



EQIP and CLC



Summer 2015
Continuous Living Cover Series

GLOSSARY

Agroforestry - In simple terms, agroforestry is intensive land-use management combining trees and/or shrubs with crops and/or livestock (The Center for Agroforestry at the University of Missouri, no date).

Biomass – For this document, the term “biomass” refers to the use of perennial crops, rather than annual crops, as a feedstock for bio-industrial energy production.

Continuous Living Cover (CLC) – The strategy of integrating summer row crops, winter annual crops, and perennial crops with the goal of keeping farm fields covered and rooted in place continuously throughout the year.

Cover Crops – Crops that are grown when the primary cash crop is not growing. Some of the objectives for using cover crops include improved soil quality, better water infiltration, weed and pest suppression, as well as erosion and runoff prevention.

Pasture – A plot of land used for grazing animals.

Forage - Plant material that livestock graze or that is cut and fed to them.

Perennial Grains – Grain crops that produce a crop every year without the need to reseed every year as with annual grains.

Stacking – In the context of this document, stacking refers to the ability to use more than one CLC strategy in the same field or on the same farm at the same time.

Prairie Strips - Prairie conservation strips are a tool for improving the function and integrity of row-cropped farms. Researchers at STRIPS (Science-based Trials of Rowcrops Integrated with Prairie Strips) have found that strategically planting small patches and strips of native prairie in farmland provides multifunctional benefits disproportional to

the amount of land converted. In other words, small patches make a big difference (“A Landowner’s Guide to Prairie Conservation Strips”, no date).

The Environmental Quality Incentives Program (EQIP) is funded by the Farm Bill to provide financial, technical, and educational assistance to agricultural producers. The purpose is to help plan and implement practices that conserve natural resources on agricultural land. The focus of EQIP is to improve soil, water, plant, animal, air and related resources while maintaining and promoting production. Producers can also utilize EQIP for assistance in meeting environmental regulations. The program is voluntary and contracts can last up to ten years (“Environmental Quality Incentives Program” | NRCS, n.d.).

EQIP’s strength – assistance for many kinds of individual conservation practices – can also present an obstacle to conservation-oriented farmers and landowners. It is complicated for landowner/operators to get EQIP funding to simultaneously implement a number of complementary practices. These kinds of multiple practice systems are embraced by Green Lands Blue Waters and can be challenging to “fit” with federal conservation program codes. This chapter was created to explore different ways that EQIP funding might support continuous living cover (CLC) strategies and systems.

Continuous Living Cover (CLC) refers to the concept of keeping plant cover on the land all year long. Green Lands Blue Waters promotes five CLC strategies: agroforestry, cover crops, perennial forage, perennial grains, and biomass (<http://greenlandsbluewaters.net/strategies/clc>).

Stacking of Strategies and Placement on the Land

“Stacking” of CLC strategies refers to the use of multiple CLC strategies on the same farm or acreage at the same time. An example of stacking two CLC of strategies (agroforestry and perennial forage) is growing forestry products in rows with a perennial forage crop



Photo courtesy of <http://dustbowljournalists.weebly.com/tasks.html>

placed between the forestry rows. The CLC strategies complement and reinforce each other. The woody species keep the soil in place, provide summer shade or winter wind protection for the livestock, provide a microclimate buffer and provide income from fruit, nut, or high-value lumber crops. The perennial forage portion of the system also holds soil in place and can bring a premium price for grass-fed beef or dairy. Both strategies improve soil health and water infiltration. By stacking CLC strategies, farm resiliency can be improved and profitability maintained (Asbjornsen et al., 2014).

Placement of CLC strategies, that is, deliberate choice of locations is important to optimize environmental benefits and economic returns. Stacking and placement of CLC can go hand-in-hand. In the “Placement of Continuous Living Cover” chapter of this manual, there is a more in-depth discussion of decision-making on placement of CLC strategies.

Standard conservation planning is done on a field by field, practice by practice basis, addressing individual conservation issues. For example, a riparian buffer along a stream can reduce soil and nutrient loss while improving water infiltration around the stream. Cover crops on annual row-crop fields can reduce erosion, improve water infiltration, and boost productivity. A shelterbelt placed along the prevailing wind direction can reduce wind erosion, increase production, and capture runoff. Implementing any one of these practices in a particular location can address a specific problem.

