs of the animals.
- Adjust intensity, frequency, timing, and duration of grazing and/or browsing (providing sufficient recovery time to meet planned, written objectives) to meet the desired objectives for the plant communities and associated resources.
- Deferment (non-grazing period less than one year) and/or rest (non-grazing period equal or greater than one year) will be planned for critical periods of plant needs (such as post-planting or renovation, severe drought, etc.).
- Manage grazing and/or browsing animals to maintain adequate cover on sensitive areas (such as riparian areas, wetlands, habitats of concern, karst areas, etc.)



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- Manage livestock movements based on rate of plant growth, available forage, and allowable utilization target. Develop and follow contingency plans to deal with episodic disturbance events.
- The narrative management recommendations and implementation for duration and intensity of grazing and/or browsing will be based on the desired plant health and productivity objectives.
- Perform a soils test on the applicable acres for organic matter and nutrient analysis through a land grant university or accredited lab.
- Apply fertilizer and/or soil amendments according to a current soil test when plant vigor needs improvement.
- Follow guidelines provided by a Certified Forage and Grassland Professional, Certified Range Management Consultant, or Certified Professional in Range Management, NRCS Technical Service Provider approved for a DIA 159, or a non-affiliated consultant with a bachelor or higher level degree in agronomy, range science or other closely-related plant science discipline and a minimum of five years' experience in pastureland conservation planning, monitoring, and consulting regarding use of pastureland improvement practices generated through the Pasture Condition Scoring (PCS) assessment tool.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, acquire a Grazing Management Plan with all the following components (provide plan to NRCS for review and approval):
 - Producer goals, objectives, and resource concerns
 - Location and condition of structural improvements
 - Watering sites with availability, quantity, and quality
 - Forage inventory
 - Forage-animal balance sheet
 - Grazing plan for livestock movement
 - Contingency plan
 - Monitoring plan
- ☐ During implementation, perform a soil test on the applicable acres.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ During implementation, secure a Certified Forage and Grassland Professional, Certified Range Management Consultant, Certified Professional in Range Management, NRCS Technical Service Provider approved for DIA 159, or a non-affiliated consultant with a bachelor or higher level degree in agronomy, range science or other closely-related plant science discipline and a minimum of five years' experience in pastureland conservation planning, monitoring, and consulting regarding use of pastureland improvement practices to:
 - 1) Select a monitoring site in each forage type or forage mixture on the enrolled acreage to assess with the Pasture Condition Scoring tool.
 - 2) Conduct assessments on those sites using the Pasture Condition Scoring tool and document the location.
 - 3) Develop a written recommendation including duration and intensity of grazing and/or browsing based on desired health and productivity objectives while addressing adequate cover, litter, and canopy to maintain or improve infiltration, soil health and reduce soil compaction and other resource concerns identified during the Pasture Condition Score (PCS) assessment.
- ☐ During implementation, identify key grazing areas and key forage species and monitor pastures for grazing utilization.
- ☐ During implementation, keep pasture/herd in/out records.
- ☐ During implementation, complete forage utilization job sheet at the end of the grazing season for NRCS Conservation Practice Standard Prescribed Grazing (528).
- ☐ During implementation, document adjustments needed to maintain feed and forage balance.
- ☐ After implementation, provide the following items for review by NRCS:
 - Pasture Condition Score Sheets with all field notes and locations.
 - Soil test analysis.
 - Written documentation from professional with recommendations and follow up actions.
 - Pasture/herd in/out dates.
 - Completed forage utilization job sheet.
 - Animal/forage balance sheet.
 - Written modifications to the grazing management and monitoring plan which address the resource concerns identified from the assessment.



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ As needed, provide technical additional assistance to participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (CPS 528) as it relates to implementing this enhancement, including forage utilization job sheet.
- ☐ Prior to implementation, provide soils information and/ or Forage Suitability Groups as requested.
- ☐ After implementation, review all Pasture Condition Score sheets and written recommendations made by professional.
- ☐ After implementation, review soil test analysis.
- ☐ After implementation, verify implementation of the grazing management plan by reviewing grazing/herd in/out records, forage utilization job sheet, animal/forage balance records and changes made to the plan to address resource concerns identified during the Pasture Condition Scoring assessments.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO
CONSERVATION ENHANCEMENT ACTIVITY**

**CONSERVATION
STEWARDSHIP
PROGRAM**

E528G

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E528G the following additional criteria apply in Ohio:

- Utilize the Pasture Condition Score Sheet located in Section III of the [Electronic Field Office Technical Guide \(eFOTG\)](#)
- Refer to the link below for a list of Certified Forage and Grassland Professionals [Certification Directory - American Forage and Grassland Council](#)
- An NRCS certified conservation planner or [Technical Service Provider \(TSP\)](#) may also be used.

Additional Documentation Requirements for Ohio

- None

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CONSERVATION ENHANCEMENT ACTIVITY

E528H

CONSERVATION STEWARDSHIP PROGRAM

Prescribed grazing to improve/maintain riparian and watershed function-elevated water temperature

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Range, Pasture, Forest

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife will be followed.
- Enhance diversity of rangeland plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - Clear objectives,
 - A resource inventory with ecological site description or reference sheet and structural improvements and existing resource conditions,
 - Grazing plan, and
 - A contingency plan.



CONSERVATION STEWARDSHIP PROGRAM

- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover and riparian/floodplain plant community structure and functions.
- Manage grazing and/or browsing so as to provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Provide adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation by moving livestock appropriately.
- Graze and rest pastures appropriately and with the right numbers, class, and kind of livestock so as to maintain adequate riparian community structure and function to sustain associated riparian, wetland, floodplain and stream species.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, obtain a written grazing plan with guidelines and recommendations for matching the forage quantity and quality produced with the grazing and/or browsing demand.
- Y During implementation, keep pasture/herd in/out records and grazing utilization records for key grazing areas.
- Y After implementation, make the follow items available for review by NRCS to verify implementation of the enhancement:
 - Written grazing plan
 - Pasture/herd in/out records.
 - Documented forage utilization levels

NRCS will:

- Y As needed, provide technical additional assistance to the participant as requested.
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement.
- Y Prior to implementation, verify a grazing plan has been developed, which includes written objectives.
- Y After implementation, verify implementation of the written grazing plan by reviewing plan, pasture/herd in/out records, and utilization records kept during enhancement implementation.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528I

CONSERVATION STEWARDSHIP PROGRAM

Grazing management that protects sensitive areas-surface or ground water from nutrients

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Range

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will provide cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations with plants that cannot tolerate defoliation.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife will be followed.
- Enhance diversity of plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes: 1) Clear objectives, 2) A resource inventory including a forage inventory, structural improvements, and existing resource conditions, 3) Grazing plan, and 4) A contingency plan.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.



CONSERVATION STEWARDSHIP PROGRAM

- Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover.
- Plan the intensity, frequency, timing and duration of grazing and/or browsing that will:
 - Minimize deposition or flow of animal wastes into water bodies or sinkholes,
 - Minimize animal impacts on stream bank or shoreline stability,
 - Provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff, and
 - Provide adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation.
- Livestock feeding and watering facilities will be located and designed/installed in a manner to improve livestock distribution and avoid overland flow to sensitive areas.
- When nutrients are applied on pastureland, soil testing and nutrient application will be done according to local land grant university guidance or the equivalent there of.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, obtain a written grazing plan that identifies the following:
 - ☐ The goals and objectives of the plan
 - ☐ Forage/Animal Balance
 - ☐ A grazing plan narrative describing the basis for when livestock movement or rotation will occur.
 - ☐ Contingency plans for forage shortfalls.
 - ☐ Monitoring locations, key species, and monitoring techniques.
 - ☐ A map identifying all permanent pastures, water sources, and any riparian area or other sensitive areas improved or maintained by this management.
- ☐ Prior to implementation, a nutrient management plan will be developed if nutrients will be applied. The nutrient management plan will detail appropriate soil testing protocol and acceptable nutrient application amounts.
- ☐ Prior to implementation, a copy of the competed grazing plan will be submitted to NRCS for review and approval.
- ☐ During implementation, consult with NRCS or a qualified grazing professional to adjust and adapt the grazing plan to current conditions. Changes to the grazing plan will be documented in writing.
- ☐ After implementation, make all records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ Prior to implementation, assist the participant with development of a grazing plan and/or nutrient management plan, as requested.
- ☐ Prior to implementation, review the plan(s) if not developed by NRCS.
- ☐ Prior to implementation, review soil test analysis



CONSERVATION STEWARDSHIP PROGRAM

- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.
- ☐ After implementation, review written grazing records provided by the participant to determine if the grazing plan was adequately followed to protect or enhance riparian areas, wetland areas, or other sensitive areas.
- ☐ After implementation, review the nutrient management plan and application record to ensure nutrients were applied according to the plan.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528J

CONSERVATION STEWARDSHIP PROGRAM

Prescribed grazing on pastureland that improves riparian and watershed function

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

Criteria

- Must follow a written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife.
- Enhance diversity of plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes: 1) Clear objectives, 2) A resource inventory including a forage inventory, structural improvements, and existing resource conditions, 3) Grazing plan, and 4) A contingency plan.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.



CONSERVATION STEWARDSHIP PROGRAM

- Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover and riparian/floodplain plant community structure and functions.
- Manage grazing and/or browsing to provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Provide adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation by moving livestock appropriately.
- Graze and rest pastures appropriately and with the right numbers, class, and kind of livestock to maintain adequate riparian community structure and function to sustain associated riparian, wetland, floodplain and stream species.
- If nutrients are applied, soil testing and nutrient application will be done according to local land grant university guidance or equivalent.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, obtain a written grazing plan that identifies the following:
 - o Goals and objectives of the plan
 - o Forage/Animal Balance
 - o A grazing plan narrative describing the basis for when livestock movement or rotation will occur.
 - o Contingency plans for forage shortfalls.
 - o Monitoring locations, key species, and monitoring techniques.
 - o Map identifying all permanent pastures, water sources, and any riparian area or watershed drainage locations improved or maintained by this management.
- ☐ Prior to implementation, a nutrient management plan will be developed if nutrients will be applied. The nutrient management plan will detail appropriate soil testing protocol and acceptable nutrient application tolerances.
- ☐ Prior to implementation, a copy of the developed grazing plan will be submitted to NRCS for review and approval.
- ☐ During implementation, consult with NRCS or a qualified grazing professional to adjust and adapt the grazing plan to current conditions. Changes to the grazing plan will be documented in writing.
- ☐ After implementation, make all records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ Prior to implementation, assist the participant with development of a grazing plan and nutrient management plan if requested to do so. If NRCS does not assist with plan development, the plan(s) will be reviewed by NRCS for approval prior to implementation.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.
- ☐ After implementation, review written grazing records provided by the participant to determine if the grazing plan was adequately followed to protect or enhance riparian areas, wetland areas, or overall watershed function.
- ☐ After implementation, if nutrients have been applied, soil testing and application records will be reviewed to determine if nutrients have been applied responsibly.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528L

CONSERVATION STEWARDSHIP PROGRAM

Prescribed grazing that improves or maintains riparian and watershed function-erosion

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Range, Forest

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

Criteria

- Must follow a written grazing plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife.
- Enhance diversity of plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - Clear objectives,
 - A resource inventory of structural improvements, existing resource conditions, and forage.
 - A monitoring plan
 - A contingency plan



CONSERVATION STEWARDSHIP PROGRAM

- Supplemental feed or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover and riparian/floodplain plant community structure and functions.
- Manage grazing or browsing so as to provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Maintain adequate ground cover and plant density through monitoring to retain or improve filtering capacity of the vegetation by moving livestock appropriately.
- Adjust grazing strategy and rest as needed with the right numbers, class, and kind of livestock to maintain adequate riparian community structure and function to sustain associated riparian, wetland, floodplain and stream species.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, obtain a written grazing plan with:
 - ☐ Inventory of structural improvements, existing resource conditions and forage
 - ☐ Guidelines and recommendations for matching the forage quantity and quality produced with the grazing and/or browsing demand of livestock
 - ☐ A contingency plan and
 - ☐ A monitoring plan
- ☐ During implementation, keep pasture/herd in/out records and forage-animal balance sheet.
- ☐ During implementation, monitor riparian vegetation for use
- ☐ After implementation, make the follow items available for review by NRCS to verify implementation of the enhancement:
 - ☐ Written grazing plan
 - ☐ Pasture/herd in/out records
 - ☐ Documented utilization records
 - ☐ Monitoring plan

NRCS will:

- ☐ As needed, provide technical additional assistance to the participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ After implementation, verify implementation of the written grazing plan, by reviewing plan and pasture/herd in/out records and forage-animal balance sheets kept during enhancement implementation.
- ☐ After implementation, review the monitoring plan

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528M

CONSERVATION STEWARDSHIP PROGRAM

Grazing management that protects sensitive areas from gully erosion

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Range

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Grazing management employed will provide vegetative cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations that cannot tolerate plant defoliation.

Criteria

- Must follow a grazing written plan matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- Enhance diversity of rangeland plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by an erosion control planning process that includes:
 - Clear objectives,
 - A resource inventory of structural improvements, existing resource conditions, and forage.



CONSERVATION STEWARDSHIP PROGRAM

- A monitoring plan
 - A contingency plan
- Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover.
- Minimize deposition or flow of animal wastes into water bodies or sinkholes,
- Minimize animal impacts on stream bank or shoreline stability,
- Maintain adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff, and
- Maintain adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation.
- Livestock feeding and watering facilities will be located and designed/installed in a manner to improve livestock distribution and avoid overland flow to sensitive areas.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, obtain a written grazing plan with guidelines and recommendations for matching the forage quantity and quality produced with the grazing and/or browsing demand. Plan will include a contingency plan for potential events that trigger adverse results, such as concentrated flow and gully erosion.
- ☐ Prior to implementation, develop a map delineating potential sensitive areas to be protected.
- ☐ During implementation, keep livestock herd management records during seasonally important periods of soil erosion potential.
- ☐ During implementation, keep grazing utilization records for key grazing areas that accommodate the criteria above, indicating the protective nature of the grazing system to the sensitive areas.
- ☐ After implementation, make the follow items available for review by NRCS to verify implementation of the enhancement:
 - ☐ Written grazing plan.
 - ☐ Pasture/herd in/out records
 - ☐ Documented utilization records.

NRCS will:

- ☐ As needed, provide technical additional assistance to the participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement.
- ☐ Prior to implementation, as needed, assist participant with the development of map delineating potential sensitive areas to be protected.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ Prior to implementation, verify a grazing plan has been developed, which includes written objectives.
- ☐ After implementation, verify implementation of the written grazing plan, by reviewing plan and records and utilization records kept during enhancement implementation.
- ☐ After implementation, verify the protection and condition of the sensitive areas.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature Date



CONSERVATION ENHANCEMENT ACTIVITY

E528O

CONSERVATION STEWARDSHIP PROGRAM

Clipping mature forages to set back vegetative growth for improved forage quality

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN: Animals, Plants

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Timely clipping of mature forages through mowing, swathing or some other mechanical cutting will occur to increase forage palatability by setting plants back to a vegetative state for improved grazing management and forage quality

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- Maintain diversity of forage plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes: 1) Clear objectives, 2) A resource inventory including forage inventory, structural improvements and existing resource conditions, 3) Grazing plan, and 4) All potential contingency plans.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.



