NRCS Practice Descriptions 2023

The following are the 43 NRCS Practices listed in the USDA-NRCS Agreement for Climate Beneficial Fiber: Building New, Accessible, and Equitable Market Opportunities for Climate-Smart Cotton and Wool. Each entry contains a quick description and information about the practice from its Conservation Practice Overview, as well as a link to each practice's Conservation Practice Standard. The intention of this document is to create a quick reference to familiarize the reader with each practice and direct them to the official standard for more information. It is not intended to be a comprehensive document with all necessary information about each practice and its full criteria for implementation.


Alley Cropping

(Code 311)

Description
Alley cropping is an agroforestry practice where agricultural or horticultural crops are grown in the alleyways between widely spaced rows of woody plants. By combining annual and perennial crops that yield varied products and profits at different times, a landowner can more effectively use available space, time, and resources.

Practice Information
Alley cropping is used to enhance or diversify a farm enterprise by adding tree/shrub products, reduce surface water runoff and soil erosion, alter water table depths, improve utilization and reduce offsite movement of nutrients, modify the microclimate for improved crop production, provide habitat for wildlife and beneficial insects, enhance the aesthetics of the area, and increase net carbon storage.

Some common examples of alley cropping plantings include wheat, corn, soybeans, or hay planted between rows of black walnut or pecan trees. Nontraditional or value-added crops may also be incorporated for extra income. These may include sunflowers or medicinal herbs planted between rows of nut or fruit trees alternated with nursery stock trees or hazelnuts.

Alley cropping can be used for other purposes such as short rotation woody crops of fast growing woody species that are combined with forage or row crops to produce fuelwood and fodder. Plantings to enhance wildlife habitat can also be designed using appropriate plant species.

NRCS Standards Page https://www.nrcs.usda.gov/resources/guides-and-instructions/alley-cropping-ac-311-conservation-practice-standard

Composting Facility

(Code 317)

Description
A structure or device to contain and facilitate an aerobic microbial ecosystem for the decomposition of manure, other organic material, or both, into a final product sufficiently stable for storage, on farm use, and application to land as a soil amendment.

Practice Information
A composting facility is designed to produce an amendment that adds organic matter and beneficial organisms to the soil, provides slow-release plant-available nutrients, and improves soil health. This amendment can be applied to the land or marketed to the public.

Organic solid wastes to be composted derive primarily from agricultural production or processing. The compost can be reused in the operation, utilized for crop production, improve soil health, or marketed to the public.

Composting is accomplished by mixing a carbon material with a nitrogen-rich material in a manner that encourages the growth of aerobic bacteria. Bins, windrows, or in-vessel structures, such as a rotary drum, can be used.

Design information for this practice includes site location, design sizing, storage period, and safety/biosecurity features. It may also include fabricated structure criteria.

This practice has a minimum expected life of 15 years. Operation requirements for the facility depend on the type of facility chosen by the producer. For every system, the temperature and moisture content of the compost will be monitored frequently. Bin or windrow compost must be turned at least once during the composting process. The operation and maintenance plan includes provisions for proper utilization of residual material. Routine maintenance is needed to ensure the facility operates as designed.

NRCS Standards Page https://www.nrcs.usda.gov/resources/guides-and-instructions/composting-facility-no-317-conservation-practice-standard

Conservation Cover

(Code 327)

Description
Conservation cover is establishing and maintaining perennial vegetative cover to protect soil and water resources on lands needing permanent protective cover that will not be used for forage production.

Practice Information
Conservation cover reduces soil erosion and sedimentation, enhances wildlife habitat, and improves water quality.

Conservation cover is applied on all lands needing permanent vegetative cover. It does not apply to plantings for forage production or to critical area plantings.

Operation and maintenance of the conservation cover includes mowing to control weeds and maintain vegetative cover. Additional measures may be necessary to control noxious weeds and other invasive species.

If wildlife habitat enhancement is a goal, maintenance practices and activities must not disturb cover during the reproductive period for the desired species. To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds will be done on a "spot" basis to protect forbs and legumes that benefit native pollinators and other wildlife.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-cover-ac-327-conservation-practice-standard

Conservation Crop Rotation

(Code 328)

Description
Conservation crop rotation is growing a planned sequence of various crops on the same piece of land for a variety of conservation purposes.

Practice Information
Crops included in conservation crop rotation include high-residue producing crops such as corn or wheat in rotation with low-residue producing crops such as vegetables or soybeans. The rotation may also involve growing forage crops in rotation with other field crops.

Crop rotations vary with soil type, crops produced, farming operations, and how the crop residue is managed. The most effective crops for soil improvement are fibrous-rooted high-residue producing crops such as grass and small grain.

Perennial plants used for forage are very effective in crop rotations due to increases in organic matter and reduced soil erosion. In addition, crop rotations help break insect, disease, and weed cycles. Rotations add diversity to farm operations and often reduce economic and environmental risks.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-crop-rotation-ac-328-conservation-practice-standard

Residue and Tillage Management, No Till

(Code 329)

Description
The residue and tillage management, no till practice addresses the amount, orientation, and distribution of crop and other plant residue on the soil surface year round. Crops are planted and grown in narrow slots or tilled strips established in the untilled seedbed of the previous crop.

Practice Information
This practice includes maintaining most of the crop residue on the soil surface throughout the year, commonly referred to as no till. The common characteristic of this practice is that the only tillage performed is a very narrow strip prepared by coulters, sweeps, or similar devices attached to the front of the planter.