However, linking these strategies together on a whole-farm basis (stacking CLC strategies) helps to better manage water, fertility, and productivity across the entire farm and over time. For examples of how farmers in the Upper Midwest have used stacking of CLC strategies to improve the productivity and resiliency of their farms, see the farmer profiles in this manual.

Beyond the farm, benefits of CLC will extend to the broader community in the form of improved water quality on the watershed scale, increased wildlife habitat and corridors, and better economic resilience of farm communities during wet or dry climate cycles. Those benefits that extend beyond the farm borders are part of the reason why the federal Farm Bill funds these conservation programs.

A Quick Look at EQIP and CLC

There are several steps in the process of receiving funding for conservation on the farm. The first step is to visit the local NRCS office for assistance in creating a conservation plan. Once this initial planning process is complete, an application for financial assistance can be submitted. The application is then reviewed by NRCS to be sure that the applicant is eligible. After eligibility is established, all current applications are ranked based on local resource concerns (see “Make a Difference by Getting Involved” section of this chapter). If the application is selected for funding, a contract is signed and the conservation practices are implemented.

Source:

<http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/home/?cid=stelprdb1193811>

Table 1 takes a quick look at some of the funded EQIP practices that have the potential to support CLC, either as individual strategies or as stacked strategies. The “Count of CLC strategies that can be applied” represents the flexibility of an EQIP practice; how many of the five types of CLC strategies could be funded for implementation or management under the practice.

Table 1. Continuous Living Cover (CLC) strategies that might be used in Natural Resource Conservation Service Environmental Quality Incentives Program (EQIP) practices in the Midwest.

Practice Number†	Practice Name†	Count of CLC strategies that can be applied‡	CLC strategies				
			Forage	Biomass	Perennial Grains	Agroforestry	Cover Crops
311	Alley Cropping	5	X	X	X	X	X
327	Conservation Cover	1				X	
328	Conservation Crop Rotation	4	X	X	X		X
332	Contour Buffer Strips	3	X	X	X		
340	Cover Crop	2					X
342	Critical Area Planting	2	X	X	X	X	
589c	Cross-Wind Trap Strips	3	X	X	X		
647	Early Successional Habitat Development/ Management	2	X			X	
386	Field Border	4	X	X	X	X	
393	Filter Strip	2	X		X		
512	Forage and Biomass Planting	3	X	X	X		
511	Forage Harvest Management	3	X	X	X		
412	Grassed Waterway	3	X	X	X		
422	Hedgerow Planting	1				X	
603	Herbaceous Wind Barriers	3	X	X	X		
595	Integrated Pest Management	5	X	X	X	X	X
379	Multi-Story Cropping	4		X	X	X	X
582	Prescribed Grazing	3	X		X		X
550	Range Planting	3	X		X		X
391	Riparian Forest Buffer	1				X	
390	Riparian Herbaceous Cover	3	X	X	X		

381	Silvopasture Establishment	3	X		X	X	
Practice Number†	Practice Name†	Count of CLC strategies that can be applied‡	CLC strategies				
			Forage	Biomass	Perennial Grains	Agroforestry	Cover Crops
612	Tree & Shrub Establishment	3	X	X		X	
490	Tree & Shrub Site Preparation	3			X	X	
645	Upland Wildlife Habitat Management	5	X		X	X	
739	Vegetated Subsurface Drain Outlet	3	X	X	X		
601	Vegetative Barriers	1		X			
380	Windbreak/Shelterbelt Establishment	2	X			X	
650	Windbreak/Shelterbelt Renovation	2	X			X	
† As assigned by NRCS. ‡ Represents the number of Continuous Living Cover strategies that might be funded under this EQIP contract.							

It is possible to stack CLC strategies in one area by using multiple EQIP contracts. Table 4 shows examples of EQIP practices that are frequently used together; but other combinations are possible as well. Part of the process of establishing EQIP contracts at the local level depends on what the farmer asks for. Farmers and farm advisors who are aware of the potential for stacked CLC strategies can help direct the process toward either the EQIP practices that allow for stacked CLC; or the use of several EQIP practices in a connected fashion to achieve stacked CLC. The goal would be to link continuous living cover strategies together and achieve whole-farm conservation.