CONSERVATION STEWARDSHIP PROGRAM

- Timely clipping of mature forage species through mowing, swathing or some other mechanical cutting will occur to set back the vegetative state of the forage species.
- Excessive stems shall be removed during the cutting process to allow sunlight to reach the lower plant canopy.
- Cut forage species to a stubble height that will promote the vigor and health of the species and maintain stem bases that store food reserves for full vigorous recovery. **Follow NRCS state conservation practice standard recommendations.**
- Clipping should be avoided when forage is entering dormancy. Cutting heights should maintain insulation for extreme heat or cold. Use **NRCS** and local Cooperative Extension Service recommendations **on dates and stages** to avoid winterkill in cold climates.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, acquire a Grazing Management Plan with all the following components: (provide plan to NRCS for review and approval)
 - Producer goals, objectives and resource concerns
 - Location and condition of structural improvements
 - Watering sites with availability, quantity and quality
 - Forage inventory
 - Forage-animal balance sheet
 - Grazing plan for livestock movement
 - Contingency plan
 - **Monitoring plan**
- Y Prior to implementation, identify grazing areas and locations where clipping mature forages will occur
- Y Prior to implementation, provide a plan for mechanical clipping and livestock movement activities to NRCS
- Y During implementation keep a record of clipping activities and livestock movement
- Y During implementation, monitor forage maturity stages and livestock condition
- Y During implementation, keep record of clipping heights
- Y During implementation, take photos of areas immediately **before and** after clipping
- Y After implementation, provide the following items for review by NRCS:
 - Map and records showing clipping areas
 - Forage-animal balance sheet
 - Records of livestock movement through clipping areas
 - Documentation of clipping heights
 - Written modifications to grazing management plan based on results of clipping forages
 - Photos of fields **before and** after clipping activities
 - Notify NRCS immediately after clipping



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- Y As needed, provide technical assistance to participant as requested
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (CPS 528) as it relates to implementing this enhancement
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage Harvest Management (CPS 511)
- Y Prior to implementation, review the plan provided for livestock movement and mechanical clipping
- Y After implementation, review the map, record of livestock movement, clipping activities and heights and photos.
- Y After implementation, review the modifications to the grazing management plan based on results of clipping forages

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature Date



CONSERVATION ENHANCEMENT ACTIVITY

E528P

CONSERVATION STEWARDSHIP PROGRAM

Implementing Bale or Swath Grazing to increase organic matter and reduce nutrients in surface water.

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Crop (Annual & Mixed), Crop (Perennial), Range

RESOURCE CONCERN: Soil, Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Improve organic matter, aggregate stability and soil organism habitat in the soil by leaving the biomass harvested from the field on site for animal use, or supplementing organic matter needs with off-field forages. Grazing harvested forages in this manner, will help to incorporate organic matter, feed and diversify the soil microbiome, build better aggregation and increase soil health and critical functions such as infiltration, nutrient cycling, and weather resilience. Forages should be placed evenly throughout the field, but can be concentrated in areas where particular concerns, such as bare ground, need to be remedied. Decisions of forage placement must take into account areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- Graze harvested forages to help incorporate organic matter into the soil and to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by



CONSERVATION STEWARDSHIP PROGRAM

a planning process that includes: 1) Clear objectives, 2) A resource inventory including a forage inventory, structural improvements and existing resource conditions, 3) Grazing plan, and 4) All potential contingency plans.

- Supplemental feed and/or minerals will be provided as needed to meet the nutritional requirements of the kind and class of grazing and/or browsing livestock.
- Forage access should be designed to meet the objective of the identified resource concern(s) of the field and may be concentrated in areas where concerns, such as bare ground, need to be remedied. Decisions of forage placement must consider areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion. **Bales may be unrolled if this design more effectively addresses the resource concern.**
- Baling and swathing on fields where this enhancement is applied should meet stubble heights found in NRCS Conservation Practice Standard Forage Harvest Management (Code 511).
- Off-field forages used should not contain noxious or invasive weeds.
- Test soil annually to monitor build-up of excessive nutrient levels. Select sites with low to moderate soils test to supplement organic matter and provide nutrients. Avoid sites with already high nutrient levels. Consideration soil texture constraints for bale locations.
- All non-degradable bale material must be removed from the field when bales are gone.
- Use electric fencing or separate paddocks to control livestock access to bales or swaths to ensure forages are used efficiently.



CONSERVATION STEWARDSHIP PROGRAM

Considerations:

- Bales with plastic twine should be placed on their ends to facilitate removal of twine prior to feeding. Net wrap may be left on to assist with controlled feeding.
- Design the size of area or number of bales or swaths to provide enough feed for the livestock for the desired period. (usually 2-5 days). Example:

Average weight of round bale: 900 #

Dry Matter (% dry × bale weight): $900\# \times 85\% = 765\#$

Loss for storage and feeding waste ($765\# \times 75\%$) = 574# DM/Bale

$574\# \text{ DM} \div 30\# \text{ DM/Cow/Day} = 19 \text{ cows would use one round bale per day}$

$100 \text{ cows} \div 19 \text{ cows/round bale/day} = 5.2 \text{ bales per day to feed the herd}$

$5.2 \text{ bales per day} \times 90 \text{ days} = 468 \text{ bales}$

$468 \text{ bales} \div 25 \text{ bales per acre} = 19 \text{ acres needed to bale graze.}$



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, acquire a Grazing Management Plan on field(s) where swath or bale grazing is planned and provide to NRCS for review and approval. Plans must include all the following components:
 - Producer goals, objectives and resource concerns
 - Location and condition of structural improvements
 - Watering sites with availability, quantity and quality
 - Forage inventory
 - Forage-animal balance sheet
 - Grazing plan for livestock movement
 - Contingency plan
 - Monitoring plan
 - Calculations for determining number of bales or swath rows needed:
 1. Herd size: _____
 2. Average bale weight or swath production (pounds per acre): _____
 3. Average forage Dry Matter (DM)% _____
 4. Average DM # Intake/Cow/Day _____
 5. Number of bales or swath row area needed per day: _____
 6. Spacing of bales (if applicable) based on local criteria _____
 7. Duration of bale or swath grazing (days) _____
 8. Acres needed for bale or swath grazing period: _____
- Y Prior to implementation, identify location(s) where bale or swath grazing will occur and proximity to sensitive areas such as surface water and soil and drainage limitations.
- Y Prior to implementation, provide current soil test results (no older than 2 years) in identified areas for bales or swaths to NRCS.
- Y During implementation record location(s) of bale placement or swathing.
- Y During implementation, keep records of livestock movement through bale or swathing areas.
- Y During implementation, monitor livestock condition and feed quality.
- Y During implementation, record swathing or mowing heights.
- Y After implementation, provide the following items for review by NRCS:
 - A map showing bale or swath grazing areas.
 - Forage-animal balance sheet
 - Records of livestock movement through bale or swathing areas.



- Records of swathing or mowing heights.
- Written modifications to grazing management plan based on results of prior bale/swath grazing season and soil test results

CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- Y As needed, provide technical assistance to participant as requested
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) and supporting documents that are needed to implement this enhancement, such as forage-animal balance forms
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage Harvest Management (Code 511) stubble height requirements
- Y Prior to implementation, provide assistance with bale spacing recommendations and calculations for determining number of bales or swath rows needed
- Y Prior to implementation, review soils test results for identified on bale/swath grazing areas
- Y After implementation, review map and locations of bale/swath grazing areas
- Y After implementation, review records of livestock movement through bale/swath grazing areas
- Y After implementation, review forage-animal balance sheet
- Y After implementation, review records of mowing/swathing heights
- Y After implementation, review modifications made to the grazing management plan

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528Q

CONSERVATION STEWARDSHIP PROGRAM

Use of body condition scoring for livestock on a monthly basis to keep track of herd health

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Crop (Annual and Mixed), Crop (Perennial), Pasture, Range, Forest, Associated Ag Land, Farmstead

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Body condition scoring (BCS) serves as a useful management tool to monitor livestock performance with respect to current and recent feeding or grazing programs. Body condition scoring is a numeric scoring system, producers can use to consistently evaluate animals' estimated body energy reserves through degree of fatness. This information can be used to adjust nutritional strategies to reach optimal BCS. Since body condition is closely associated with reproductive performance as well as feed efficiency, monitoring body condition can help producers reach production goals and increase the operation's bottom line. Knowledge and understanding of BCS will assist producers to adjust a supplemental feeding program to maintain animal health and nutrition on a-monthly-basis.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- A written plan for maintaining diversity of forage plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration



CONSERVATION STEWARDSHIP PROGRAM

of grazing and/or browsing needed as determined through the planning process with: 1) Clear objectives, 2) A resource inventory including forage inventory, structural improvements and existing resource conditions, 3) Grazing schedule, and 4) All potential contingency plans.

- A written plan to monitor and document Body Condition Scores monthly using Land Grant University Scoring Guidelines.
- Supplemental feed and/or mineral will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.
- Animals must maintain ideal/Land Grant University recommended BCS for their breed, phase of production, or livestock type. (animals should not be emaciated to thin, or fat to obese).



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, acquire a Grazing Management Plan with all the following components: (provide plan to NRCS for review and approval)
 - ☐ Producer goals and objectives
 - ☐ Location and condition of structural improvements
 - ☐ Watering sites with availability, quantity and quantity
 - ☐ Forage inventory
 - ☐ Forage-animal balance sheet
 - ☐ Grazing plan for livestock movement
 - ☐ Contingency plan
 - ☐ Monitoring plan
- ☐ Prior to implementation, develop a written BCS monitoring plan
- ☐ During implementation keep a record of livestock movement and BCS of livestock type, breed and phase of production
- ☐ During implementation, keep a record of supplemental feeding
- ☐ During implementation, take photos of livestock from several representative animals. Photos should be taken of the side with the entire animal in the picture frame
- ☐ After implementation, provide the following items for review by NRCS:
 - ☐ Map of paddocks used
 - ☐ Forage-animal balance sheet
 - ☐ Records of livestock movement through paddocks
 - ☐ BCS monitoring plan with livestock photos
 - ☐ Supplemental feeding plan
 - ☐ Written modifications to grazing management plan based on results of BCS monitoring and supplemental feeding program

NRCS will:

- ☐ As needed, provide technical assistance to participant as requested
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (CPS 528) as it relates to implementing this enhancement



CONSERVATION STEWARDSHIP PROGRAM

- ☐ Prior to implementation, review the plan provided for livestock movement, BCS monitoring and supplemental feed plan
- ☐ After implementation, review the livestock movement plan, BCS monitoring data, and supplemental feed contingency plan (if implemented)
- ☐ After implementation, review the modifications to the grazing management plan based on results of BCS monitoring and the supplemental feeding program

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

• _____
NRCS Technical Adequacy Signature Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E528Q

Optional references for completing this enhancement include:

- <https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/south-dakota/body-conditioning-scoring-bcs-resources>

Beef

- https://ohio4h.org/sites/ohio4h/files/imce/animal_science/Body%20Condition%20Scoring%20of%20Beef%20Cattle%20for%20Youth%20Producers.pdf
- <https://extension.okstate.edu/fact-sheets/body-condition-scoring-of-cows.html>
- <https://extension.uga.edu/publications/detail.html?number=B1308&title=body-condition-scoring-beef-cows>
- <https://extensionpubs.unl.edu/publication/ec281/2014/pdf/view/ec281-2014.pdf>

Dairy

- <https://extension.psu.edu/learn-to-score-body-condition>
- <https://extension.psu.edu/examples-of-cows-at-various-body-condition-scores>

Sheep

- <https://www.agric.wa.gov.au/management-reproduction/condition-scoring-sheep>

Sheep BCS Recommendations (from University of Kentucky Extension)

Stage of Production	Ideal BCS when:	
	Entering	Leaving
Flushing	1.5-2	2-2.5
Breeding	2-2.5	2-2.5
Early Gestation	2-2.5	3
Late Gestation	3	3.5-4
Lactation	3.5-4	1.5-2
Maintenance	1.5-2	1.5-2

**taken from pdf stored on the Ohio NRCS Training Teams channel in Pasture & Grazing Resources.*



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E528Q

Sheep BCS Recommendations (from South Dakota State University Extension)

Stage of Production	Ideal BCS for:	
	Mature Ewe Expecting	
	Singles	Twins
Breeding	3-4	3-4
Mid-Gestation	2.5-4	2.5-4
Lambing	3-3.5	3.5-4
Weaning	2+	2+

Pre-breeding: Recommended BCS for Rams = 3.5

Goats

- NOTE: body condition scoring cannot be assigned by simply visually evaluating an animal. The animal must be touched and felt in three specific areas of the body. The first is the lumbar area, which is the area of the back behind the ribs containing the loin. The second is the sternum, or breast bone, and the third is the ribs and intercostal (between the rib) spaces.
- <https://www.nfacc.ca/images/codes-of-practice/goat/Appendix%20F%20-%20Body%20Condition%20Score%20for%20Meat%20Goats.pdf>

Dairy Goats

- <https://adga.org/wp-content/uploads/2017/11/adga-dairy-goat-body-condition-scoring.pdf>

Meat Goats

- <https://www.sare.org/resources/video-body-condition-scoring-of-goats/>
- https://www.in.gov/boah/files/Goats_BCS_pamphlet.pdf

Horses

- <https://ohioline.osu.edu/factsheet/as-1024>
- <https://animal.ifas.ufl.edu/extension/youth/horse/bcs/>



United States Department of Agriculture

OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E528Q

Bison BCS Recommendations

Stage of Production (time frame; months)	Ideal BCS for Conservation* focus:			Ideal BCS for Production* focus:		
	Cow	Heifer	Bull	Cow	Heifer	Bull
Weaning (Nov – Apr)	4↘2.5	4↘3	4↘3	4↘3	4↘3	4↘3
Pre-Calving (Apr – Jun)	2.5	3	3.5	3	3.5	3.5
Prior to Breeding (Jun – Sep)	3	3	2.5	3.5	3.5	2.5
Gestation/Pre-winter condition (Sep – Nov)	4	4	3.5	4	4	4

**Conservation and production focused operations are separated to better guide the bison manager's decisions. The ↘ indicates a downward trend of body condition score over winter due to harsh conditions (this is normal in bison).*

- <https://www1.agric.gov.ab.ca/%24department/deptdocs.nsf/all/agdex9622/%24FILE/bcs-bison.pdf>

Client Name _____

Year _____

Optional E528Q BCS Plan

This document is not required to be filled out, but all the information should be provided in a written plan at the start of the enhancement.

Monitoring Plan for Body Condition Scoring:

Animal Type	Month/Stage of Production	# of Animal Type	# of Animals needed to be Monitored (1 out of 5* or 1 out of 10*)	Ideal Body Condition Score
<i>Cattle</i>	<i>May / Calving</i>	<i>150</i>	<i>15</i>	<i>5</i>

*1 out of 5 animals for herds less than 100 animals, or 1 out of every 10 animals for herds greater than 100.

Suggested Times for Body Condition Scoring: (enter month(s) when this occurs on your operation for the type(s) of animals on the farm).