Benefits to soil include increasing organic matter, improving soil tilth, and increasing productivity as the constant supply of organic material left on the soil surface is decomposed by a healthy population of earthworms and other organisms.

Operations and maintenance for this practice includes evaluating the crop-residue cover and orientation for each crop to ensure the planned amounts, orientation, and benefits are being achieved. Weeds and other pests must be monitored to ensure pest populations do not exceed thresholds.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/residue-and-tillage-management-no-till-ac-329-conservation

Contour Buffer Strips

(Code 332)

Description
Contour buffer strips are strips of perennial grass alternated with wider cultivated strips that are farmed on the contour. Vegetation in strips consists of adapted species of grasses or a mixture of grasses and legumes.

Practice Information
Contour buffer strips slow runoff water, trap sediment, and reduce erosion. Sediments, nutrients, pesticides, and other potential pollutants are filtered out as water flows through the grass strips. The grass strips also provide food and cover for wildlife.

The practice is more difficult to establish on undulating to rolling topography because of the difficulty of maintaining parallel strip boundaries across the hill slope or staying within row-grade limits.

The effectiveness of contour buffer strips is dependent on several variables such as steepness, soil type, crops grown, strip widths, management, and climatic factors.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/contour-buffer-strips-ac-332-conservation-practice-standard

Soil Carbon Amendment

(Code 336)

Description
Soil Carbon Amendments (SCA) are materials derived from plant materials or treated animal byproducts. These amendments may be applied to the soil to improve or maintain soil organic matter, sequester carbon and enhance soil carbon stocks, improve soil aggregate stability, and/or improve habitat for soil organisms.

Practice Information
Soil carbon amendments consisting of compost, biochar, and other carbon-based materials may be added to improve existing soil conditions. Soils of the planning unit should be evaluated using the most current planning criteria, field assessments, and benchmark soil tests.

Materials used as soil carbon amendments should be created by approved methods. An appropriate laboratory analysis of the material is necessary to determine application rates and if there are any inherent chemical limitations.

Apply soil carbon amendments on planning units avoiding sensitive areas. Consider crop sequence, temperature, and slope. Consider the nutrient content within the amendment to avoid negative impacts on air, water, plant, or nutrient cycling.

Operation and maintenance of the soil carbon amendment practice includes calibration of distribution equipment, monitoring crop health following applications, inspection of fields following precipitation events to ensure material is staying in place and completing soil health tests after the first application and then in subsequent years to monitor changes in soil carbon levels and other soil health indicators.

Additional Note
2023 EQIP codes for this practice are listed under code 808 rather than 336.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/soil-carbon-amendment-ac-336-conservation-practice-standard

Cover Crop

(Code 340)

Description
Cover crop is growing a crop of grass, small grain, or legumes primarily for seasonal protection and soil improvement.

Practice Information
Cover and green manure crops are grown on land where seasonal or long-term benefits of a cover crop are needed.

This practice is used to control erosion, add fertility and organic material to the soil, improve soil tilth, increase infiltration and aeration of the soil, and improve overall soil health. The practice is also used to increase populations of bees for pollination purposes. Cover and green manure crops have beneficial effects on water quantity and quality. Cover crops have a filtering effect on movement of sediment, pathogens, and dissolved and sediment-attached pollutants.

Operation and maintenance of cover crops include: controlling weeds by mowing or by using other pest management techniques, and managing for the efficient use of soil moisture by selecting water-efficient plant species and terminating the cover crop before excessive transpiration. Use of the cover crop as a green manure crop to cycle nutrients will impact when to terminate the cover to match release of nutrient with uptake by following cash crop.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/cover-crop-ac-340-conservation-practice-standard

Critical Area Planting

(Code 342)

Description
Critical area planting establishes permanent vegetation on sites that have, or are expected to have, high erosion rates, and on sites that have conditions that prevent the establishment of vegetation with normal practices.

Practice Information
Erosion control is the primary consideration for plant material selection. However, a broad choice of grass, trees, shrubs, and vines are usually available and adapted for most sites. Wildlife and beautification are additional considerations that influence planning decisions on a site needing this practice.

Conservation benefits may include, but are not limited to—
- reduced sheet and rill erosion
-reduced transport of sediment
-stabilized slopes, road banks, stream banks, shorelines, sand dunes

The following decisions must be made when planning this practice:
-species of plants to establish
-methods and rates of planting
-fertilizer and soil amendments necessary for establishment and growth
-mulching requirements
-planting site preparation
-irrigation requirement
-site management following establishment of the vegetation

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/critical-area-planting-ac-342-conservation-practice-standard

Residue and Tillage Management, Reduced Till

(Code 345)

Description
Residue and tillage management, reduced till practice manages the amount, orientation, and distribution of crop and other plant residue on the soil surface year round while limiting the soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled prior to planting.

Practice Information
This practice includes tillage methods commonly referred to as mulch tillage where a majority of the soil surface is disturbed by non-inversion tillage operations such as vertical tillage, chiseling, and disking, and also includes tillage/planting systems with relatively minimal soil disturbance. Mulch tillage includes the uniform spreading of residue on the soil surface, planning the number, sequence, and timing of tillage operations to achieve the prescribed amount of surface residue needed and using planting equipment designed to operate in high residue situations.

This practice benefits soil by increasing organic matter, improving soil tilth, and increases productivity as the constant supply of organic material left on the soil surface is decomposed by a healthy population of earthworms and other organisms.

Operations and maintenance for this practice includes evaluating the crop residue cover and orientation for each crop to ensure the planned amounts, orientation, and benefits are being achieved.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/residue-and-tillage-management-reduced-till-ac-345-conservation

Combustion System Improvement

(Code 372)

Description
Replace, repower, or retrofit an agricultural combustion system and related components or devices.