The amount of acreage to be managed for CLC is also a consideration. Some of the EQIP practices are more amenable to large acreages than others. Conservation crop rotation, for instance, can be used on large-scale row-cropped acres. Prescribed grazing can also take place on large acreage. These are two examples of EQIP practices can easily be combined with other EQIP practices, such as Field Border or Hedgerow Planting, to allow multiple CLC strategies to take place within that cropped or grazed area.

For a more in-depth description of these EQIP practices as they relate to CLC, please see Table 4 at the end of this chapter.

The payment ranges for EQIP practices that support CLC are shown in Table 2. These rates were collected from the 2015 Fiscal Year EQIP payment rates for Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Each EQIP practice is broken into sub-practices or “components.” Each component has a payment rate associated with it, and these differ depending on the complexity and expense of implementing the component of the practice. The payment rates also vary from state to state as well as from year to year, and are further complicated by the fact that states can set different percentages that they will pay for each practice. The ranges reported in Table 2 were found by taking the smallest and largest dollar amounts across all components and among all five states for each EQIP practice. For more detail regarding payment rates in your area and how the rates are set, please contact your local or state NRCS office. It should also be noted that contracts involving rented land require written permission from the landowner for the life of the contract.



Photo - Cover Crops, Rick Cruse

Table 2. Natural Resource Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) practice number, name, and range of pay rates for Iowa, Illinois, Minnesota, Missouri, and Wisconsin.

Practice Number†	Practice Name†	States Currently Funding‡	Payment Range Per Unit§
311	Alley Cropping	IL	\$1.89 – \$20.53/plant
327	Conservation Cover	IA IL MN MO WI	\$90.00 - \$3758.84/Acre
328	Conservation Crop Rotation	IA IL MN MO WI	\$1.75 - \$338.91/Acre
332	Contour Buffer Strips	IA IL MN WI	\$266.49 - \$745.82/Acre
340	Cover Crop	IA IL MN MO WI	\$29.88 - \$933.79/Acre
342	Critical Area Planting	IA IL MN MO WI	\$123.02 - \$16,078.31/Acre
589c	Cross-Wind Trap Strips	NONE	No data
647	Early Successional Habitat Development/Management	IA IL MN MO WI	\$48.87 - \$496.14/Acre
386	Field Border	IA IL MN MO WI	\$116.26 – \$729.61/Acre
393	Filter Strip	IA IL MN WI	\$262.86 - \$624.63/Acre
512	Forage and Biomass Planting	IA IL MN MO WI	\$71.66 - \$492.68/Acre
511	Forage Harvest Management	IA IL MN WI	\$2.11 - \$7.86/Acre
412	Grassed Waterway	IA IL MN MO WI	\$1379.34 - \$4876.84/Acre
422	Hedgerow Planting	IA IL	\$0.23 - \$2.70/Foot
603	Herbaceous Wind Barriers	IL	\$0.08/Linear Foot
595	Integrated Pest Management	IA IL MN MO WI	\$5.64 - \$1259.68/Acre
379	Multi-Story Cropping	NONE	No data
582	Prescribed Grazing	IA IL MN MO WI	\$12.92 - \$595.09/Acre
550	Range Planting	NONE	No data
391	Riparian Forest Buffer	IA IL MN WI	\$410.74 - \$2818.38/Acre
390	Riparian Herbaceous Cover	IA IL	\$331.12 - \$645.45/Acre
381	Silvopasture Establishment	NONE	No data
612	Tree & Shrub Establishment	IA IL MN MO WI	\$193.69 - \$1314.66/Acre
490	Tree & Shrub Site Preparation	IA IL MN MO WI	\$24.90 - \$246.46/Acre
645	Upland Wildlife Habitat Management	IA IL MO WI	\$2.01 - \$224.39/Acre
739	Vegetated Subsurface Drain Outlet	IA MN	\$2.97 - \$4.00/Foot
601	Vegetative Barriers	MN	\$0.08 - \$0.14/Linear Foot
380	Windbreak/Shelterbelt Establishment	IA IL MN MO WI	\$0.20 - \$2.39/Foot
650	Windbreak/Shelterbelt Renovation	IA IL MN WI	\$0.20 - \$1.19/Linear Foot

† As assigned by NRCS.