☐ Beef

Late summer or early fall _____

Weaning _____

60 days prior to calving _____

30 days post calving _____

☐ Sheep & Goats

Pre-breeding (1 month to 2 weeks before) _____

Mid-gestation (60 days prior to lambing) _____

Lambing/Kidding _____

Weaning _____

☐ Bison

Pre-calving _____

Prior to breeding _____

2 months prior to weaning _____

☐ Dairy

At Pregnancy Check _____

Dry-off _____

Calving _____

- **Circle months when animals will be monitored:** Include the months from above, as well as any months when grazing will occur

January	February	March	April	May	June
July	August	September	October	November	December

Year

*This is intended to help practitioners in maintaining adequate records for the purposes of the CSP enhancement.
This document is not required to be filled out if other adequate records are available.*

- ☐ **Grazing Plan:** After the initial Grazing Management Plan (GMP) is written, each year provide written documentation of changes to the grazing plan.
- ☐ **Livestock Grazing Records:** Livestock grazing records documenting when livestock are grazing in each paddock shall be provided annually.
- ☐ **Record of any Supplemental Feeding** (supplemental feeds provided to the herd as well as when it was provided).
- ☐ **Photos of representative animals**, organized by the date of each monitoring.

Herd Name/Number: _____ (Attach additional sheets for each herd if needed)

[illegible]

Client Name _____

Year _____

Management actions taken when BCS is below ideal score:

Date	Management Actions taken (if any)

Examples may include:

- *Animals that are not growing or maintaining as well as the other animals:*
 - *Sorting individual animals out to provide supplemental feed as a separate group.*
 - *Sorting out animals to cull as they do not meet the operation's management and resources.*
- *Forage-Animal Balance examples:*
 - *Providing additional acres of pasture during a single rotation.*
 - *Splitting the group so that the number of animals on a permanent pasture division/paddock (set acres) is less.*
- *Providing supplemental feed to the entire group.*

Client Name _____

Year _____

Optional Worksheet for Recording Individual Animal Information

[illegible]



CONSERVATION ENHANCEMENT ACTIVITY

E528R

CONSERVATION STEWARDSHIP PROGRAM

Management Intensive Rotational Grazing

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Range

RESOURCE CONCERN ADDRESSED: PLANTS

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Management intensive, multi-paddock grazing system where livestock are regularly and systematically moved to fresh forage to optimize quantity and quality of forage growth, improve manure distribution, improve wildlife cover, and improve soil health.

Criteria

- Management-intensive rotational grazing increases harvest efficiency of vegetation with grazing and/or browsing animals through smaller paddock sizes, higher stock density while maintaining plant residue with enough energy reserves to recover quickly when adequate soil moisture is available for regrowth.
- Must develop and implement a written grazing plan that:
 - o increases stock density
 - o shortens grazing periods
 - o enhances plant recovery
 - o matches the forage quantity and quality produced with the grazing and / or browsing animal, and



CONSERVATION STEWARDSHIP PROGRAM

- increases harvest efficiency and manure distribution by significantly increasing the existing stock density per herd.
- Removal of forage will be in accordance with site production limitations, rate of plant growth, the physiological needs of forage plants and the nutritional needs of the livestock.
- Deferment (non-grazing period less than one year) and / or rest (non-grazing period equal to or greater than one year) will be planned for critical periods of plant needs.
- Manage livestock rotation based on rate of plant growth, available forage, and allowable utilization target.
- Manage livestock rotation to provide adequate ground cover and plant density to decrease soil erosion, reduce runoff and improve infiltration and water holding capacity.
- Minimize concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover.
- Utilize higher stock density and shorter grazing periods in riparian areas to minimize impact to stream bank or shoreline stability and ensure other sensitive areas such as wetlands, habitats of concern, karst areas do not become degraded.
- Implement and maintain a rotational grazing system using a combination of permanent or temporary division fences and water facilities to serve the management needs of operation.
- Develop and follow contingency plans to deal with drought or flooding or other episodic disturbance events.

Develop and implement a monitoring plan that at a minimum evaluates livestock performance, plant community composition and density, and soil function components such as ground cover, infiltration and aggregate stability.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementing, obtain a grazing plan map delineating the existing paddock system, along with a livestock inventory (type, class, average weight, and number) to document the current stocking density and current stocking rate.
- ☐ Prior to implementation, acquire a prescribed grazing plan, with a plan narrative delineating the following:
 - The goals and objectives of the plan
 - Map showing the number of paddock subdivisions with water sources, proposed stock densities per paddock associated with different herds in the system.
 - Forage Inventory
 - Forage / Animal Balance
 - A grazing plan narrative describing the basis for when livestock movement or rotation will occur
 - A contingency plan
 - A monitoring plan
- ☐ During implementation, keep pasture/ herd in/out records, stock density records and photos of paddock condition and photos of high stock density grazing implementation.
- ☐ After implementation, provide the following items for review by NRCS:
 - Written grazing plan with maps showing fencing and water layout and managed stock densities for each herd.
 - Paddock / herd in / out records with actual stock densities documentation.
 - Photos of paddock(s) condition and improved forage utilization and photos of high stock density grazing.
 - Changes made to the grazing management plan.

NRCS will:

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CONSERVATION STEWARDSHIP PROGRAM

- ☐ As needed, provide technical assistance to participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) and supporting documents that are needed to implement this enhancement, such as forage-animal balance forms.
- ☐ Prior to implementation, review the existing grazing plan, maps and livestock inventory provided by the participant.
- ☐ Review the newly proposed grazing plan fencing and watering layout, associated maps and stock density numbers for each herd.
- ☐ After implementation, review the following:
 - Written grazing plan with maps showing fencing and water layout and managed stock densities for each herd.
 - Paddock / herd in / out records with actual stock densities documentation.
 - Photos of paddock(s) condition and improved forage utilization and photos of high stock density grazing.
 - Changes made to the grazing management plan

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E528S

Soil Health Improvements on Pasture

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN ADDRESSED: Soil

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Use of soil health assessment to evaluate impact of planned grazing in addressing organic matter depletion, soil organism habitat and aggregate instability. Laboratory soil health tests will be completed in year 1 and year 4 of the contract. Planned modifications to the pasture forages and/or management system will be made to the benchmark grazing system to address concerns from the assessments. During sample collection, Pasture Condition Score (PCS) or Determining Indicators of Pasture Health (DIPH) assessment will be completed for the sample area.

Criteria

- Utilizing the benchmark PCS or DIPH, the participant will plan improvements to at least one of the indicators. The benchmark PCS or DIPH will be less than one year old.
- A primary assessment will be completed in Year 1 that includes completing the PCS or DIPH and sampling soil that will be analyzed by a soil health testing laboratory. Follow guidance from Technical Note No. 450-03 to select indicators (soil organic carbon, aggregation, bioavailable nitrogen, respiration, and/or active carbon) and for sampling procedure. Record weather factors and most recent grazing event on the PCS or DIPH. Soil sample collection and PCS or DIPH will be completed on the same day and in the same location.



- During Year 4, a follow-up assessment will be completed using the same methods that were utilized in year 1. The assessment will be in the same season, comparable conditions and key area as completed in year 1.

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation:
 - Provide NRCS with the benchmark grazing information.
 - Develop a prescribed grazing plan.
 - Select the laboratory soil health test and provider based on your soil health objectives.
- ☐ During implementation:
 - Complete PCS or DIPH or work with someone qualified to complete the pasture assessment when soil samples are collected.
 - Collect soil samples and georeferenced sampling locations in years 1 and 4 of the contract and send them to a reputable soil testing lab that completes soil health testing. Year 1 and year 4 soil samples will be tested by the same laboratory.
 - Make changes to the grazing management plan based on results of PCS or DIPH and soil health test to benefit organic matter depletion, soil organism habitat and/or aggregate instability.
- ☐ After implementation provide the following items for review by NRCS:
 - PCS or DIPH score sheets with all field notes and locations.
 - Both Soil Health Assessment results to NRCS.
 - Changes made to the grazing management plan for the year.

NRCS will:

- ☐ As needed, provide any technical assistance to participant as requested.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (CPS 528) as it relates to implementing this enhancement.
- ☐ Prior to implementation, and as requested from the participant, develop a Prescribed Grazing plan for each year of this enhancement.



- ☐ During implementation, assist the producer with locating the key area for the PCS or DIPH and soil samples to be collected.
- ☐ During implementation, as requested work with the producer to complete PCS or DIPH and collect the soil samples.
- ☐ After implementation, review all PCS or DIPH and all soil health laboratory testing results.
- ☐ After implementation, verify implementation of changes made to the grazing management plan to address organic matter depletion, soil organism habitat and/or aggregate instability and other identified indicators from the PCS or DIPH by reviewing grazing herd in and out records or implementation of additional activities.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature Date



CONSERVATION ENHANCEMENT ACTIVITY E533A

CONSERVATION STEWARDSHIP PROGRAM

Advanced Pumping Plant Automation

Conservation Practice 533: Pumping Plant

APPLICABLE LAND USE: Crop (Annual & Mixed), Crop (Perennial), Pasture

RESOURCE CONCERN: Water

PRACTICE LIFE SPAN: 1 year

Enhancement Description

This enhancement consists of installing a control device to a pump station that allows the user to remotely monitor and operate the pump station based on field measured data. Pumping stations may have either a combustible or electric power unit that are compatible with the control device or sensor. These devices/sensors collect field-measured data and provide this data in real time to the landowner to make irrigation decisions and adjustments to the pump operation. These decisions should be made in conjunction with an irrigation water management plan. Field measuring devices may be part of the IWM plan, but additional devices can be installed as part of the enhancement such as water level, fuel level, pressure, or speed control sensors.

Criteria

- Documentation that ensures the control devices is compatible with the exiting pump station and irrigation system
- Detailed drawings of how the control device will connect to the existing pump station
- Protective structure/mechanism
- Irrigation water management (IWM) plan that follows the NRCS Conservation Practice Standard Irrigation Water Management (CPS449)
- Components necessary for automation depends on the type of pump installed, but both electric and combustible system should have a flow meter as indicated below:
 - Electrical power unit- flow meter with data logger and telemetry, necessary circuit boards and protections, VFD (if applicable), antenna, modem, housing, and other appurtenances as applicable



- Diesel power units- flow meter with data logger and telemetry, necessary circuit boards and protections, antenna, modem, housing, fuel use meter, and other appurtenances as applicable.

CONSERVATION STEWARDSHIP PROGRAM





Documentation and Implementation Requirements

Participant will:

Prior to implementation

- ☐ Completed IWM plan, documenting guidance and landowner decision using State specific protocol
- ☐ Map delineating the location of the installed pumping plants, soil moisture sensors, electronic water level sensors, pipeline networks, permanent flow meters and fields they serve. All components should be capable of telemetry
- ☐ Digital/Printed photography of installed components and GPS location

During implementation

- ☐ Provide documentation ensuring that the control device and supporting appurtenances allow the pumping station to continue to operate safely and in the range of designed operating conditions
- ☐ Provide documentation of the protective structure(s) meet the requirement of the control device and supporting appurtenances. Ensure that the protective structures meet NRCS standards
- ☐ Record each irrigation event, and daily soil moisture/water level (if applicable) throughout growing season.
- ☐ Apply irrigation water based on irrigation scheduling method selected to meet the crop's needs and maximize irrigation water efficiency.
- ☐ Measure and record the amount of water used to irrigate as it comes onto the farm and is applied to each field.

After implementation

- ☐ Copy of the record each irrigation event, and daily soil moisture/water level (if applicable), and rainfall throughout growing season.

NRCS will:

Prior to implementation

- ☐ Provide and explain NRCS Conservation Practice Standard Pumping Plant (Code 533) as it relates to implementing this enhancement
- ☐ Provide and explain NRCS Conservation Practice Standard Irrigation Water Management (Code 449) as it relates to implementing this enhancement
- ☐ Provided additional assistance to the participant as requested

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- ☐ Review and approve producer's selected equipment

After Implementation

- ☐ Verify installation of the control device and all supporting appurtenances
- ☐ Verify that the control device is compatible with the pumping station and the range of operation condition
- ☐ Verify implementation of irrigation water management plan by reviewing records kept during enhancement implementation

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E533B

CONSERVATION STEWARDSHIP PROGRAM

Complete pumping plant evaluation for energy savings

CONSERVATION PRACTICE: 533 - Pumping Plant

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Energy

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Evaluation of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to reduce energy use. Evaluate to determine if a Variable Frequency Drive motor controller(s) will reduce energy use and is feasible.

Criteria

- Pump test evaluation will include all irrigation pumps on the on fields where the activity is implemented. There could be multiple pumps that are used on single or multiple fields.
- Minimum data necessary to complete the pumping evaluation:
 - Flow rate, instantaneous and for the season.
 - Pressure at different flow rates based on partial or complete irrigations.
 - Power usage to compute efficiency of the drive unit.
 - Area and fields irrigated.
 - Estimate of friction loss in pipelines based on pressure drop in lines during test.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

Prior to implementation:

- ☐ Provide NRCS with a map showing the location of all fields and pumps connected to the irrigation system.
- ☐ Arrange for pump test evaluations of all irrigation pumps on fields where activity is implemented.

During implementation

- ☐ Have a pump test evaluation performed on all irrigation pumps that service the fields where activity is implemented.

After implementation

- ☐ Make the following items available for review by NRCS to verify implementation of the enhancement:
 - Pump test evaluation report(s).
 - Provide a list of any adjustments to improve system efficiency made as a result of the evaluation. Calculate the reduction of energy use based on before and after conditions. Energy savings can be reported as the average annual or seasonal energy reduction compared to previous operating conditions.

NRCS will:

Prior to implementation

- ☐ Provide and explain Pumping Plant (Code 533) to participant as it relates to implementing this enhancement.
- ☐ As needed, provide additional technical assistance to the participant as requested.

After implementation

- ☐ Verify pump test evaluation, by reviewing evaluation report.
- ☐ Verify energy savings based on system efficiency before and after implementation of the enhancement.



CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E533C

CONSERVATION STEWARDSHIP PROGRAM

Install VFDs on pumping plants

CONSERVATION PRACTICE: 533 - Pumping Plant

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Energy

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Install Variable Frequency Drive(s) (VFD) on Pumping Plant with the correct sensors, on all pumps as indicated in the evaluation.

Criteria

- Implement recommendations for components from a pumping plant evaluation where the FVD is feasible, reduces energy use, and the existing or new electric drive unit will support the VFD.
- The replacement or retrofit system and related components or devices meet or exceed currently applicable federal, state, and local standards and guidelines.
- Components of this enhancement will meet the NRCS Conservation Practice Standard Pumping Plant (Code 533).



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

Prior to implementation:

- ☐ Review pumping plant evaluation, season of use, existing pump motor needs, and current operation.
- ☐ Evaluate site specific energy alternatives and net benefit of the Variable Frequency Drive(s).
- ☐ Ensure that energy utility provider has reviewed and approved location of installation on pump motor, including needs for electrical harmonic filter.
- ☐ Obtain written documentation of utility approval for site with requirements for installation.

During implementation

- ☐ Ensure installation meets federal National Electrical Code and any local or state codes.