Practice Information
Combustion system improvement can be used to reduce emissions of particulate matter (PM) and/or oxides of nitrogen (NOx). This standard can also be used to reduce the energy use of an agricultural combustion system by increasing the combustion system energy efficiency.

Agricultural combustion systems are stationary (e.g., engines, heaters, etc.) or mobile (e.g., tractors, etc.) power units that combust fuels. Replacement and repowered systems must be either noncombustion units or result in less emissions or energy usage.

Design criteria for this practice include proper sizing and use of the replacement or repowered combustion system, requirements for proper disposal of replaced or removed combustion systems and parts, and expected air emissions and/or energy usage from the existing and replacement, repowered, or retrofitted combustion system.

There is a requirement to identify and describe the existing combustion system and the changes to be made to that system in order to reduce air emissions or energy use. The methodologies and analyses used to estimate air emissions or energy use reductions will be documented. Records of improvements and operation needed to document reductions in air emissions or energy use are required to be kept throughout the practice lifespan.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/combustion-system-improvement-no-372-conservation-practice

Energy Efficient Agricultural Operation

(Code 374)

Description
On farm facilities, equipment, and management strategies that provide increased energy efficiency.

Practice Information
NRCS Conservation Practice Standard (CPS) Energy Efficient Agricultural Operation (Code 374) is applied to improve the energy efficiency of agricultural operations. The practice applies to any agricultural equipment, system, nonresidential structure, or component that consumes energy as long as that system or component has been assessed and energy improvements identified.

Replacement or retrofit system and related components or devices must meet or exceed currently applicable Federal, State, and local standards and guidelines, as well as appropriate NRCS or industry standards. Examples of NRCS standards include CPSs Pumping Plant (Code 533) and Combustion System Improvement (Code 372). Examples of industry standards that may be applied under this standard include American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard, ASHRAE 90.1, "Energy Standard for Buildings Except Low-Rise Residential Buildings," American Society of Agricultural and Biological Engineers, ASAE EP566, "Guidelines for Selection of Energy Efficient Agricultural Ventilation Fans," and National Electrical Manufacturers Association motor efficiency standards.

Applications covered by this practice may include but are not limited to automatic environmental controllers, circulation fans, grain dryers, plate coolers, heat recovery systems, and systems to improve the efficiency of maple syrup production.

Operation and maintenance requirements include periodic inspections with prompt repair of damaged components and monitoring to ensure the continued success of the practice.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/energy-efficient-agricultural-operation-no-374-conservation

Forest Farming

(Code 379)

Description
Managing or establishing stands of trees or shrubs in coordination with the management and/or cultivation of understory plans or non timber forest products.

Practice Information
Forest farming, also known as multi-story cropping, requires the development and implementation of a forest management plan that incorporates the growth, management, and harvest of non timber forest products (e.g., foliage, mushrooms, berries, roots, nuts, etc.) while maintaining the option to manage existing trees. This practice does not apply to land that is grazed.

Conservation benefits may include but are not limited to: improved soil quality from increased organic matter, improved wildlife habitat, increased plant and tree diversity, and improved crop diversity by growing compatible crops on the same area.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/forest-farming-ac-379-conservation-practice-standard

Windbreak/Shelterbelt Establishment or Renovation

(Codes 380, 650)

Description
Windbreaks or shelterbelts are single to multiple rows of trees and possibly shrubs planted in a linear fashion. They are established upwind of the areas to be protected. Renovating a windbreak may involve removing, releasing, or replacing selected trees and shrubs or rows of trees or shrubs.

Practice Information
Windbreaks and shelterbelts are primarily used to reduce soil erosion from wind; protect crops, livestock, and farmsteads from wind and related microclimate effects; control snow deposition; and improve air quality by intercepting drifting chemicals and odors.

Windbreak/shelterbelt establishment involves the planting of vegetation to serve the purposes noted above. The effectiveness of a windbreak or shelterbelt is dependent on the height of the mature plants. Therefore, it may take 20 years or more for the practice to become fully functional.

Windbreak/shelterbelt renovation involves widening, partial replanting, removing, and replacing selected trees and shrubs to improve an existing windbreak or shelterbelt. A period of years may also be needed for proper renovation.

These practices can be applied in any area where there is sufficient linear length to establish the windbreak on the lee side of the area to be protected. It is important during planning to consider the dominant wind direction during weather events that cause damage

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/windbreakshelterbelt-establishment-and-renovation-ft-380

Silvopasture Establishment

(Code 381)

Description
Silvopasture establishment involves establishing a combination of trees and compatible forages on the same acreage. Shrubs may be used along with trees and forages where desired and compatible.

Practice Information
Silvopasture systems are specifically designed and managed to produce trees, forage, and livestock on the same acreage. Silvopasture is created when forage crops are introduced or enhanced in a forested system (typically a plantation), when trees are added to a forage system, or when both trees and forages are established on suitable land.

Silvopasture practices contribute to the well-being of livestock, providing high-quality forages along with shade and shelter from sun, wind, and storms. They can be designed to produce income from wood products in the longer term, and a livestock operation in the short-term.

Where trees or shrubs are planted, species selection, site preparation, planting date and method, and tree spacing will vary depending on the specific purpose of the silvopasture, and on site conditions. Once planted, trees and shrubs need to be inspected periodically and protected from insects, diseases, competing vegetation, fire, and damage from livestock or wildlife.