‡ States providing a payment rate on EQIP Fiscal Year 2015 Payment Rate documents for Illinois, Iowa, Minnesota, Missouri, and Wisconsin are listed in this column. If a state did not list the practice or a payment rate for the practice, it was assumed that the state does not fund the particular EQIP practice.

§ Pay rates were collected from EQIP Fiscal Year 2015 Payment Rate documents for Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Each practice has a series of sub-practices or “components”. The prices above simply represent the highest possible pay rate and the lowest possible pay rate based on the documents reviewed.

Prairie STRIPS and the EQIP Program

Plants native to the North American prairies have multiple ecological benefits. Above ground, native plants provide food and habitat for wildlife, pollinators, and beneficial insects. Below ground these plants are easily as beneficial as above ground. About 80 percent of a perennial prairie plant's mass lies in the root system. The roots are constantly sloughing off cells and building anew. Over time these sloughed off cells build rich, fertile soil. In the constant cycle of growth and death, the roots leave behind organic matter and create a network of pore spaces in the soil. This network of roots and pore spaces combined with organic matter provide the ability to absorb water, hold water, and let it slowly move down into the water table. Bare soil, compacted soil, and soil with little organic matter does not allow this infiltration or "soaking in". The result is increased surface movement of water. The surface water, or run-off, moves over land until it finally meets a water body such as a stream or river. Run-off frequently contains agricultural chemicals, nutrients in the form of fertilizer, as well as precious topsoil. These contaminants pollute local waters and frequently find their way to larger water bodies. The lack of water infiltration found in poor soils can also compound the effects of drought and increase flooding during wet seasons.

Diminished water quality is only one disadvantage to soil loss. In the United States, cropland loses an average of just under 9000 lbs/acre per year of soil to erosion. This can mean sustained reduction in productivity as soil formation is much slower than this rate of loss. It can take 10 to 20 years to form the equivalent of one year's loss (Pimentel, 2006).

In light of the concerns associated with erosion and runoff, Iowa State University and several partners formed STRIPS (Science-based Trials of Row-crops Integrated with Prairie Strips). The STRIPS project has been collecting data on the benefits of adding perennial native plants to conventional row-crop settings. The research provides hard data that shows how converting just 10% of a crop field to perennial natives, can reduce the loss of topsoil by 90% (Helmert et al., 2012).

The STRIPS project is made up of scientists, educators, and extension specialists working together. The partners involved have a goal of gaining a better understanding of the assembly, management, function, and value of prairie strips in an agricultural setting. The information gathered is shared with others and is used to assist



producers in implementing prairie strips on their farms. The assistance that the STRIPS project provides is informational only and does not provide funding.

Several of the NRCS (Natural Resource Conservation Service) EQIP (Environmental Quality Incentives Program) funded conservation practices presented in this document allow for, and fund the types of placement of perennial species on the landscape that the STRIPS project has shown to be so beneficial. In most cases, when native plants are allowed under an EQIP practice, the payment rate is higher for natives than for non-natives to cover the higher cost of implementing natives. Additionally, some of the EQIP practices allow for the harvest of the native perennials placed on the field. Native prairie plants can be grazed, hayed, and harvested for forage or energy biomass. **Table 3** shows EQIP practices that relate to prairie strips.

By strategically placing these practices on the field and incorporating native perennials, multiple benefits can be realized. The benefits include habitat for wildlife, pollinators and beneficial insects, improved soil health and fertility, reduced loss of topsoil and nutrients, better resilience during heavy rain and drought, and improved water quality as well as potential income from harvest. These practices will take up a portion of the farmer’s land, but the benefits reach beyond the borders of the farm now and for future generations.

Table 3. List of EQIP conservation practices and how they relate to integration of prairie strips.	
EQIP PRACTICE	HOW THE PRACTICE RELATES TO PRAIRIE STRIPS
311 Alley Cropping	By definition, alley cropping is the planting of a vegetative crop in areas between rows of a woody species. The areas between the woody species rows could be planted to a perennial forage or biomass crop. Alley cropping may be used to implement prairie strips only if the perennial strip is quite wide to allow for two rows of woody species with a perennial vegetative crop in between.
332 Contour Buffer Strips	Contour Buffer Strips uses herbaceous vegetative cover to prevent erosion and improve water infiltration on hills lopes. This practice could be used to implement prairie strips and has the potential to be used as a forage crop with some restrictions on time of harvest.
342 Critical Area Planting	Critical Area Planting deals with the seeding