After implementation

- ☐ Provide documentation of installation including first season energy use for comparison to prior years to NRCS for review to verify implementation of the enhancement.
- ☐ Monitor and maintain system for the life span of the practice (10 years).

NRCS will:

Prior to implementation

- ☐ Provide and explain NRCS Conservation Practice Standard Pumping Plant (Code 533) as it relates to implementing this enhancement.
- ☐ As needed, provide additional technical assistance to the participant as requested.
- ☐ Review with the participant the costs and benefits of the installation of Variable Frequency Drive(s).
- ☐ Develop written specifications describing site specific details of installation, including:
 - The replacement or retrofit system and/or related components or devices.
 - Baseline system energy usage and potential energy savings from the implementation of this enhancement.
 - Plan view showing the location of the measures in relation to other structures or natural features, where appropriate.
 - Electrical wiring that meets the requirements of the National Electrical Code.
 - Operation and maintenance plan that is consistent with the purpose(s) of this practice, its intended life, and safety requirements.



After implementation

- ☐ Verify energy savings based on system efficiency before and after implementation of the enhancement

CONSERVATION
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NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E533D

CONSERVATION STEWARDSHIP PROGRAM

Switch fuel source for pumps

CONSERVATION PRACTICE: 533 - Pumping Plant

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Air

ENHANCEMENT LIFE SPAN: 15 years

Enhancement Description

Switch the fuel source for the pump motor(s) to an on-farm renewable source (wind, solar, geothermal, etc.).

Criteria

- Replace an existing pump motor with a drive unit that is powered by a renewable source such as wind, solar, geothermal, etc. that can adequately maintain the existing operating conditions, flow rates and pressures.
- The replacement or retrofit system and related components or devices meet or exceed currently applicable federal, state, and local standards and guidelines.
- Components of this enhancement will meet the NRCS Conservation Practice Standard Pumping Plant (Code 533).



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

Prior to implementation:

- ☐ Evaluate current operating conditions of the existing pump(s) including season of use and motor needs.
- ☐ Evaluate site specific renewable energy alternatives.
- ☐ Evaluate options during lack of production of renewable energy source.

During implementation

- ☐ Ensure installation meets federal National Electrical Code and any local or state codes.

After implementation

- ☐ Monitor and maintain system for the life span of the practice (10 years).

NRCS will:

Prior to implementation

- ☐ Provide and explain NRCS Conservation Practice Standard Pumping Plant (Code 533) as it relates to implementing this enhancement.
- ☐ As needed, provide additional technical assistance to the participant as requested.
- ☐ Review with the participant the costs and benefits of conversion to renewable energy source.
- ☐ Develop written specifications describing site specific details of installation, including:
 - ☐ The replacement or retrofit system and/or related components or devices.
 - ☐ Plan view showing the location of the measures in relation to other structures or natural features, where appropriate.
 - ☐ Method used to protect existing power provider from back feed from renewable source.
 - ☐ Electrical components that meet the requirements of the National Electrical Code.
 - ☐ Operation and maintenance plan that is consistent with the purpose(s) of this practice, its intended life, and safety requirements.



CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E570A

Enhanced Rain Gardens for Wildlife

Conservation Practice 570: Stormwater Runoff Control

APPLICABLE LAND USE: Crop (Annual & Mixed), Crop (Perennial),
Associated Ag Land & Farmstead

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Seed or plug nectar and pollen producing plants into rain gardens to provide wildlife habitat.

Criteria

Establish habitat for Monarchs, pollinators and beneficial insects as described below:

Monarch butterflies

- Lists of larval host plants and nectar plants suitable for Monarch butterfly habitat are provided in the NRCS Field Office Technical Guide (FOTG).
- A grass component to a Monarch habitat planting is commonly needed for ecological stability, weed control, and fuel for prescribed burning. The FOTG provides information on the grass/forb ratio for Monarch habitat plantings.
- To provide food (nectar and pollen) for adult Monarch butterflies, at least 60% of the forb seeds (pure live seed) in the mix shall be from the Monarch butterfly planting list (FOTG). Milkweed seeds are included in meeting the 60% minimum because milkweeds are excellent nectar plants. The FOTG provides information on the required number of forb species per bloom period (early, mid, or late season) for Monarch habitat plantings. Bloom periods are to coincide with Monarch presence in the area.



- To provide food for Monarch butterfly larvae, plantings shall include at least one species of milkweed (*Asclepias* spp.) from the FOTG Monarch butterfly planting list. All milkweed species used in the mix must be from this list and shall represent at least 1.5% of the total seeds in the mix. The total seeds include pure live seed from both grass and forbs. Tropical milkweed (*Asclepias curassavica*) shall not be planted.

Waiver: In some regions, a commercial source of native Asclepias species is limited or not available. In these situations, the NRCS State Conservationist may apply for a waiver, and only require that plantings include Monarch nectaring species. In this situation, milkweed seed or plugs are still encouraged to be planted, if possible. If such a waiver is granted, the mix will result in at least 80% of the seed being from the state's Monarch nectaring plant list.

- If a Monarch Butterfly Wildlife Habitat Evaluation Guide (WHEG) is available for use in the state, a minimum planned Monarch WHEG score of 0.60 will be obtained for the planted area.

Planting criteria for Monarch butterfly habitat

- Site selection should consider existing weed pressures and available methods of control. Delay planting and conduct an additional growing season of weed control if high weed pressure requires aggressive treatment.
- Successful establishment is when the planting is providing at least 80 percent soil cover, visually estimated, and that the resultant cover consists of at least 1 milkweed plant per 100-sq. ft., and successful establishment of at least two targeted nectar plants per bloom period when Monarchs are present in the state. A milkweed plant is defined as a single stem emerging from the ground.
- Insecticides should not be used in the rain garden or immediately adjacent area.
- Herbicides are allowed during site preparation (prior to planting) when it is necessary to eliminate competing weeds from a planting area in order for nectar and pollen producing plants to establish. After a Monarch habitat enhancement has been planted, herbicides may be spot-sprayed to remove broad-leaf weeds, or grass-selective herbicides may be applied to larger areas to eliminate persistent weedy grasses. Similarly, in the first year post-planting, the entire site may be mowed 8 to 10 inches high to reduce annual or biennial weeds that persist (site should be mowed just before dominant annual weeds flower).

Operation and maintenance for Monarch butterfly habitat

- Management and/or maintenance activities such as mowing, haying, burning, or grazing shall be conducted outside of the season when Monarch larvae or adults are present.



- Insecticides will not be used in the habitat planting area.
- The planted habitat areas must be regularly inspected for invasive and/or noxious plants or other plants that may compromise the purpose of this enhancement. Undesirable species should be controlled using the least damaging method, for example, spot-spraying with herbicide or physical removal of individual plants.



Documentation and Implementation Requirements

Participant will:

- ☐ Take before and after photos of the rain garden.
- ☐ During implementation, purchase specified seed mix or plant materials that meet planting requirements provided by NRCS. Provide seed tags to NRCS.
- ☐ During implementation, follow habitat establishment guidance provided by NRCS.
- ☐ After implementation, provide a list of management and/or maintenance activities carried out to manage the habitat areas and the dates on which those activities occurred.

NRCS will:

- ☐ Prior to implementation, assess habitat condition using a monarch Wildlife Habitat Evaluation Guide (WHEG) to calculate current WHEG score and anticipated WHEG score after implementation of Enhancement.
 - **Benchmark WHEG score = _____ Planned Post Implementation WHEG score = _____**
- ☐ Prior to implementation, confirm installation of NRCS Conservation Practice Standard Storm Water Runoff Control (Code 570) State specifications have been met and installation of E5701A enhancement is feasible.
- ☐ Prior to implementation, provide participant with guidance to establish the planting and a site specific mix. Provide mix designs with plants suitable for pollinator and beneficial insect habitat, including larval host and nectar plants, with as many native species as practical.
- ☐ Prior to implementation, provide and explain State specifications for NRCS Conservation Practice Standard Conservation Cover (Code 420).
- ☐ Prior to implementation, provide participant with a recommended seed mix and planting specifications per above criteria (grass/forb ratio; number of forb species per bloom period for Monarch habitat plantings)
- ☐ After implementation, verify successful establishment (per planting criteria above) and collect supporting documentation (seed tags, pictures) from participant.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



OHIO SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E570A

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E570A the following additional criteria apply in Ohio:

- An existing rain garden is required for this enhancement. During the I&E phase, NRCS is responsible for confirming that the rain garden meets NRCS standards and specs and that the enhancement is feasible. If the original design and construction information for the rain garden is not available, do not plan this enhancement. Engineering job approval authority for Stormwater Runoff Control (CPS 570) applies.
- Include a minimum of 9 species of pollinator-friendly forbs/legumes from acceptable species list; in addition to the above 9 species, mixes must include a minimum of 2 milkweed species (1 species shall be common milkweed). Resulting in a minimum requirement of an 11 species seed mix. Wildflower and legume species planted are encouraged to be native. However, beneficial introduced flowering plants may be part of the seed mix.
- Grasses are required, native non-sod-forming bunch grasses are preferred. These native grasses provide additional structure to rain garden, knitting together to hold soil in place and prevent erosion. Grasses should be included throughout the rain garden, but especially concentrated at water entry and exit points. For a list of acceptable grass species. Refer to Appendix A Table 2a.
- The list below contains plant species that are highly and very highly recommended for monarch butterfly habitat establishment; this list can be used when selecting plant species to establish under this enhancement. Additional plant list for use can be found Appendix A Wildlife Habitat (Ohio FOTG, Section IV, Old Section IV, Appendices) for additional recommendations on species to plant. For a more comprehensive list see Recommended Pollinator Plant Species list found in FOTG, Section IV, Ecological Science Tools.
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CONSERVATION STEWARDSHIP PROGRAM

- Establishment may be done by seeding and/or planting plugs. Plugs are generally recommended for milkweed plants in all cases and for high value forbs especially in areas with already established vegetation.
- On page 4, D. Operation and maintenance for monarch butterfly habitat, the second bulletin states "Insecticides should not be used in the habitat planting area."; in addition to no spraying in the habitat planting area, also seriously consider the effects of drift if insecticides are applied to adjacent crop areas and consider use of measures to mitigate this effect.
- Habitat conditions will be evaluated using the NRCS Monarch WHEG: Midwest or Appalachian Edition (depending on your location in Ohio) found in Ohio EFOTG, Section I, Assessment Procedures, 5. Wildlife Habitat, Monarch Butterfly

Additional Documentation Requirements for Ohio

- Documentation to show that the planting occurred within the approved planting time period and all other requirements were met.



CONSERVATION STEWARDSHIP PROGRAM

Species name	Plant symbol	Common name	Growth habit	Monarch Value	Bloom Period		
					Early	Mid	Late
<i>Agastache nepetoides</i>	AGNE2	yellow giant hyssop	forb/herb, subshrub	High		x	x
<i>Amorpha canescens</i>	AMCA6	leadplant	shrub, subshrub	High		x	
<i>Amsonia tabernaemontana</i>	AMTA2	eastern bluestar	forb/herb	High	x		
<i>Apocynum cannabinum</i>	APCA	Indianhemp	forb/herb	High	x	x	
<i>Asclepias incarnata</i>	ASIN	swamp milkweed	forb/herb	Very High		x	x
<i>Asclepias ovalifolia</i>	ASOV	oval-leaf milkweed	forb/herb	High	x	x	
<i>Asclepias purpurascens</i>	ASPU2	purple milkweed	forb/herb	High	x	x	
<i>Asclepias speciosa</i>	ASSP	showy milkweed	forb/herb	High	x	x	x
<i>Asclepias sullivantii</i>	ASSU3	prairie milkweed	forb/herb	High		x	
<i>Asclepias syriaca</i>	ASSY	common milkweed	forb/herb	Very High		x	
<i>Asclepias tuberosa</i>	ASTU	butterfly weed	forb/herb	Very High	x	x	
<i>Asclepias verticillata</i>	ASVE	whorled milkweed	forb/herb	Very High	x	x	x
<i>Bidens aristosa</i>	BIAR	bearded beggarticks	forb/herb	Very High		x	
<i>Bidens laevis</i>	BILA	smooth beggartick	forb/herb	High		x	x
<i>Blephilia ciliata</i>	BECI	downy pagoda-plant	forb/herb	High	x	x	
<i>Blephilia hirsuta</i>	BLHI	hairy pagoda-plant	forb/herb	High	x	x	x
<i>Boltonia asteroides</i>	BOAS	white doll's daisy	forb/herb	High		x	x
<i>Brickellia eupatorioides</i>	BREU	false boneset	forb/herb, subshrub	High		x	x
<i>Cirsium discolor</i>	CIDI	field thistle	forb/herb	High		x	x
<i>Cirsium flodmanii</i>	CIFL	Flodman's thistle	forb/herb	High		x	x
<i>Cirsium muticum</i>	CIMI	swamp thistle	forb/herb	High		x	x
<i>Conoclinium coelestinum</i>	COCO13	blue mistflower	forb/herb	High		x	x
<i>Coreopsis palmata</i>	COPA10	stiff tickseed	forb/herb	High		x	
<i>Coreopsis tripteris</i>	COTR4	tall tickseed	forb/herb	High		x	x
<i>Dalea candida</i>	DACA7	white prairie clover	forb/herb, subshrub	High	x	x	
<i>Delphinium tricorne</i>	DETR	dwarf larkspur	forb/herb	High			
<i>Dicentra cucullaria</i>	DICU	dutchman's breeches	forb/herb	High	x		



CONSERVATION STEWARDSHIP PROGRAM

Species name	Plant symbol	Common name	Growth habit	Monarch Value	Bloom Period		
					Early	Mid	Late
<i>Doellingeria umbellata</i>	DOUM2	parasol whitetop	forb/herb	High		x	x
<i>Echinacea angustifolia</i>	ECAN2	blacksamson echinacea	forb/herb	High	x	x	
<i>Echinacea pallida</i>	ECPA	pale purple coneflower	forb/herb	High	x	x	
<i>Echinacea purpurea</i>	ECPU	eastern purple coneflower	forb/herb	Very High	x	x	x
<i>Eryngium yuccifolium</i>	ERYU	rattlesnake master	forb/herb	High	x	x	
<i>Eupatorium altissimum</i>	EUAL3	tall thoroughwort	forb/herb	Very High		x	x
<i>Eupatorium perfoliatum</i>	EUPE3	common boneset	forb/herb	High		x	x
<i>Eupatorium serotinum</i>	EUSE2	late-flowering thoroughwort	forb/herb	Very High		x	x
<i>Euthamia graminifolia</i>	EUGR5	grass-leaved goldentop	forb/herb	Very High	x	x	x
<i>Eutrochium fistulosum</i>	EUF14	trumpetweed	forb/herb	High		x	x
<i>Eutrochium maculatum</i>	EUMA9	spotted joe pye weed	forb/herb	Very High		x	x
<i>Eutrochium purpureum</i>	EUPU21	sweetscented joe pye weed	forb/herb	High		x	x
<i>Helianthus annuus</i>	HEAN3	common sunflower	forb/herb	Very High		x	x
<i>Helianthus giganteus</i>	HEGI	giant sunflower	forb/herb	High		x	x
<i>Helianthus grosseserratus</i>	HEGR4	sawtooth sunflower	forb/herb	Very High		x	x
<i>Helianthus maximiliani</i>	HEMA2	Maximilian sunflower	forb/herb	High		x	x
<i>Helianthus pauciflorus</i>	HEPA19	stiff sunflower	forb/herb	High		x	x
<i>Helianthus strumosus</i>	HEST	Paleleaf woodland sunflower	forb/herb	High		x	x
<i>Helianthus tuberosus</i>	HETU	Jerusalem artichoke	forb/herb	High		x	x
<i>Helianthus *laetiflorus</i>	HELA	cheerful sunflower	forb/herb	High		x	x
<i>Heliopsis helianthoides</i>	HEHE5	smooth oxeye	forb/herb	High		x	x
<i>Krigia biflora</i>	KRBI	twoflower dwarf dandelion	forb/herb	High	x	x	
<i>Liatis aspera</i>	LIAS	tall blazing star	forb/herb	Very High			x
<i>Liatis cylindracea</i>	LICY	Ontario blazing star	forb/herb	Very High		x	
<i>Liatis ligulistylis</i>	LILI	Rocky Mountain blazing star	forb/herb	Very High		x	x
<i>Liatis punctata</i>	LIPU	dotted blazing star	forb/herb	High		x	x