Depending on the site, supplemental water may be required to ensure survival during the establishment period, typically 1 to 3 years. Replanting trees or forage may be necessary to meet objectives. Periodic applications of nutrients may be needed to maintain plant vigor.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/silvopasture-ac-381-conservation-practice-standard

Fence

(Code 382)

Description
A constructed barrier to animals or people.

Practice Information
This practice is applied to any area where livestock and/or wildlife control is needed, or where access to people is to be regulated. A wide variety of fences exist, however, fencing material and construction quality is always designed and installed to assure the fence will meet the intended purpose. The standard fence is constructed of either barbed or smooth wire suspended by posts with support structures. Other types include woven wire for small animals, electric fence, and suspension fences which are designed with heavy, but widely spaced posts and support structures.

Things to consider when planning a fence:
-Avoid irregular terrain as much as possible
-Impact on wildlife movement
-State and local laws
-Livestock handling, watering, and feeding requirements

Operation and maintenance for a fence include regular inspections after storms and other disturbance events. Maintain and repair a fence as needed, including tree and limb removal, water-gap replacement, repair or replacement of control features, and maintenance of fladry or signage.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/fence-ft-382-conservation-practice-standard

Field Border

(Code 386)

Description
Field borders are strips of permanent vegetation (grasses, legumes, forbs, or shrubs) established on one or more sides of a field.

Practice Information
The field containing the border is usually, but not necessarily, cropland. The border is generally converted from cropland but may be created by removing large trees at the edge of woodland, leaving a transition zone of herbaceous and small woody plants.

Field borders are functional and aesthetically pleasing. They are multipurpose practices that will serve one or more of the following functions:
-reduce wind and water erosion
-protect soil and water quality
-assist in management of harmful insect populations
-provide wildlife food and cover
-provide tree or shrub products
-increase carbon storage in biomass and soils
-improve air quality

The above functions should be considered when selecting the plant species for this practice.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/field-border-ac-386-conservation-practice-standard

Riparian Herbaceous Cover

(Code 390)

Description
Riparian herbaceous cover is establishment and maintenance of grasses, grass-like plants, and forbs that are tolerant of intermittent flooding or saturated soils and that are established or managed in the transitional zone between terrestrial and aquatic habitats.

Practice Information
This practice is used on lands along water courses or at the boundary of water bodies or wetlands where the natural or desired plant community is dominated by herbaceous vegetation; the ecosystem has been disturbed and the natural plant community is missing, changed, or has been converted to agricultural crops, lawns, or other high maintenance vegetation; or invasive species dominate.

The purposes of this practice include:
-Provision of food, shelter, shading substrate, access to adjacent habitats.
-Nursery habitat and pathways for movement by resident and nonresident aquatic, semiaquatic, and terrestrial organisms.
-Improvement and protection of water quality.
-Stabilization of streambanks and shorelines.
-Increased net carbon storage in the biomass and soil.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/riparian-herbaceous-cover-ac-390-conservation-practice-standard

Riparian Forest Buffer

(Code 391)

Description
An area predominantly covered by trees and/or shrubs located adjacent to and up-gradient from a watercourse or water body.

Practice Information
This practice applies to areas adjacent to permanent or intermittent streams, lakes, ponds, wetlands, and areas associated with groundwater recharge. The riparian forest buffer is a multipurpose practice designed to accomplish one or more of the following:

-Reduce transport of sediment to surface water, and reduce transport of pathogens, chemicals,-pesticides, and nutrients to surface and groundwater
-Improve the quantity and quality of terrestrial and aquatic habitat for wildlife, invertebrate species, fish, and other organisms
-Maintain or increase total carbon stored in soils and/or perennial biomass to reduce atmospheric concentrations of greenhouse gasses
-Lower elevated stream water temperatures
-Restore diversity, structure, and composition of riparian plant communities

Dominant vegetation consists of existing or planted trees and shrubs suited to the site and purpose(s) of the practice. Grasses and forbs that come in naturally further enhance the wildlife habitat and filtering effect of the practice. Headcuts and streambank erosion should be assessed and treated appropriately before establishing the riparian forest buffer. Specifications for each installation are based on a thorough field investigation of each site.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/riparian-forest-buffer-ac-391-conservation-practice-standard

Filter Strip

(Code 393)

Description
A filter strip is an area of vegetation established for removing sediment, organic material, and other pollutants from runoff and wastewater.

Practice Information
Filter strips are generally located at the lower edge(s) of a field and are designed to serve as a buffer between a field and environmentally sensitive areas such as streams, lakes, wetlands, and other areas susceptible to damage by sediment and waterborne pollutants.

In addition to serving as a buffer, with proper plant selection and management, filter strips can provide additional benefits such as:

-improved fish and wildlife habitat
-improved field access
-increased livestock forage

Operate and maintain filter strips by mowing, fertilizing, controlling weeds, and reseeding (as needed) to promote dense vegetative growth. After storm events, inspect filter strips and if needed, fill in gullies and remove accumulated sediment to keep filter strips functioning effectively.

Exclude livestock and vehicular traffic from filter strips during wet periods of the year to reduce compaction that will limit infiltration.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/filter-strip-ac-393-conservation-practice-standard

Grassed Waterway

(Code 412)

Description
A shaped or graded channel that is established with suitable vegetation to convey surface water at a nonerosive velocity using a broad and shallow cross section to a stable outlet.

Practice Information
Waterways are constructed to convey runoff from concentrated-flow areas, terraces, or diversions where erosion control is needed. Waterways can be used to control gullies and/or improve the water quality of downstream water bodies by reducing the sediment carried by runoff water.