	and establishment of permanent vegetation in highly erodible areas, or areas where establishing vegetation is difficult. This would be a good place to plant perennial prairie plants.
589c Cross-Wind Trap Strips	Cross Wind Trap Strips are herbaceous strips planted perpendicular to the prevailing winds to prevent wind erosion and protect growing crops. Strategically place strips to reduce overland flow of water as well as wind erosion.
647 Early Successional Habitat Development/Management	The purpose of the Early Successional Habitat Development/Management practice is to create and maintain wildlife habitat and/or natural communities. Grazing can be used as a management strategy making prairie strips a good choice with this practice.
386 Field Border	Field Borders provide many ecosystem services and can be profitable as well. Plant field borders to prevent wind and water erosion, protect soil and water quality, and harvest perennial grains, biomass, and/or forage. Plant prairie strips and increase pollinator habitat.
393 Filter Strip	Filter Strips are planted to remove contaminants from overland flow. The strip should be permanent, herbaceous vegetation. In some cases the strips can be grazed.
412 Grassed Waterway	A Grassed Waterway is a shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity. Prescribed grazing can be practiced on the waterways. Prairie strips can be planted along waterway margins for increased wildlife habitat.
603 Herbaceous Wind Barriers	Herbaceous Wind Barriers are strips of herbaceous plants planted across prevailing winds. The purpose is the reduce wind erosion, protect crops, and to control snow deposition to increase plant-available moisture. Strategically place perennial native barriers to reduce overland flow of water as well as wind erosion.
595 Integrated Pest Management	Integrated Pest Management uses practices that prevent, avoid, monitor, and suppress pests. Diverse species support soil health and provide habitat for beneficial organisms

	making prairie strips an excellent choice.
390 Riparian Herbaceous Cover	Riparian Herbaceous Cover consists of grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats. Since native vegetation is recommended, Prairie strips would apply here.
645 Upland Wildlife Habitat Management	Upland wildlife habitat management offers guidance on establishing and managing upland habitats and connectivity within the landscape for wildlife. Prairie strips could serve as corridors between habitat areas.
601 Vegetative Barriers	A vegetative barrier is a permanent strip of stiff, dense vegetation established along the general contour of slopes or across concentrated flow areas. This practice is closely related to what the Prairie STRIPS team has found to be the most effective way to implement prairie strips on the farm.

For more information on these and other EQIP practices, see the NRCS's Practice Standards:

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/references/?cid=nrcs143_026849

For more information on STRIPS project, see page 58 of this manual, STRIPS publications included in the appendix of this manual, or visit:

<http://www.prairiestrips.org>

<http://www.leopold.iastate.edu/STRIPS-FAQ2>

NOTE: Not covered in this manual - but proving to be a good, flexible fit for offsetting costs of prairie implementation - is the USDA Farm Service Agency (FSA) practice CP42 pollinator habitat. Find a CP42 brochure

at: http://www.fsa.usda.gov/Internet/FSA_File/cp42_habitat.pdf

Make a Difference by Getting Involved

Each individual state chooses which EQIP conservation practices it will fund based on local concerns. Groups at the county and state level assist the State Conservationist in deciding which practices will be funded. The State Technical Committee (STC) directly advises the State Conservationist to assist in making technical decisions. The STC listens to recommendations on the county level from Local Work Groups (LWGs). This way the State Conservationist can guide national programs that address needs on a local level (United States Department of Agriculture Natural Resource Conservation Service, 2006).

In addition to representatives from Federal and State agencies, STC and LWG membership includes “individuals with conservation expertise, agricultural producers, nonprofit organizations, persons knowledgeable about conservation techniques and programs, and representatives from agribusiness” (United States Department of Agriculture Natural Resource Conservation Service, 2006). The meetings are open to the public. Citizens are welcome to voice concerns and offer input regarding conservation as it applies to agriculture.

At a recent STC meeting, Minnesota State Conservationist Cathee Pullman stated that she believes strongly in local conservation and told the attendees “We need you and it’s critical.”

Figure 1 demonstrates how EQIP conservation practices are prioritized and implemented.