CONSERVATION STEWARDSHIP PROGRAM

Species name	Plant symbol	Common name	Growth habit	Monarch Value	Bloom Period		
					Early	Mid	Late
<i>Liatris pycnostachya</i>	LIPY	prairie blazing star	forb/herb	High		x	x
<i>Liatris scariosa</i>	LISC2	devil's bite	forb/herb	High		x	x
<i>Liatris spicata</i>	LISP	dense blazing star	forb/herb	High		x	x
<i>Lilium superbum</i>	LISU	turk's-cap lily	forb/herb	High		x	x
<i>Lithospermum canescens</i>	LICA12	hoary puccoon	forb/herb	High	x	x	
<i>Lobelia siphilitica</i>	LOSI	great blue lobelia	forb/herb	High		x	x
<i>Mertensia virginica</i>	MEVI3	Virginia bluebells	forb/herb	High	x	x	
<i>Monarda fistulosa</i>	MOFI	wild bergamot	forb/herb, subshrub	High	x	x	x
<i>Monarda punctata</i>	MOPU	spotted beebalm	forb/herb, subshrub	High	x	x	
<i>Oligoneuron rigidum</i>	OLRI	stiff goldenrod	forb/herb	High		x	x
<i>Onosmodium bejarriense</i>	ONBE	western marblesseed	forb/herb	High		x	
<i>Phlox divaricata</i>	PHDI5	wild blue phlox	forb/herb	High	x		
<i>Phlox glaberrima</i>	PHGL4	smooth phlox	forb/herb	High	x	x	
<i>Phlox paniculata</i>	PHPA6	fall phlox	forb/herb	High		x	
<i>Physostegia virginiana</i>	PHVI8	obedient plant	forb/herb	High		x	x
<i>Rubus flagellaris</i>	RUFL	northern dewberry	subshrub	High	x	x	
<i>Rudbeckia hirta</i>	RUHI2	blackeyed Susan	forb/herb	High		x	x
<i>Silphium integrifolium</i>	SIIN2	wholeleaf rosinweed	forb/herb	High		x	x
<i>Silphium laciniatum</i>	SILA3	compassplant	forb/herb	High		x	x
<i>Silphium perfoliatum</i>	SIPE2	cup plant	forb/herb	High		x	x
<i>Sium suave</i>	SISU2	hemlock waterparsnip	forb/herb	High		x	x
<i>Solidago canadensis</i>	SOCA6	Canada goldenrod	forb/herb	High			x
<i>Solidago nemoralis</i>	SONE	gray goldenrod	forb/herb	High		x	x
<i>Solidago speciosa</i>	SOSP2	showy goldenrod	forb/herb	Very High			x
<i>Symphotrichum cordifolium</i>	SYCO4	common blue wood aster	forb/herb	High		x	x
<i>Symphotrichum laeve</i>	SYLA3	smooth aster	forb/herb	High		x	x
<i>Symphotrichum novae-angliae</i>	SYNO2	New England aster	forb/herb	Very High		x	x
<i>Symphotrichum oolentangiense</i>	SYOO	skyblue aster	forb/herb, subshrub	High		x	x



CONSERVATION STEWARDSHIP PROGRAM

Species name	Plant symbol	Common name	Growth habit	Monarch Value	Bloom Period		
					Early	Mid	Late
<i>Symphotrichum pilosum</i>	SYPI2	hairy white oldfield aster	forb/herb	High		x	x
<i>Verbena stricta</i>	VEST	hoary verbena	forb/herb	High		x	
<i>Vernonia baldwinii</i>	VEBA	Baldwin's ironweed	forb/herb	High		x	x
<i>Vernonia fasciculata</i>	VEFA2	prairie ironweed	forb/herb	High		x	x
<i>Veronicastrum virginicum</i>	VEVI4	Culver's root	forb/herb	High		x	x

Notes and comments on this National Enhancement

A Wildlife Habitat Evaluation Guide (WHEG), must be used to show that a minimum planned Monarch WHEG score of 0.60 will be obtained for the planted area.

Monarch Wildlife Habitat Evaluation Guide (WHEG): Midwest or Appalachian Edition 2.0 will be used to determine the final planned WHEG value after the enhancement or combination of conservation practices and enhancements are applied.

NRCS Rain Garden Fact Sheet:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcs142p2_008528

Xerces Rain Garden Info:

<https://www.xerces.org/blog/rain-gardens-are-winwin>



CONSERVATION ENHANCEMENT ACTIVITY

E578A

CONSERVATION STEWARDSHIP PROGRAM

Stream crossing elimination

Conservation Practice 578: Stream Crossing

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Range; Forest; Farmstead; Associated Ag Land

RESOURCE CONCERN: Animals

PRACTICE LIFE SPAN: 10 years

Enhancement Description

Existing stream crossings on an operation are consolidated into fewer crossings in order to reduce impacts to stream habitat.

Criteria

- Minimize the number of stream crossings through evaluation of alternative trail or travel-way locations. Assess land user operations to consolidate and reduce the number of crossings in order to minimize habitat fragmentation and to minimize barriers to aquatic organism movement.
- Evaluate proposed crossing removal sites for variations in stage and discharge, tidal influence, hydraulics, fluvial geomorphic impacts, sediment transport and flow continuity, groundwater conditions, and movement of woody and organic material. Assess the effects of removal upon the channel with respect to local site conditions and stream geomorphology, to the extent possible.
- Road crossing removal can affect wetlands, flooding potential, existing infrastructure, and social and cultural practices and resources. Evaluate and address the full range of impacts when planning or designing removal projects.
- Replacing or removing an existing instream structure may trigger channel adjustments upstream and/or downstream of the crossing. Mitigate undesirable channel plan or profile shifts resulting from the removal of crossing.



CONSERVATION STEWARDSHIP PROGRAM

- Return the stream to a condition to provide passage for as many different aquatic species and age classes as possible.
- Incorporate natural streambed substrates throughout the removed crossing length. Natural streambeds provide numerous passage and habitat benefits to many life stage requirements for fish and other aquatic organisms.
- Retain as much riparian and streambank vegetation as possible during crossing removal to maintain shade, riparian continuity, and sources of nutrient and structural inputs for aquatic ecosystems. Plant all areas to be revegetated as soon as practical after crossing structure removal.
- Where appropriate, consider removing associated access roads or trails and restoring native vegetation representative of the site.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, develop a written plan detailing proposed stream crossing removal and associated actions using Conservation Practice Standards Stream Crossing (Code 578), Aquatic Organism Passage (Code 396), and Streambank and Shoreline Protection (Code 580). (NRCS will provide technical assistance, as needed.)
- ☐ Prior to implementation, obtain all necessary Clean Water Act, Section 404 permits, and other federal, state or local permits, as required.
- ☐ During implementation, use erosion control methods based upon specifications developed for the site.
- ☐ Where necessary, prior to crossing structure removal, remove upstream accumulation of sediment from behind the structure.
- ☐ Remove the structure (culvert, bridge) and associated embankment materials as much as possible from the bank with as little encroachment into the stream as possible.
- ☐ Where necessary, replace natural streambed rock, cobble, and gravel throughout the removed crossing length.
- ☐ After structure removal, blend the stream bank at the former crossing into existing site topography. Use streambank soil revegetation and stabilization measures that are appropriate to maintain bank stability and prevent erosion.
- ☐ Where appropriate, remove crossing-associated access roads or trails and restore native vegetation representative of the site.
- ☐ During implementation, notify NRCS of any planned changes to verify the planned system meets the enhancement criteria.
- ☐ After implementation, conduct inspections after high flows and undertake prompt actions if there is excessive streambank or streambed instability or erosion.

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement, including NRCS engineering oversight where required.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standards Stream Crossing (Code 578), Aquatic Organism Passage (Code 396), and Streambank and Shoreline Protection (Code 580) as it relates to implementing this enhancement.
- ☐ Prior to implementation, ensure that stream will not be actively incising or down cutting after the crossing removal.
- ☐ Prior to implementation, ensure that all necessary Clean Water Act, Section 404, and other federal, state, or local permits have been acquired.
- ☐ Prior to implementation, as needed, develop a written plan detailing proposed stream crossing removal and associated actions using Conservation Practice Standards Stream Crossing (Code 578), Aquatic Organism Passage (Code 396), and Streambank and Shoreline Protection (Code 580).
- ☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- ☐ During implementation, verify all erosion control needed for the site is functioning and is maintained to specifications developed for the site.
- ☐ After implementation, verify that the stream crossing removal and follow-up channel and streambank actions, and removal of crossing-associated access roads or trails was implemented according to the plan and specifications developed for the site.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E580A

CONSERVATION STEWARDSHIP PROGRAM

Stream corridor bank stability improvement

Conservation Practice 580: Streambank and shoreline protection

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Range; Forest; Farmstead; Associated Ag Land

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 20 years

Enhancement Description:

Stream corridor bank vegetation components are established to provide additional stream corridor bank stability.

Criteria:

- This enhancement can be applied to streambanks and adjacent floodplain/riparian area of natural channels where the channel is susceptible to erosion and migration.
- Stream corridor vegetative components must be established as necessary for ecosystem functioning and stability. The appropriate composition of vegetative components is a key element in preventing excess long-term channel migration in re-established stream corridors.
- Dominant vegetation will consist of existing, naturally-regenerated, or seeded/planted trees and shrubs suited to the soil and hydrology of the site. Vegetation established on channel banks and adjoining areas must be in accordance with NRCS Conservation Practice Standard Critical Area Planting (Code 342).
- Vegetation cover that promotes sediment deposition should be used to help floodplain development and growth. Overland flow should be maintained as sheet flow through the adjacent floodplain/riparian area to prevent erosion and promote sediment deposition.



CONSERVATION STEWARDSHIP PROGRAM

- Utilize vegetative species that are native and/or compatible with local ecosystems. Avoid introduced, invasive, noxious or exotic species that could become nuisances. Where possible, select plant materials that also provide habitat requirements for desirable wildlife and pollinators.
- Treatments should meet aesthetic and recreational objectives as determined by a site-specific assessment or management plan. Aesthetic objectives should be based on human needs, including visual quality, noise control, and microclimate control. Treatments should be designed to achieve recreation objectives as determined by a site-specific assessment or management plan. Safety requirements shall be based on type of human use and recreation objectives.
- Construction materials, grading practices, and other site development elements must be selected and designed to be compatible with adjacent land uses.
- Livestock exclusion must be considered during establishment of vegetative treatments and appropriate grazing practices applied after establishment to maintain plant community integrity. Wildlife may also need to be controlled during establishment of vegetative treatments. Temporary and local population control methods should be used with caution and within state and local regulations.
- Design the stream corridor and bank vegetation enhancement for an expected life of at least 20 years. Protective treatments must be self-sustaining or require minimum maintenance.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, prepare the planned acres for tree or shrub establishment. Refer to NRCS Conservation Practice Standards Streambank and Shoreline Protection (Code 580) and Critical Area Planting (Code 342). (NRCS will provide technical assistance, as needed.)

- ☐ Prior to implementation, select a combination of deep-rooted trees and shrubs appropriate for preventing bank erosion, promoting sedimentation, and limiting long-term channel migration. If possible, select plant materials that also provide habitat for desirable wildlife and pollinators (NRCS will provide technical assistance, as needed.)

Species / Type	Number	Wildlife habitat characteristic(s), if any

- ☐ Prior to implementation, select arrangement and spacing design to maximize erosion control and planting techniques and timing appropriate for the site and soil conditions. (NRCS will provide technical assistance, as needed.)

TASKS	Species/Type	Species/Type	Species/Type	Species/Type	Species/Type
Planting Date					
Planting Technique					
Arrangement/Spacing					

- ☐ During implementation, use erosion control methods based upon specifications developed for the site.
- ☐ After implementation, protect the area from livestock until vegetation is well-established, and, if necessary, control wildlife access within state and local regulations.
- ☐ After implementation, conduct inspections after high flows and undertake prompt actions if there is excessive streambank or streambed instability or erosion.



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, verify the enhancement is planned for acres that have been appropriately graded and prepared for tree and shrub establishment. Refer to NRCS Conservation Practice Standards Streambank and Shoreline Protection (Code 580) and Critical Area Planting (Code 342).
- ☐ Prior to implementation, verify no plants on the Federal or state noxious weeds list are included.
- ☐ As needed, prior to implementation, NRCS will provide technical assistance for:
 - Selecting a combination of appropriate, deep-rooted tree and shrub species for preventing bank erosion, promoting sedimentation, and limiting long-term channel migration.
 - Selecting appropriate arrangement and spacing design to maximize erosion control and planting techniques and timing appropriate for the site and soil conditions.
 - Planning the use of additional erosion control, as needed for the site.
 - Preparing specifications for applying this enhancement using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.
- ☐ During implementation, verify all erosion control needed for the site is functioning and is maintained to specifications developed for the site.
- ☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- ☐ After implementation, verify the planned trees and shrub species were established to specifications developed for the site.
- ☐ After implementation, verify the planting is protected from livestock and, as necessary, from wildlife.
- ☐ After implementation, verify planned erosion control provided by the site is functioning and is maintained to specifications developed for the site.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E580B

CONSERVATION STEWARDSHIP PROGRAM

Stream corridor bank vegetation improvement

Conservation Practice 580: Streambank and shoreline protection

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Range; Forest; Farmstead; Associated Ag Land

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 20 years

Enhancement Description

Stream corridor bank vegetation components are established to improve ecosystem functioning and stability.

Criteria

- This enhancement can be applied to streambanks and adjacent floodplain/riparian area of natural channels where the channel is susceptible to erosion.
- Stream corridor vegetative components shall be established as necessary for ecosystem functioning and stability. The appropriate composition of vegetative components is a key element in preventing excess long-term channel migration in re-established stream corridors.
- Establishment of vegetation on channel banks and associated areas shall also be in accordance with NRCS Conservation Practice Standard Critical Area Planting (Code 342).
- Utilize vegetative species that are native and/or compatible with local ecosystems. Avoid introduced, invasive, noxious or exotic species that could become nuisances.
- Select plant materials that provide habitat requirements for desirable wildlife and pollinators.