Grassed waterways are usually parabolic or trapezoidal in shape and are designed to allow farm equipment to cross without damaging the waterway or the equipment.

When possible, species of vegetation should be selected that can serve multiple purposes, such as benefiting wildlife, while still meeting the basic criteria needed for providing a stable conveyance for runoff. Tall bunch grasses and perennial forbs may also be planted along waterway margins to improve wildlife habitat. Including diverse legumes or other forbs that provide pollen and nectar will have the added benefit of providing habitat for native bees.

This practice has a minimum expected life of 10 years. Some maintenance will be needed to maintain the waterway capacity, vegetative cover, and outlet stability. This will include mowing (or controlled grazing), fertilizing, and sediment removal. Most of the damage that occurs to grassed waterways is caused by equipment or herbicides and can be avoided by careful management. Vegetation that is damaged by machinery, herbicides, or erosion must be repaired promptly.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/grassed-waterway-ac-412-conservation-practice-standard

Wildlife Habitat Planting

(Code 420)

Description
Establishing herbaceous or herbaceous and shrubby wildlife habitat by planting of seeds or plants can provide essential wildlife food and cover. These plantings are particularly valuable when converting cropland or pastureland to dedicated wildlife habitat.

Practice Information
NRCS Conservation Practice Standard (CPS) Wildlife Habitat Planting (Code 420) is used to create herbaceous or shrubby wildlife habitat in areas that are currently being used for other purposes (e.g., crops or pasture). Additionally, this practice is used to convert existing poor quality habitat to high quality habitat. For example, this practice is commonly used to convert monoculture introduced grasslands areas (e.g., smooth brome grass, old-world bluestems, and fescue) to habitat with more plant species richness. CPS Wildlife Habitat Planting (Code 420) is very commonly used to provide habitat rich in blooming forbs for pollinators and monarch butterflies.

The practice lifespan is 5 years, with a target plant community dominated by species that will persist for the life of the practice. Annual wildlife plantings (e.g., annual food plots) are not planted using this practice, but rather are planted using CPSs Upland Wildlife Habitat Management (Code 645) or Wetland Wildlife Habitat Management (Code 644), each having a practice lifespan of 1 year. Habitat planted to trees is implemented using CPS Tree and Shrub Establishment (Code 612), with a practice lifespan of 15 years.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/wildlife-habitat-planting-ac-420-conservation-practice-standard

Hedgerow Planting

(Code 422)

Description
Hedgerow planting involves establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.

Practice Information
Hedgerows are established using woody plants or perennial bunch grasses that produce erect stems of at least 3 feet in height that will persist over winter.

Conservation benefits include but are not limited to:
-improved wildlife habitat, and
-reduced drift of airborne dust, chemicals, and odors.

Hedgerows also help to screen noise and improve landscape appearance. Hedgerows containing a mixture of native shrubs and small trees provide the greatest environmental benefits. It is important to consider the amount of shading a hedgerow will provide at maturity. Shading and root growth may impact growth of adjacent plants and microclimate.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/hedgerow-planting-ft-422-conservation-practice-standard

Irrigation Water Management

(Code 449)

Description
The process of determining and controlling the volume, frequency, and application rate of irrigation water.

Practice Information
Irrigation water management is primarily used to manage soil moisture to promote plant growth. It can also be used to optimize use of available water supplies, minimize irrigation-induced erosion, reduce surface and ground water pollution, manage salts in the root zone,improve poor plant productivity and health, reduce energy use,and provide for safe chemigation or fertigation. Additional uses include management of air, soil, or plant microclimates and dust control.

Proper irrigation scheduling is the most critical component of this practice. The operator must understand when it is time to irrigate, how much water to apply, and where the water is going when it is applied. The operator must also know how to prevent erosion and ground water contamination and how to adjust the system to account for these concerns. Additional specialized requirements apply to surface, subsurface, and pressurized irrigation systems.

When irrigation is used for chemical, nutrient, or wastewater application, it should be scheduled to coincide with the irrigation cycle in order to avoid excess runoff to surface water or leaching to ground water.

Irrigation water management is an annual practice that may change with the crops grown.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/irrigation-water-management-ac-449-conservation-practice-standard

CPS Mulching

(Code 484)

Description
Mulching is applying plant residues or other suitable materials to the land surface.

Practice Information
This practice is used on all lands subject to erosion and high runoff that need the additional protection. Mulching can be applied to achieve one or a combination of purposes.

Purposes for utilizing this practice are—
-To help control soil erosion.
-Protect crops.
-Improve moisture management.
-Reducing irrigation energy.
-Prevent excessive bank erosion from water conveyance channels.
-Maintain or increase organic matter.
-Improve plant productivity and health.

Mulch materials may consist of natural or artificial materials of sufficient dimension (depth or thickness) and durability to achieve the intended purpose for the required time period.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/mulching-ac-484-conservation-practice-standard

Forage Harvest Management

(Code 511)

Description
Forage harvest management includes timely cutting and removal of forages as hay, green-chop, or ensilage.

Practice Information
This practice applies to all land uses where forage is machine harvested. Forage is harvested at a frequency and height that optimizes the desired forage stand, plant community, and stand life.

When harvesting for feed, health considerations for specific plant and animal species must be considered. Depending on the plant material, drought conditions may increase nitrate levels in forages to the point of possible toxicity, while prussic acid poisoning may be an issue with frosted material.

In conjunction with harvest options, storage and feeding options may be needed that will retain acceptable forage quality and minimize digestible dry matter loss. Where weather conditions make it difficult to harvest the desired quality of forage, use of mechanical or chemical conditioners, and/or ensiling may be required.