CONSERVATION STEWARDSHIP PROGRAM

- Treatments shall be designed to achieve habitat and population objectives for fish and wildlife species or communities of concern as determined by a site-specific assessment or management plan. Objectives shall be based on the survival and reproductive needs of populations and communities, which include habitat diversity, habitat linkages, daily and seasonal habitat ranges, limiting factors and native plant communities.
- The type, amount, and distribution of vegetation shall be based on the requirements of the fish and wildlife species or communities of concern to the extent possible.
- Treatments shall be designed to meet aesthetic objectives as determined by a site-specific assessment or management plan. Aesthetic objectives shall be based on human needs, including visual quality, noise control, and microclimate control.
- Construction materials, grading practices, and other site development elements shall be selected and designed to be compatible with adjacent land uses.
- Treatments shall be designed to achieve recreation objectives as determined by a site-specific assessment or management plan. Safety requirements shall be based on type of human use and recreation objectives.
- Livestock exclusion shall be considered during establishment of vegetative treatments and appropriate grazing practices applied after establishment to maintain plant community integrity. Wildlife may also need to be controlled during establishment of vegetative treatments. Temporary and local population control methods should be used with caution and within state and local regulations.
- Design the stream corridor and bank vegetation enhancement for an expected life of at least 20 years.



Documentation and Implementation Requirements

CONSERVATION STEWARDSHIP PROGRAM

Participant will:

- ☐ Prior to implementation, prepare the planned acres for tree or shrub establishment. Refer to NRCS Conservation Practice Standards Streambank and Shoreline Protection (Code 580) and Critical Area Planting (Code 342). (NRCS will provide technical assistance, as needed.)
- ☐ Prior to implementation, select a combination of deep-rooted trees and shrubs appropriate for preventing bank erosion, promoting sedimentation, and limiting long-term channel migration. These plant materials should also provide habitat for wildlife, pollinators, and fish species as determined by a site-specific assessment or management plan (NRCS will provide technical assistance, as needed.)

Plant Species / Type	Number	Planted for what wildlife, pollinators, fish:

- ☐ Prior to implementation, select arrangement and spacing design to maximize erosion control and planting techniques and timing appropriate for the site and soil conditions. (NRCS will provide technical assistance, as needed.)

TASKS	Species/Type	Species/Type	Species/Type	Species/Type	Species/Type
Planting Date					
Planting Technique					
Arrangement/Spacing					

- ☐ During implementation, use erosion control methods based upon specifications developed for the site.
- ☐ After implementation, protect the area from livestock until vegetation is well-established, and, if necessary, control wildlife access within state and local regulations.
- ☐ After implementation, conduct inspections after high flows and undertake prompt actions if there is excessive streambank or streambed instability or erosion.



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, verify the enhancement is planned for acres that have been appropriately graded and prepared for tree and shrub establishment. Refer to NRCS Conservation Practice Standard Critical Area Planting (Code 342).
- ☐ Prior to implementation, verify no plants on the Federal or state noxious weeds list are included.
- ☐ As needed, prior to implementation, NRCS will provide technical assistance:
 - Developing a Wildlife Habitat Management Plan for targeted suite of species.
 - Meeting with participant to review the Wildlife Habitat Management Plan and plan and specifications.
 - Selecting a combination of appropriate, deep-rooted tree and shrub species for preventing bank erosion, promoting sedimentation, and limiting long-term channel migration and achieving habitat and species objectives.
 - Selecting appropriate arrangement and spacing design to maximize erosion control and planting techniques and timing appropriate for the site and soil conditions.
 - Planning the use of additional erosion control, as needed for the site.
 - Preparing specifications for applying this enhancement using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.
- ☐ During implementation, verify all erosion control needed for the site is functioning and is maintained to specifications developed for the site.
- ☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- ☐ After implementation, verify the planned trees and shrub species were established to specifications developed for the site.
- ☐ After implementation, verify the planting is protected from livestock and, as necessary, from wildlife.
- ☐ After implementation, verify planned erosion control provided by the site is functioning and is maintained to specifications developed for the site.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO
CONSERVATION ENHANCEMENT ACTIVITY**

**CONSERVATION
STEWARDSHIP
PROGRAM**

E580B

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E580B the following additional criteria apply in Ohio:

- Utilize Appendix B-Tree/Shrub Recommendations found in Ohio FOTG, Section IV, Appendices for selecting appropriate tree or shrub species for this enhancement. Preference is for species that have rooting systems that will stabilize banks and for species tolerant of wetness.

- **Recommended species** for this enhancement in Ohio are:

Trees: Black Willow, River Birch, Sweetgum, Sycamore, Red Maple, Silver Maple

Shrubs: Common Alder, Winterberry, Silky Dogwood, Red-osier Dogwood, American Cranberrybush

- Spacings of shrub plantings shall be based on Ohio EFOTG, Section IV, Appendix B.

Additional Documentation Requirements for Ohio

There are no additional documentation requirements that apply in Ohio.

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CONSERVATION ENHANCEMENT ACTIVITY

E590A

CONSERVATION STEWARDSHIP PROGRAM

Improving nutrient uptake efficiency and reducing risk of nutrient losses

Conservation Practice 590: Nutrient Management

APPLICABLE LAND USE: Crop (Annual and Mixed), Crop (Perennial)

RESOURCE CONCERN: Water, Air

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses to surface and groundwater and reduce risks to air quality by reducing emissions of greenhouse gases (GHGs).

The wide variability of soils, rainfall, fertilizer rates, products, placement, and timing will all influence the actual crop yield. Enhanced fertilizer products are not a yield enhancement guarantee. Products that claim yield enhancement benefits may not be applicable to this enhancement.

Note: Some technologies in this enhancement apply to use of commercial fertilizer only.

Criteria

- Documentation of producer's record of nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.



Select two or more (not already utilized) strategies for nutrient use efficiency:

CONSERVATION STEWARDSHIP PROGRAM

Strategy 1: Enhanced Efficiency Fertilizers (EEF) which contain **nitrification inhibitor** products resulting in delayed nitrification processes, by eliminating the bacteria *Nitrosomonas* in the area where ammonium is to be present.

- Materials must be defined by the Association of American Plant Food Control Officials (AAPFCO) and be accepted for use by the State fertilizer control official, or similar authority, with responsibility for verification of product guarantees, ingredients (by AAPFCO definition) and label claims.
- Application timing, method, N source, soil texture, and tillage regime are all factors that should be evaluated to determine where nitrification inhibitors should be used. Before buying an inhibitor make sure scientific evidence backs up all claims. Producers and/or consultants should be wary of any product that does not have solid scientific data demonstrating that the inhibitor activity matches the advertised benefit.
- EEF products must be recommended by state Land Grant University (LGU) and concurred with by NRCS on all treatment acres to supply at least 50% of the pre-emergent and early post emergent LGU recommended nitrogen budget requirements for the crop(s) grown. Common chemical products used to interrupt the nitrification process include, Dicyandiamide (DCD), and 2-chloro-6 (trichloromethyl) pyridine.

Strategy 2: Enhanced Efficiency Fertilizer (EEF) products which contain **urease inhibitor** products to temporarily reduce the activity of the urease enzyme and slow the rate at which urea is hydrolyzed.

- Materials must be defined by the Association of American Plant Food Control Officials (AAPFCO) and be accepted for use by the State fertilizer control official, or similar authority, with responsibility for verification of product guarantees, ingredients (by AAPFCO definition) and label claims.
- Application timing, method, N source, soil texture, and tillage regime are all factors that should be evaluated to determine where urease inhibitors should be used. Before buying an inhibitor make sure scientific evidence backs up all claims. Producers and/or consultants should be wary of any product that does not have solid scientific data demonstrating that the inhibitor activity matches the advertised benefit.



CONSERVATION STEWARDSHIP PROGRAM

- EEF products must be recommended by state Land Grant University (LGU) and concurred with by NRCS on all treatment acres to supply at least 50% of the pre-emergent and early post emergent LGU recommended nitrogen requirements for the crop(s) grown.
- Common chemical products that are known to affect urease formation are N-(n-butyl) thiophosphoric triamide (NBPT) and ammonium thiosulfate (ATS).

Strategy 3: Slow-release or controlled release formulations of nitrogen fertilizer for at least 50% of the pre-plant and/or post emergent applications.

- Use of slow-release or controlled-release nitrogen fertilizer products to improve nutrient use efficiency.

Uncoated Nitrogen Fertilizers include: Ureaformaldehyde (UF) reaction products, Ureaform and Methylene ureas.

Coated Nitrogen Fertilizers include: Sulfur-coated fertilizers, Polymer-coated fertilizers and Polymer/sulfur coated fertilizers.

Strategy 4: Nature-based fertilizer and Soil Amendments

- Use of Nature-based Fertilizer and Soil Amendments such as bio-stimulants and bio-fertilizers to:
 - Enhance uptake and efficient use of nutrients, both applied and existing.
 - Improve soil health by enhancing beneficial soil microorganisms.
 - Stimulate root growth to increase water use efficiency.

Strategy 5: In-season soil nitrate sampling.

- Use pre-sidedress soil nitrate test (PSNT) to determine the need and/or amount of additional nitrogen to be applied during sidedress/topdress N application. Conduct a PSNT for the selected crop (e.g. corn) to determine if additional N fertilizer is needed.
- The use of PSNT is not recommended for all soil types and field situations. Consult your local state LGU for guidance.

Strategy 6: Use in-season plant tissue sampling and analysis as a complement to soil testing.

- Follow local LGU and/or laboratory guidelines for interpretations of the results and appropriate adjustments in the application of N and other nutrients. *End of season stalk*



nitrate testing is not applicable if the enhancement is only contracted for one year, as results must be used to evaluate and adjust nutrient management in the following year, as needed.

CONSERVATION STEWARDSHIP PROGRAM

Strategy 7: Split nutrient applications.

- Apply no more than 50% of total crop nitrogen needs within 30 days prior to planting (or in the case of hay or pasture after green up of dormant grasses). Apply the remaining nitrogen after crop emergence (or green up).
- Post emergent nitrogen may be reduced based on crop scouting, in-season soil sampling/analysis, or plant tissue sampling/analysis. Nutrient availability should be timed to crop uptake.

Strategy 8: Time nutrient application timing to match nutrient uptake timing.

- Apply nutrients no more than 30 days prior to planting date of annual crops. Nutrient availability should be timed to crop uptake.

Strategy 9: Nutrient placement below soil surface.

- Nutrients are injected or incorporated into the soil as soon as possible, no more than 24 hrs. of being applied.

Strategy 10: Use EEF technology for **phosphorous** fertilizer applications.

- EEF products must be recommended by state Land Grant University (LGU) and concurred with by NRCS.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements:

Participant will:

- ☐ Prior to implementation, provide documentation for review by NRCS showing a record of implementing nutrient management meeting all applicable NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater, including existing 590A strategies. List EEF strategies or materials that have been implemented: _____
- ☐ Prior to implementation, develop and document a planned nutrient budget, yield goal, and applications (pounds/acre active ingredient, nutrients must include at a minimum N-P-K).
- ☐ Prior to implementation, select two or more new nutrient use efficiency strategies or technologies not already used. **Selections:** _____
- ☐ During implementation, keep records to document actual nutrient applications (pounds/acre active ingredient, nutrients must include at a minimum N-P-K).
- ☐ During implementation, minimize soil surface disturbance during nutrient placement.
- ☐ During implementation, notify NRCS of any planned changes to verify the planned system meets the enhancement criteria.
- ☐ During implementation, additional record keeping requirements for specific strategy or technology:
 - In-season soil nitrate sampling. Records and documentation must include results (including reference strips) and adjustments in nutrient management based on results.
 - In-season plant tissue sampling and analysis. Records and documentation must include type of test used (stalk, leaf, chlorophyll, infrared, or other plant tissue), results (including reference strips), and adjustments in nutrient management based on results.
 - Nutrient placement below soil surface. Records and documentation must include method of injection or incorporation time and depth.
- ☐ After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Nutrient Management (CPS 590) as it relates to implementing this enhancement.
- ☐ Prior to implementation, review documentation to verify a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- ☐ Prior to implementation, verify the development of a planned nutrient budget, yield goal, and planned nutrient applications.
- ☐ Prior to implementation, verify the selection of two or more nutrient use efficiency strategies or technologies.
- ☐ During implementation, evaluate any planned changes to verify the planned system meets the enhancement criteria.
- ☐ After implementation, review documentation and records to verify implementation of the enhancement.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



**OHIO SUPPLEMENT TO
CONSERVATION ENHANCEMENT ACTIVITY**

**CONSERVATION
STEWARDSHIP
PROGRAM**

E590A

Additional Criteria for Ohio

In addition to the criteria specified in the National job sheet E590A the following additional criteria and criteria definitions apply in Ohio:

- Use Enhanced Efficiency Fertilizer (EEF) products with 1 or more nutrient applications.
 - Nitrogen or phosphorous EEF products recommended by state Land Grant University (LGU) and concurred with by NRCS on all treatment acres to supply at least 50% of the pre-emergent and early post emergent LGU recommended nitrogen or phosphorous requirements for the crop(s) grown.

Enhanced Efficiency Fertilizer Products Recognized in Ohio:

1. Controlled (slow) release fertilizers (polymer-coated N-P material)
2. Enhanced Efficiency Fertilizer most common active ingredient
 - Nitrification inhibitors
 - 2-chloro-6-(trichloromethyl)-pyridine (nitrapyrin)
 - Ammonium thiosulfate (ATS)
 - Dicyandiamide (DCD)
 - Urease inhibitors
 - N (n-butyl) thiophosphoric triamide (NBPT)

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CONSERVATION STEWARDSHIP PROGRAM

- Use in-season soil nitrate sampling.
 - Use pre-sidedress soil nitrate test (PSNT) to determine the need and/or amount of additional nitrogen to be applied during sidedress / topdress N application. Conduct a PSNT on a selected crop (e.g. corn) to test if additional N fertilizer is needed.

Pre-Sidedress Soil Nitrate Test PSNT in Ohio

- The Pre-Sidedress Soil Nitrate Test (PSNT) has limited value in Ohio because correlation studies of crop response have not been conducted in the state. The PSNT has been used to determine the likelihood of N availability on cropland that has had frequent or recent manure usage or in some cases N fixing cover or previous crops. If a nitrate test reads 25 ppm or higher no additional N is needed. Background levels using the PSNT tend to be 8-12 PPM. The response curve has not been developed for PSN levels between background and 25 PPM.

Therefore in Ohio the PSNT is used more as a Nitrogen Needed/Nitrogen Not Needed test. This is applicable to cropland that has had frequent or recent manure usage or in N fixing cover or previous crops.

- Use in-season plant tissue sampling and analysis as a complement to soil testing.
 - Follow local LGU and/or laboratory guidelines for interpretations of the results and appropriate adjustments in the application of N and other nutrients.

Ohio Agronomy Guide (Bulletin 472)

- The Ohio Agronomy Guide serves as the official compilation of adaptive results and recommendations from research and educational programs. A discussion of plant tissue testing is found on pages 29-30.
- This bulletin is available electronically at:
http://agcrops.osu.edu/sites/agcrops/files/imce/fertility/Ohio_Agronomy_Guide_b472.pdf
- To utilize this nutrient use efficiency strategy as a part of meeting the requirements of this enhancement tissue testing must be used to evaluate N and other nutrients. Tissue testing to evaluate the status of secondary and/or micronutrients alone does not meet the requirements of this strategy.

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CONSERVATION ENHANCEMENT ACTIVITY

E590B

CONSERVATION STEWARDSHIP PROGRAM

Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

CONSERVATION PRACTICE: 590 - NUTRIENT Management

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial)

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Precision application technology and techniques are utilized to plan and apply nutrients to improve nutrient use efficiency and reduce risk of nutrient losses.

Criteria

- Documentation of producer's record of nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- Minimize soil surface disturbance during fertilizer placement.
- Development of site-specific geo-referenced maps using soils data, current soil test results, and a precision agriculture system recommended by the Land Grant University or industry. Data is used to diagnose low, medium, and high productivity areas (management zones).
- Nutrient rates of application (minimum N-P-K) are planned and applied according to management zone.
- Utilize variable rate technology for nutrient application to reduce nutrient loss risk and improve nutrient use efficiency; variable rate technology may be map-based, sensor-based (crop canopy sensors), or manual.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation for review by NRCS showing a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- ☐ Prior to implementation, develop site-specific maps and use them to develop management zones within the field.
- ☐ Prior to implementation, develop and document a planned nutrient budget, yield goal, and applications by management zone (pounds/acre active ingredient nutrients, must include at a minimum N-P-K). Develop planned variable and flat rate application layers (maps and/or tabular statistics).
- ☐ During implementation, utilize variable rate technology. Variable rate technology may be map-based, sensor-based (crop canopy sensors), or manual.
- ☐ During implementation, keep records to document as applied records of actual variable rate applications (maps and/or tabular statistics).
- ☐ During implementation, minimize soil surface disturbance during fertilizer placement.
- ☐ During implementation, notify NRCS of any planned changes to verify the planned system meets the enhancement criteria.
- ☐ After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Nutrient Management (CPS 590) as it relates to implementing this enhancement.



CONSERVATION STEWARDSHIP PROGRAM

- ☐ Prior to implementation, review documentation to verify a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- ☐ Prior to implementation, verify the development of site-specific maps used to develop management zones within the field.
- ☐ Prior to implementation, verify the development of a planned nutrient budget, yield goal, and planned nutrient applications by management zone.
- ☐ During implementation, evaluate any planned changes to verify the planned system meets the enhancement criteria.
- ☐ After implementation, review documentation and records to verify implementation of the enhancement.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY
E590C

CONSERVATION
STEWARDSHIP
PROGRAM

Improving nutrient uptake efficiency and
reducing risk of nutrient losses on pasture

Conservation Practice 590: Nutrient Management

APPLICABLE LAND USE: Pasture

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses on pasture.

Criteria

- Documentation of producer's record of nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- For nitrogen (N), phosphorus (P), and potassium (K), plan application rates using land grant university (LGU) recommendations or industry practices when recognized by the LGU. Lower-than-recommended nutrient application rates are permissible if the client's objectives are met.
- Geo-referenced map of all current and planned hay feeding areas, watering facilities, shelters, or other potential areas of animal concentration.



CONSERVATION STEWARDSHIP PROGRAM

- Minimize soil surface disturbance during fertilizer placement.
- **Utilize two or more nutrient use efficiency strategies or technologies** to reduce nutrient loss risk and improve nutrient use efficiency. Select two or more of the strategies and technologies below:
 - Split nutrient applications.
 - Apply no more than 50% of total forage N needs before green up of dormant grasses. Apply the remaining N after green up.
 - Additional nitrogen applications may be reduced or eliminated based on forage scouting, in-season soil sampling/analysis, or plant tissue sampling/analysis.
 - Nutrient application placement below soil surface.
 - Nutrients are injected or incorporated using a minimal soil disturbance method at time of application.
 - Use variable rate technology for all nutrient applications. Variable rate technology may be map-based, sensor-based (crop canopy sensors), or manual. Requires the development of site-specific production maps using soils data, current soil test results, or a productivity monitoring system with GPS to correlate field location with productivity. Data is used to diagnose low, medium, and high productivity areas (pasture management zones).
 - Movement of hay feeding locations to distribute nutrients across the pasture(s) to avoid areas of nutrient concentration and sensitive areas. Develop a detailed hay feed movement plan, which includes soil sampling of the historic/current hay feeding areas and planned areas to assess status of soil nutrients. Monitoring required through annual soil sampling, geo-references photographs, and written records.
 - Adjust pH to the optimum level for legumes and forages. Apply soil amendments to adjust soil pH according to soil test recommendations. Monitoring required through



annual soil sampling. *This option is only applicable on fields with documented need and having existing stands of forage species that do not need re-establishment.*

CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation for review by NRCS showing a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- ☐ Prior to implementation, develop and document a planned nutrient budget, forage production goal, and applications (pounds/acre active ingredient, nutrients must include at a minimum N-P-K). *If variable rate technology will be used develop site-specific yield maps and use them to develop management zones within the pasture.*
- ☐ Prior to implementation, develop geo-referenced maps showing location of current areas of livestock concentration.
- ☐ Prior to implementation, select two or more of the nutrient use efficiency strategies or technologies. **Selections:** _____
- ☐ During implementation, keep records to document actual nutrient applications (pounds/acre active ingredient, nutrients must include at a minimum N-P-K).
- ☐ During implementation, minimize soil surface disturbance during fertilizer placement.
- ☐ During implementation, notify NRCS of any planned changes to verify the planned system meets the enhancement criteria.
- ☐ During implementation, additional record keeping requirements for specific strategy or technology:
 - Nutrient application placement below soil surface. Records and documentation must include method of injection or incorporation and depth.



CONSERVATION STEWARDSHIP PROGRAM

- Variable rate technology. Keep records to document as applied records of actual variable rate applications (maps and/or tabular statistics).
- Monitoring of hay feeding location movement. Maintain annual soil sample results, geo-references photographs, and written records.
- Adjust pH. Maintain soil test results.
- After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- As needed, provide technical assistance to meet the criteria of the enhancement.
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Nutrient Management (CPS 590) as it relates to implementing this enhancement.
- Prior to implementation, review documentation to verify a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- Prior to implementation, verify the development of a planned nutrient budget, yield goal, and planned nutrient applications. *If variable rate technology will be used, verify the development of site-specific yield maps used to develop management zones within the field.*
- Prior to implementation, verify the selection of two or more nutrient use efficiency strategies or technologies.
- During implementation, evaluate any planned changes to verify the planned system meets the enhancement criteria.
- After implementation, review documentation and records to verify implementation of the enhancement.



United States Department of Agriculture

CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E590D

CONSERVATION STEWARDSHIP PROGRAM

Reduce risks of nutrient losses to surface and groundwater by increasing setback awareness via precision technology

Conservation Practice 590: Nutrient Management

APPLICABLE LAND USE: Crop (Annual and Mixed), Crop (Perennial)

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Utilize precision technology to increase Surface/Groundwater Setbacks & Associated Application Rate Restrictions (SGS&AARR) implementation during nutrient application by providing precise, real-time location information (geo-located) in the field to the equipment operator. While operating nutrient application equipment, the operator's location is continually updated and displayed on an integrated, in-cab or add-on GPS-enabled device visible to the operator at all times to reduce the risk of nutrient application in setback and/or sensitive areas. This allows the equipment operator to manually turn off or steer equipment to avoid applying nutrients in setback or sensitive areas. Done properly this helps to protect surface and ground water resources.

Criteria

- Implementation of this enhancement requires the use of components of precision agriculture technologies for nutrient management.
- Prior or current documentation of implementation of a nutrient management meeting all NRCS Conservation Practice (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- Documentation that all 590 surface/groundwater setbacks and associated



application rate restrictions (SGS &AARR) are geolocated in a file format that is overlaid on a current air photo and/or field map and visually displayed for the nutrient applicator. SGS&AARR includes, but are not limited to, state specific 590 surface/groundwater setbacks and sensitive areas including soils and bedrock restrictions.

CONSERVATION STEWARDSHIP PROGRAM

- Photo or written documentation of:
 - Field verification of SGS&AARR,
 - Creation of updated maps in a format compatible with the system on application equipment, and annual updating if new SGS&AARR are documented,
 - Equipment installation and testing to ensure fully functional system, and
 - Implementation of the system with each nutrient application.
- Subject to payment limitations, this enhancement will apply to all cropland acres operated by the producer meeting CSP 590.



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements:

Participant will:

- ☐ Prior to implementation, provide documentation for review by NRCS showing a record of implementing nutrient management meeting all NRCS Conservation Practice (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- ☐ Prior to implementation, a Qualified Individual will create an electronic file(s) with 590 criteria geolocated, compatible with all nutrient application equipment used on the farm and ensure compatibility with all equipment used. The Qualified Individual will provide copies, training, and operating instructions to all operators prior to nutrient application.
- ☐ Prior to implementation, the Qualified Individual will quality review all electronic files, and provide documentation for review to NRCS showing the system to be used by the equipment operator and electronic copies of site specific, field verified 590 maps including all SGS&AARR in a format readable by NRCS (KML files, shapefiles, or other mutually agreed upon format) via NRCS State Office designated delivery method.
- ☐ Prior to implementation, existing maps are reviewed, SGS&AARR are geolocated an in-field assessment for previously unmapped SGS&AARR is conducted and all maps updated and approved by a Qualified Individual to ensure all 590 criteria are documented and accurate.
- ☐ Prior to implementation, provide documentation of nutrient application equipment calibration.
- ☐ Prior to implementation, provide documentation to NRCS documenting the installation of equipment on tractors/equipment using a dedicated, fuse protected, power source or a factory installed power source, documentation of maps loaded onto devices, and documentation that system is fully functional and operational.

Prior to initial implementation (one time)

Verification of purchase/usage of tablet/display system with internal/connected GPS receiver	Verification of purchase/usage of tablet/display system with minimum screen brightness of 450 NITS	Verification of installation/usage of tablet/display system with a dedicated, fuse protected, power source or a factory installed power source.



CONSERVATION STEWARDSHIP PROGRAM

Prior to initial implementation (one time, or when additional SGS/AARR are documented)

Field	Acres	Verification of current CPS 590 implementation by NRCS	Verification of calibration of nutrient application equipment by Qualified Individual	Verification of electronic maps and equipment compatibility by Qualified Individual

Prior to initial implementation (one time, or when additional SGS/AARR are documented)

Field	Acres	Verification that the Qualified Individual has conducted an in-field assessment, geolocated all SGS&AARR in a compatible format and provided copies to NRCS	Verification of installation and functionality on all nutrient application equipment by Qualified Individual	Verification that the Qualified Individual has trained all equipment operators

- ☐ During implementation, keep records to document as applied records of nutrient applications (maps, photo documentation and/or tabular statistics).
- ☐ During implementation, update all electronic files when additional SGS&AARR are documented. Updated copies must be provided to NRCS annually.



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Nutrient Management (CPS 590) as it relates to implementing this enhancement.
- ☐ Prior to implementation, review documentation to verify a record of implementing nutrient management meeting all NRCS Conservation Practice Standard Nutrient Management (CPS 590) general criteria and additional criteria to minimize agricultural nonpoint source pollution of surface and groundwater.
- ☐ Prior to implementation, verify the development of site-specific geo-located maps. For each field, all SGS&AARR will be documented by the Qualified Individual via geo-location and included in the electronic file. NRCS staff will review to ensure that known site specific soils information and known sensitive area resource concerns are included.
- ☐ Prior to implementation, verify the development of a planned nutrient budget, yield goal, and planned nutrient applications by management zone.
- ☐ During implementation, evaluate any planned changes to verify the planned system meets the enhancement criteria.
- ☐ After implementation, review documentation and records to verify implementation of the enhancement.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E595A

CONSERVATION STEWARDSHIP PROGRAM

Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques

Conservation Practice 595: Integrated Pest Management

APPLICABLE LAND USE: Crop (annual & mixed); Crop (perennial)

RESOURCE CONCERN ADDRESSED: Water Quality Degradation

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Utilize precision application techniques to reduce risk of pesticides in surface water by reducing total amount of chemical applied and reducing the potential for delivery of chemicals into water bodies.

Criteria

- Documentation of producer's record of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria
- Use of GPS or other geospatial technologies is required to document application and site-specific compliance with all label requirements for controlling non-target application.
- Utilize one or more of the following techniques to reduce the total amount of chemical applied and reduce the potential for delivery of chemicals into water bodies:
 - Precision guidance system which reduces ground or aerial spray overlap to less than 12 inches



CONSERVATION STEWARDSHIP PROGRAM

- Variable rate technology (VRT) which allows rate of pesticide application to dynamically change for site specific applications
- “Smart sprayer” technology which utilizes automatic sensors and computer controlled nozzles to turn individual nozzles on and off

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation of implementation of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria and additional criteria to prevent or mitigate off-site pesticide risks to water quality from leaching, solution runoff, and adsorbed runoff losses.
- ☐ During implementation, keep records of applications using the selected technology with maps and/or tabular data.
- ☐ After implementation, make the following items available for review by NRCS to verify implementation of the enhancement:
 - As applied records of actual applications using the selected technology (maps and/or tabular statistics).

NRCS will:

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Integrated Pest Management (CPS 595) as it relates to implementing this enhancement.
- ☐ As needed, provide technical additional assistance to the participant as requested.
- ☐ After implementation, verify implementation of the enhancement, by reviewing records created during enhancement implementation.



NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Acres Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION STEWARDSHIP PROGRAM

Reduce risk of pesticides in surface water and air by utilizing IPM PAMS techniques

Conservation Practice: 595 Integrated Pest Management

APPLICABLE LAND USE: Crop (annual & mixed), Crop (perennial), **Pasture**

RESOURCE CONCERN: Water, Air

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Utilize integrated pest management (IPM) prevent, avoidance, monitoring, and suppression (PAMS) techniques to reduce risk of pesticides in water and air. Reduce the potential for delivery of chemicals into water or ozone precursor emissions.

Criteria

- Documentation of producer's record of how integrated pest management is meeting all general criteria within the Integrated Pest Management Conservation Practice Standard (CPS 595).
- Utilize ***at least four additional activities from techniques below***. The four or more activities can come from one or all of the PAMS activities identified below:
 - Prevention activities include cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, and irrigation scheduling to limit situations that are conducive to disease development.
 - For pasture, activities could include: longer rotation periods, higher stop grazing heights, identify quarantine or exclusion zones if pests are present, and utilize weed free hay. Utilize forage species or varieties with generic resistance to anticipated insects or diseases.
 - Avoidance activities include maintaining healthy and diverse plant communities, using pest resistant varieties, crop and livestock rotation, and refuge



CONSERVATION STEWARDSHIP PROGRAM

management. Maintain populations of beneficial species to limit development of weed and insect infestations.