Harvest may be delayed if prolonged or heavy precipitation is forecast that would reduce forage quality. Green-chopping or ensiling the forage to reduce or eliminate field-drying time may be necessary in regions where rainfall and/or humidity levels cause unacceptable forage quality losses. Other options include the use of desiccants, preservatives, or macerating implements to reduce field-drying time.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/forage-harvest-management-ac-511-conservation-practice-standard

Pasture and Hay Planting

(Code 512)

Description
Pasture and hay planting is establishing adapted and compatible species, varieties, or cultivars of perennial herbaceous plants suitable for pasture or hay production.

Practice Information
This practice applies to all lands suitable for establishment of perennial species for pasture and hay production. This practice does not apply to establishment of annually planted and harvested food, fiber, or oilseed crops.

Pasture and hay planting can help improve or maintain livestock nutrition and/or health, provide or increase forage supply during periods of low forage production, reduce soil erosion, and improve water and air quality. Considerations for plant species selection can include climatic conditions such as annual precipitation and its distribution, growing season length, temperature extremes, and the USDA Plant Hardiness Zone.

Soil condition and landscape position attributes, such as pH, available water holding capacity, aspect, slope, drainage class, fertility level, salinity, depth, flooding and ponding, and levels of phytotoxic elements may be important considerations. Resistance to disease and insects common to the site or location may also be important.

Planting rates, methods, and dates may be recommended from the NRCS Plant Materials Program, other NRCS technical documents, land grant and research institutions, and extension agencies. Land grant university field trials of various forages can be helpful in selecting forage species for planting, as well. Refer to the local NRCS Field Office Technical Guide for information on cultural specifications for establishing and managing the species for the intended use.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/pasture-and-hay-planting-ac-512-conservation-practice-standard

Livestock Pipeline

(Code 516)

Description
A livestock pipeline is a pipeline installed to convey water for livestock or wildlife.

Practice Information
The purpose of NRCS Conservation Practice Standard (CPS) Livestock Pipeline (Code 516) is to convey water from the source of supply to the points of use. This practice is also used to reduce energy use. Normally, the objective is to decentralize the location of drinking or water storage facilities. The practice is applicable where water must be piped to another location for management purposes, to conserve the supply, or for reasons of sanitation.

Pipelines installed under this practice are generally for livestock management purposes. A single water source can provide livestock water to several locations and be very effective in improving management of a grazing unit. Livestock pipelines are also used to provide or distribute drinking water facilities for wildlife. The livestock pipeline will require maintenance over the expected life of the practice.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/livestock-pipeline-ft-516-conservation-practice-standard

Prescribed Grazing

(Code 528)

Description
Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.

Practice Information
Not available.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/prescribed-grazing-ac-528-conservation-practice-standard

Range Planting

(Code 550)

Description
The seeding and establishment of herbaceous and woody species for the improvement of vegetation composition and productivity of plant communities when the existing ecological state is insufficient to meet management goals or the timely natural recovery toward a more desirable state is not expected.

Practice Information
This practice is used to restore a plant community to a state similar to the ecological site description reference state for the site or another desired plant community; provide or improve forages for livestock; provide or improve forage, browse, or cover for wildlife; reduce erosion by wind and water; improve water quality and quantity; restore hydrologic function; and increase and/or stabilize carbon balance and sequestration.

Plant species and functional/structural groups selected for this practice must meet the ecological requirements of the site. Planting methods and seedbed preparations will vary depending on site conditions and ecological goals. Monitoring will document the success or failure of the planting establishment.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/range-planting-ac-550-conservation-practice-standard

Stripcropping

(Code 585)

Description
Stripcropping is growing crops in a systematic arrangement of strips in a field to reduce soil erosion, reduce particulate emissions into the air, and improve water quality.

Practice Information
This practice is used on cropland and certain recreation and wildlife lands where field crops are grown. The crops are arranged so that a strip of grass or close-growing crop is alternated with a clean tilled strip or a strip with less protective cover. Generally, the strip widths are equal across the field. On sloping land where sheet and rill erosion are a concern, the strips are laid out on the contour or across the general slope. Where wind erosion is a concern, the strips are laid out as close to perpendicular as possible to the prevailing erosive wind direction.

In addition to its primary purpose of reducing soil erosion and improving water quality, the practice is also effective in increasing infiltration and available soil water, and improving wildlife habitat.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/stripcropping-ac-585-conservation-practice-standard

Nutrient Management

(Code 590)

Description
Manage rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts.

Practice Information
Nutrient management may be used on any area of land where plant nutrients and soil amendments are applied. Nutrient management may be used to improve crop productivity and improve soil organic matter while reducing environmental impacts. Sources of nutrients include, but are not limited to, commercial fertilizers (including starter and in-furrow starter/pop-up fertilizer), animal manures, legume fixation credits, green manures, plant or crop residues, compost, organic by-products, municipal and industrial biosolids, wastewater, organic materials, estimated plant available soil nutrients, and irrigation water.

Nutrients are managed based on the 4Rs of nutrient stewardship—apply the right nutrient source at the right rate at the right time in the right place—to improve nutrient use efficiency by the crop and to reduce nutrient losses to surface water and groundwater and to the atmosphere.

Operation and maintenance provide that nutrient management plans must be reviewed and revised, as needed, with each soil test cycle; changes in manure management, volume or analysis, plants and crops; or plant and crop management. Records must be maintained for at least 5 years to document plan implementation.