- For pasture, activities include establishment of trap and/or cover crops to avoid pests' migration and invasion into healthy pasture lands. Utilize grazing practices that maintain vigorous forage growth that competes with weeds and able to withstand insects or diseases. Consider adding a diversity of forage species to dilute insect host plants and reduce opportunities for plant pest pressure.
- Monitoring activities include scouting for both pests and beneficial organisms, degree-day modeling, and weather forecasting to help target suppression strategies and avoid routine preventative treatments. Monitoring may include the use of drones, or other remote sensing tools which can provide color, red, or infrared images to help detect pest issues. Utilize weather models to help predict disease or insect outbreaks.
 - For pasture, use pasture condition score (PCS) and/or determining indicators of pasture health (DIPH) to assess and evaluate effects of invasive pests.
- Suppression activities include judicious use of cultural, mechanical, biological and chemical control methods that reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms. Optimizing application timing (plant phenology, weather and soil conditions etc.), using precision application equipment, or substituting lower risk pesticides.
 - For pasture, consider biological control activities, such as livestock grazing for targeted suppression and control of invasive plant species used in conjunction with other pest management activities. Consider utilizing the timing, duration, frequency and intensity of grazing to disrupt insect or disease cycles. Also consider other synthetic or biological agents (other than livestock) to manage weeds, insects and diseases.
 - When addressing air quality, include at least one suppression activity to reduce emissions of ozone precursors, such as choosing low-emission application methods, selecting alternatives or avoiding use of emulsifiable concentrate (EC) formulations, use of precision application, solarization, biofumigants or adding adjuvants. Consider conditions/practices that reduce herbicide volatilization (in areas with low RH and high temps).



CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation for review showing producer's record of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria.
- ☐ During implementation, keep documentation, such as records, plans, receipts, showing the implementation of the activities selected.
- ☐ After implementation, make documentation available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Integrated Pest Management (CPS 595) as it relates to implementing this enhancement.
- ☐ As needed, provide technical assistance to the participant as requested.
- ☐ After implementation, verify implementation by reviewing records kept during enhancement implementation.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Acres Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E595D

CONSERVATION STEWARDSHIP PROGRAM

Increase the size requirement of refuges planted to slow pest resistance to Bt crops

Conservation Practice 595: Pest Management

APPLICABLE LAND USE: Crop (Annual and Mixed)

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Bacillus thuringiensis (Bt) plant-incorporated protectants are plants that have been genetically altered to produce proteins that are harmful to certain insect pests. Widespread implementation of Bt crops has decreased insecticide use and increased crop yields, but it must be used as part of an integrated pest management (IPM) approach to protect the crop from pest species that are not susceptible to the Bt toxin and to manage pest resistance.

Crop rotation, scouting and resistance management strategies, such as planting and creating refuges of non-Bt crops, are essential when farming Bt crops. Insects have developed resistance to Bt proteins. To mitigate the development of further resistance, growers are required to plant refuges of non-transgenic crops. These refuges produce numbers of susceptible insects that will help sustain populations of non-resistant insects.

The size of refuge requirement depends on the environment, pest and strain of the crop. The size of refuge is determined by resistance risk and can vary depending on the product. A recent study published in the Journal of Integrated Pest Management revealed, compliance has been a challenge. Only 40% of growers surveyed stated they were planning to plant a refuge (Reisig 2017). Further, EPA (2018) reports document refuge compliance as low as 7% in areas at the highest risk of resistance. Non-compliance arises, in part, due to a

concern for yield loss and thus profit loss if a non-Bt refuge is planted.

Criteria

- This enhancement will increase the size of the required refuge by an additional 10% (of the total crop acreage) in areas with the highest risk of pest resistance to Bt crops¹. Ex. If the label requires a refuge to be 20% of the entire crop, an additional 10% area of non-Bt crop would be needed to be planted for a total of a 30% refuge to receive incentivization under this enhancement.
- Additional refuge planted must adhere to the extant terms of registration for Bt crops. (see Fig 1.)

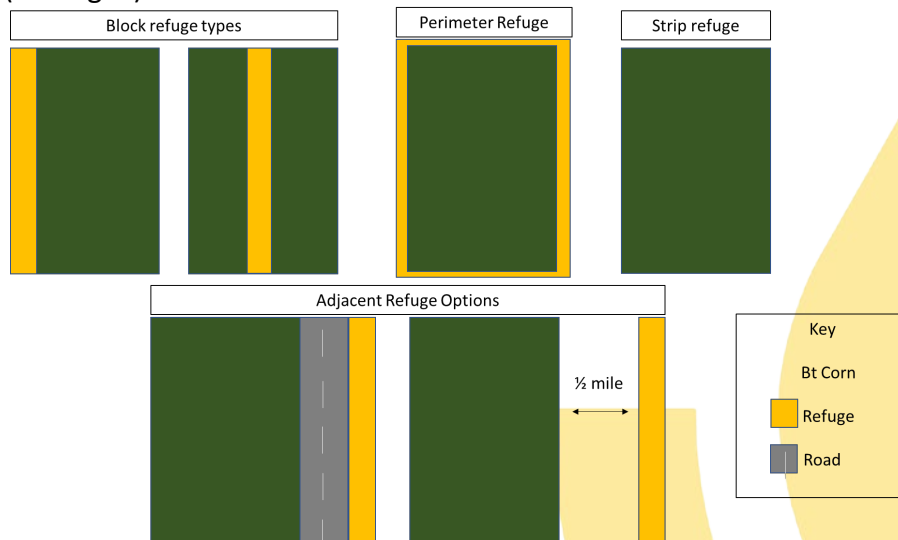


Figure 1. Refuge Planting Design Options

- Refuge designs include separate fields, blocks within fields (e.g., along the edges or headlands), perimeter strips, or in-field strips can be used to achieve the 10% increase.

1-The high risk resistance region consists of the states of Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, Sussex) and Missouri (only the counties of Dunkin, New Madrid, Pemiscot, Scott, Stoddard) and Missouri (only the counties of Dunkin, New Madrid, Pemiscot, Scott, Stoddard).



CONSERVATION STEWARDSHIP PROGRAM

- Refuge area must meet the proximity requirements of the Bt crop type (e.g., if a block refuge is planted it must be within a half mile of the Bt field, if perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide, etc.)
- Required refuge areas must be planted to the same crop as the Bt crop (i.e., a Bt corn field must have a non-Bt corn counterpart). The non-Bt variety must be as similar to the Bt variety as possible using an isoline hybrid if available.
- Growers who receive the incentivization are encouraged to monitor fields for Bt resistance and report unexpected pest damage to Bt crops to the company from which the grower obtained the Bt seed.

Documentation and Implementation Requirements:

Participant will:

- Prior to implementation, provide documentation for review showing producer's record of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria.
- During implementation, keep documentation, such as records, plans, receipts, showing the implementation of the activities selected including:
 - Document the Bt crop and the refuge size requirement from the label.
 - A map showing the non-Bt variety of the crop (refuge area) in relation to the Bt crops, noting the original refuge plus the additional refuge areas.
 - Photographs of Bt and non-Bt crops planted in the field.
- After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.



CONSERVATION STEWARDSHIP PROGRAM

NRCS will:

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Integrated Pest Management (CPS 595) as it relates to implementing this enhancement.
- ☐ As needed, provide technical assistance to the participant as requested.
- ☐ After implementation, verify implementation by reviewing records kept during enhancement implementation.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E595E

CONSERVATION STEWARDSHIP PROGRAM

Eliminate the use of chemical treatments to control pests and to increase the presence of dung beetles

Conservation Practice: Integrated Pest Management - 595

APPLICABLE LAND USE: Pasture; Range

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Pests and parasites can have a significant impact on the economic viability of livestock operations by affecting the performance and health of animals. The use of broad-spectrum insecticides, pour-ons and avermectins have been shown to have a detrimental effect on dung beetle populations. Having a healthy population of dung beetles facilitates the recycling of nutrients and promotes soil and grassland health. By eliminating the application of broad-spectrum insecticides, pour-ons, and avermectins, including injectable avermectins, for pest control in and on livestock along with rotational grazing and higher stock densities has shown to increase the dung beetle population. Use of natural or alternative methods of pest control over multiple years is encouraged.

Criteria

- Determine the chemical treatments that are harmful to the dung beetle population and eliminate use. Rotational grazing management and the use of natural treatments for pest control will be implemented. Follow all land grant university recommendations and methods of evaluations.
- A written grazing plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.



- Maintain diversity of pastureland and rangeland plants to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - A resource inventory with ecological site description or reference sheet and structural improvements and existing resource conditions,
 - Grazing plan that provides for 45 days or more recovery period between grazing events
 - All potential contingency plans
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.



Documentation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation for review showing producer's record of integrated pest management meeting Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria.
- ☐ During implementation, keep documentation, such as records, plans, receipts, showing the implementation of the activities selected including:
 - Written documentation of what chemical treatment(s) that were replaced by non-harmful alternative method(s).
 - A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
 - Record of rotational grazing.
- ☐ After implementation, make documentation available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Integrated Pest Management (CPS 595) as it relates to implementing this enhancement.
- ☐ As needed, provide technical assistance to the participant as requested.
- ☐ After implementation, verify implementation by reviewing records kept during enhancement implementation.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Acres Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date



CONSERVATION ENHANCEMENT ACTIVITY

E595F

Improving soil organism habitat on agricultural land

Conservation Practice 595: Pest Management Conservation System

APPLICABLE LAND USE: Pasture, Crop (Mixed & Annual)

RESOURCE CONCERN ADDRESSED: Pest Pressure, Soil Organism Habitat Loss or Degradation

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

To reduce or eliminate the use of seed treatments in corn and soybean cropping systems to promote beneficial organism populations and pest control. Beneficial organisms such as the Carabidae beetle are very important in the population control of common agricultural pests like the grey garden slug. Slugs are a common pest in no-till and heavily cover cropped fields. Slugs are mollusks and can ingest some treatments with no adverse effects. Beneficial organism populations can be negatively impacted when they consume slugs exposed to seed treatments. The reduction or elimination of routine seed treatments in these cash crop systems may increase beneficial insect populations.

Criteria

- Producers will reduce or eliminate treatments used in their crop rotations. Treatments on corn or soybean may not be replaced with another routine treatment, such as in-furrow applications.
- If a participant determines after contracting that a targeted seed treatment or other early season treatment is necessary on a contracted soybean or corn field (i.e., within three weeks of planting), the participant will not be penalized, but will forego an incentive payment provided he or she can provide documentation of needed control (e.g. scouting report).



- Documentation of producer's record of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation for review showing producer's record of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria.
- ☐ Provide documentation to demonstrate prior seed treatment use.
- ☐ Provide any historical pest scouting reports.
- ☐ During implementation, keep documentation, such as seed labels, records, plans, receipts, showing the implementation of the activities selected.
- ☐ After implementation, make documentation available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Integrated Pest Management (CPS595) as it relates to implementing this enhancement.
- ☐ As needed, provide technical assistance to the participant as requested.
- ☐ After implementation, verify implementation by reviewing records kept during enhancement implementation.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____



United States Department of Agriculture

NRCS Technical Adequacy Signature

Date





CONSERVATION ENHANCEMENT ACTIVITY

E595G

CONSERVATION STEWARDSHIP PROGRAM

Reduce resistance risk by utilizing PAMS techniques

CONSERVATION PRACTICE: 595 - Integrated Pest Management

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture

RESOURCE CONCERN: Plants – Pest Pressure

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Utilize integrated pest management (IPM) prevention, avoidance, monitoring, and suppression (PAMS) techniques to reduce pesticide resistance and address plant pest pressure.

Criteria

- 1) As a baseline, document the producer's record of Integrated Pest Management (IPM) activities currently used that meet the Conservation Practice Standard Pest Management Conservation System (CPS 595) general criteria, including but not limited to:
 - Current IPM- fields, tracts, or PLUs and acres under current management.
 - Planned IPM - fields, tracts or PLUs and acres affected.
 - Prevention activities: cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, and irrigation scheduling to limit situations that are conducive to disease development.
 - Avoidance activities: maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, and refuge management.
 - Monitoring activities: pest scouting, degree-day modeling, and weather forecasting to help target suppression strategies and avoid routine preventative treatments.
 - Suppression activities: judicious use of cultural, mechanical, biological, and chemical control methods that reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms. Optimizing application timing, using precision application equipment, or substituting lower risk pesticides.



CONSERVATION STEWARDSHIP PROGRAM

- 2) Utilize rotation of pesticide modes of action (MOA) and **at least three new or additional activities** from the techniques below that fit within the general PAMS strategies above:

Pre-season strategies:

- Acquisition of knowledge and skills to manage pesticide resistance by:
 - Attending educational meetings to obtain the latest information in development of sound pest management programs.
 - OR
 - Promote communication regarding pesticide resistance, by hosting a field day or community meeting to discuss pesticide resistance issues in their community.
- Diversify the current crop rotation to add different crop types to disrupt the host plant/pest cycle and reduce use of the same pesticide MOA season after season.
- Add cover crops to the crop rotation or consider use of nurse crops and intercropping of crops to be competitive with weeds thereby reducing weed pressure in the cash cropland weed seed development or as host crops for beneficial insects
- Use grazing and/or browsing animals when applicable, to reduce weed populations.

Planting strategies:

- Plant certified (or tested by a certified lab) weed-free crop, cover crop, or pollinator habitat seed to reduce introduction of new weed pests.
- Use pre-emergence herbicides with soil residual activity, with different mechanisms of activity MOA on target weed species.
- Plant crops with stacked traits to maximize the diversity of available pest management tools a crop with Bt (*bacillus thuringiensis*) and herbicide resistance traits.

Growing season strategies:

- Managing the crop according to recommendations from local extension experts or crop consultants (i.e., Certified Crop Advisors) to promote overall crop vigor, resilience, and competitiveness.
- Scouting prior to pesticide application to correctly identify the target pest and to determine if economic thresholds or estimates of crop damage are met before applying pesticides.
- Time pesticide applications treatment or other PAMS activity when the most susceptible life cycle stage of the target pest(s) is present to maximize the efficacy for the treatment selected.
- Methods of monitoring include use of monitoring traps to indicate adult emergence, real time data feeds from monitoring systems, or using weather or vegetation growth models that predict conditions conducive to pest development.



CONSERVATION STEWARDSHIP PROGRAM

- Perform in-field follow-up after pesticide application determine and document whether the applied pesticide provided effective control of the target pests.
- Use of cultural, mechanical, or biological pest management strategies such as, tillage, mowing, flaming, roller crimping etc.

Harvesting strategies:

- Manage the soil seedbank by reducing weed seed inputs through use of harvest weed seed destruction equipment i.e., combine weed seed grinding.
- Manage the field environment (including soils) to lessen the probability of weed establishment, enhance weed seed decay, and promote weed seed predation (e.g., maintaining habitat refuges, delaying postharvest tillage etc.).

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide documentation for review showing producer's record of integrated pest management meeting all Conservation Practice Standard Integrated Pest Management (CPS 595) general criteria.
- ☐ During implementation, keep documentation, such as records, plans, receipts, showing the implementation of the activities selected.
- ☐ After implementation, make documentation available for review by NRCS to verify implementation of the enhancement.

NRCS will:

- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Pest Management Conservation System (CPS 595) as it relates to implementing this enhancement.
- ☐ Evaluate any new pesticides used with this enhancement with WIN-PST and will plan appropriate mitigation if needed to protect water quality and/or beneficial organism protection.
- ☐ As needed, provide technical assistance to the participant as requested.
- ☐ After implementation, verify implementation by reviewing records kept during enhancement implementation.



CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date