All nutrient management activities must adhere to national, State and local water quality regulations.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/nutrient-management-ac-590-conservation-practice-standard

Vegetative Barrier

(Code 601)

Description
A vegetative barrier is a permanent strip of stiff, dense vegetation established along the general contour of slopes or across concentrated flow areas.

Practice Information
Vegetative barriers are used to reduce sheet and rill erosion, manage water flow, stabilize steep slopes, trap sediment, or reduce ephemeral gully erosion.

This practice applies to all eroding areas, including cropland, grazing land, forest land, farmsteads, mined land, and construction sites.

When used to reduce sheet and rill erosion, vegetative barriers are established along the contour and at intervals necessary to meet erosion reduction goals.

When used to control ephemeral gully erosion, vegetative barriers are established across concentrated flow areas perpendicular to the direction of water flow.

Recommended plant species must be adapted to local soil and climate conditions; be easily established, long-lived, and manageable; and must maintain the necessary stiffness to meet the intended purpose.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/vegetative-barrier-ft-601-conservation-practice-standard

Herbaceous Wind Barriers

(Code 603)

Description
Herbaceous wind barriers are rows or narrow strips of herbaceous vegetation established in a field perpendicular to the prevailing wind direction.

Practice Information
Installation of the practice requires that the vegetation in the wind barriers be stiff and be resi stant to lodging during inclement weather/ seasons. The plant material must also have good leaf retention and not pose a competitive threat to adjacent crops. Conservation benefits include but are not limited to:
-reduce soil erosion (wind erosion: saltation, creep, and suspension)
-reduce soil particulate emissions to improve air quality
-improve plant health by reducing crop damage by wind or wind-borne soil particles

Installation requires analysis of the wind direction, field size, crop types, and machinery types and size. These factors will determine the alignment, height and width, and distance between the strips. After establishment, wind barriers may need to be fertilized to maintain plant vigor. Noxious weeds must be controlled. Gaps in the barriers must be replanted as soon as practical to maintain effectiveness.

Over time, wind-borne sediment accumulated by the barriers may need to be redistributed over the surface of the field. To maintain effectiveness wind barriers need to be reestablished or relocated periodically depending on the vegetation used to create the barriers, soil, crops grown, and frequency of high-wind events.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/herbaceous-wind-barriers-ft-603-conservation-practice-standard

Tree/Shrub Establishment

(Code 612)

Description
Tree/shrub establishment involves planting seedlings or cuttings, seeding, or creating conditions that promote natural regeneration.

Practice Information
Trees and shrubs can be established for a variety of purposes. Conservation benefits may include, but are not limited to—
-establishing forest cover
-enhancing wildlife habitat
-controlling erosion
-improving water quality
-capturing and storing carbon
-conserving energy

Species selection, site preparation, planting date and method, and tree spacing will vary depending on the planned purpose and site conditions. Once planted, trees and shrubs need to be inspected periodically and protected from insects, diseases, competing vegetation, fire, and damage from livestock or wildlife.

Depending on the site, supplemental water may be required to ensure survival during the establishment period, typically 1 to 3 years. Periodic applications of nutrients may be needed to maintain plant vigor.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/treeshrub-establishment-ac-612-conservation-practice-standard

Watering Facility

(Code 614)

Description
A watering facility is a means of providing drinking water to livestock or wildlife.

Practice Information
A watering facility is used to provide livestock and/or wildlife with drinking water to meet their daily needs. Proper location of a trough improves animal distribution and vegetation associated with the watering facility.

A watering facility is sometimes installed to keep livestock out of streams and other surface water areas where water quality is a concern. This practice applies to all land uses where there is a need for a watering facility for livestock and/or wildlife, where there is a source of water that is adequate in quantity and quality, and where soils and topography are suitable for a facility.

The water source may be a well, spring, stream, pond, municipal water supply, or other source, including water hauled from offsite, in some situations. A tank can be installed to store water to supply the trough. A watering ramp can be used to provide controlled access to a pond or stream.

This practice has a minimum expected life of 10 years. Operation and maintenance of the watering facility includes cleaning, repair or replacement of damaged components, ensuring adequate inflow and outflow, and winterizing. If a portable trough is used, operation and maintenance includes moving the trough and monitoring the condition of the associated vegetation.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/watering-facility-no-614-conservation-practice-standard

Upland Wildlife Habitat Management

(Code 645)

Description
Upland wildlife habitat management offers guidance on establishing and managing upland habitats and connectivity within the landscape for wildlife.

Practice Information
Upland wildlife habitat concerns are identified during the conservation planning process that enables wild animals to meet their life requisite needs. This practice is applicable on agricultural working lands as well as all other lands.

Structural, vegetative, or management measures to improve food and cover for the desired species of wildlife are identified. Examples include creating food plots, planting warm or cool season grasses or legumes, forbs, trees, or other woody vegetation depending on the desired-target wildlife species.

How land is managed affects the kinds and amounts of wildlife. Carefully planned wildlife habitat can add value and beauty to the landscape.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/upland-wildlife-habitat-management-ac-645-conservation-practice

Wetland Restoration

(Code 657)

Description
Wetland restoration is a way to return a former or degraded wetland to a condition that is a close approximation of its original condition.

Practice Information
Wetlands are a valuable part of the natural landscape because they provide habitat for wildlife, reduce flooding, improve water quality, and increase groundwater recharge. There are three major characteristics of a wetland; hydric soils, hydrology, and hydrophytic (water-loving) vegetation.

The most common reason that a wetland has been lost or degraded is that the hydrology of the site has been changed. This causes the hydrophytic vegetation to disappear. Restoration of the hydrology of the site usually causes a natural return of the hydrophytic plants. When a wetland restoration is planned, consider the effects on the adjacent surface and groundwater hydrology.

Water temperature and flow volumes and direction may be affected. Also consider the effects on the aquatic species, including fish and amphibians. This practice has a minimum expected life of 15 years.

The operation and maintenance plan will include an inspection schedule, a list of items to inspect, recommended repairs, and procedures for documentation. A list of management and monitoring activities will also be included. One major component of this practice is maintenance of the vegetation once it is established.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/wetland-restoration-ac-657-conservation-practice-standard

Wetland Enhancement

(Code 659)

Description
Wetland enhancement is the rehabilitation or reestablishment of a degraded wetland, and/or the modification of an existing wetland to favor specific wetland functions.

Practice Information
This practice applies on any degraded or non degraded existing wetland where the objective is specifically to enhance selected wetland functions. This practice is not used on degraded wetlands when the soils, hydrology, vegetative community, and biological habitats are returned to original conditions or where a wetland is created on a site that historically was not a wetland.

The purpose of this practice is to provide specific wetland conditions by:
-Hydrologic enhancement (depth duration and season of inundation, and/or duration and season of soil saturation), and/or
-Vegetative enhancement (including the removal of undesired species, and/or seeding or planting of desired species).
-Native vegetative species should be used in the enhancement whenever possible. Manipulation of water levels can be used to control unwanted vegetation. Haying or grazing can also be used to manage vegetation.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/wetland-enhancement-ac-659-conservation-practice-standard

Forest Stand Improvement

(Code 666)

Description
Forest stand improvement is the manipulation of species composition, structure, or density of a stand of trees to achieve desired forest condition.

Practice Information
This practice applies to forestland where competing vegetation interferes with the growth of preferred tree and understory species. Preferred plants are identified and retained to achieve the desired composition and structure of the forest stand. Specifications for this practice include defining the spacing, density, and number or area of preferred plants.

Timing of treatment and retaining dead or dying trees will help minimize impacts on nesting birds and other wildlife. Food and cover for desired wildlife species may be enhanced by modifying tree and understory composition and spacing.

Conservation benefits may include but are not limited to:
-Improved plant health and productivity.
-Improved forest structure and composition.
-Reduced susceptibility to pests and moisture stress.
-Reduced wildfire hazard.
-Improved wildlife, fish, and pollinator habitat.
-Manage natural precipitation more efficiently.
-Increased carbon storage.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/forest-stand-improvement-ac-666-conservation-practice-standard

Energy Efficient Lighting System

(Code 670)

Description
An agricultural lighting system with increased energy efficiency.

Practice Information
NRCS Conservation Practice Standard (CPS) Energy Efficient Lighting System (Code 670) is applied to improve energy efficiency of agricultural lighting systems. The practice applies to any agricultural facility with an electrical lighting system and may include luminaires (lamps, ballast, and housing), controls, and wiring as appropriate. This includes all agricultural operations, including, but not limited to animal housing, greenhouses, onfarm processing facilities, and farmyard lighting.

The plan for an energy efficient lighting system is based on the lighting needs of the facility for the intended purpose of each area or space. An assessment evaluating the potential for increased energy efficiency and savings is necessary to select more energy efficient system components. The intended use of the facility also needs to be considered to select materials that are rated for dusty, moist, or potentially corrosive environments such as animal housing. In some cases lighting system modifications may impact heating, cooling, or ventilation requirements for the facility. These impacts are often minor, but they should be considered when planning changes to the lighting system. Installation of system components and any potential modification to electrical wiring may require permits and a licensed contractor to complete the work.

Energy efficient lighting systems require maintenance over the expected 10-year life of the practice to maintain desired lighting levels and performance.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/energy-efficient-lighting-system-no-670-conservation-practice

Energy Efficient Building Envelope

(Code 672)

Description
A boundary between a conditioned space and an unconditioned space that meets or exceeds best practices for energy efficiency.

Practice Information
NRCS Conservation Practice Standard (CPS) Energy Efficient Building Envelope (Code 672) is applied to improve the energy efficiency of agricultural building envelopes. The practice applies to any partially or fully conditioned agricultural building or space. A partially conditioned space is a building or space using both mechanical ventilation and natural ventilation. Ventilation systems can be used individually or at the same time. Examples include curtain-sided poultry broiler or swine finishing houses, and dairy milking parlors, among others. A fully conditioned space is a building or space using fans, heaters, or other mechanical devices for year-round conditioning of the space. Mechanically ventilated systems can be negative, positive, or neutral pressure.

The practice does not apply to residential spaces or buildings.

The plan for an energy efficient building envelope is based on the building tightness, insulation, and ventilation needs of the facility for the intended purposes of each area or space. An assessment evaluating the potential for increased energy efficiency and savings is necessary to select energy efficient building envelope components that provide the desired level of improvement. The intended use of the facility also needs to be considered to select materials that are rated for dusty, moist, or potentially corrosive environments such as animal housing. Building envelope modifications will impact heating, cooling, or ventilation requirements for the facility.

Energy efficient building envelopes will require maintenance over the expected 10 year life of the practice to maintain desired building tightness and insulation levels.

NRCS Standards Page
https://www.nrcs.usda.gov/resources/guides-and-instructions/energy-efficient-building-envelope-no-672-conservation-practice

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

(Code E528P)

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.

Practice Information

None available.

NRCS Standards Page

https://www.nrcs.usda.gov/sites/default/files/2022-11/E528P%20May%202020.pdf