Figure 1. How EQIP Conservation Practices are Prioritized and Implemented

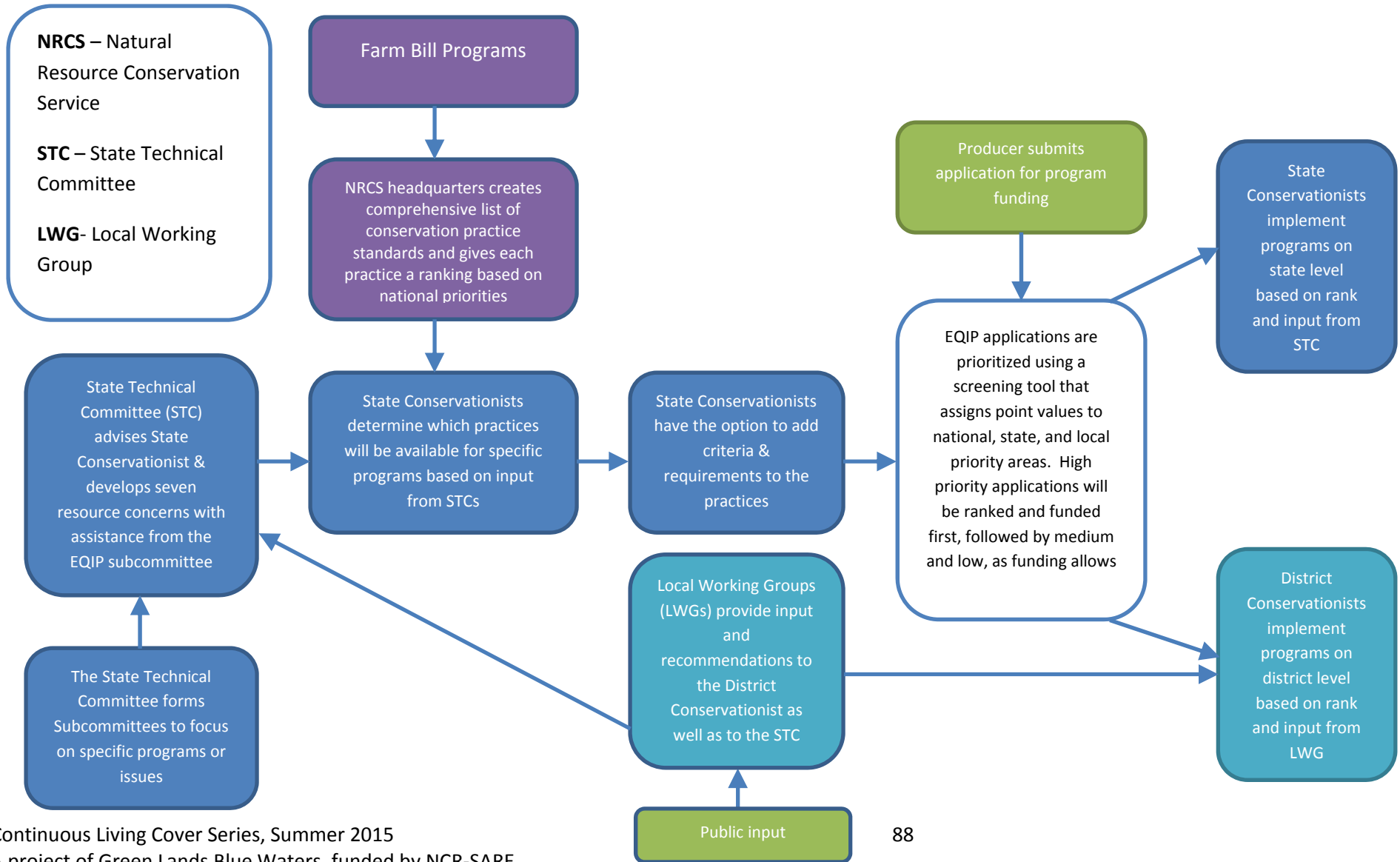


Table 4. Descriptions of Natural Resource Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) practices† and their potential relevance to Continuous Living Cover (CLC) strategies in the US Midwest§.	
EQIP PRACTICE AND COMMONLY ASSOCIATED PRACTICES‡	PRACTICE DESCRIPTION¶ AND APPLICATION TO CLC
<p>311 Alley Cropping <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 612 Tree and Shrub Establishment ▪ 384 Woody Residue Treatment 	<p>Alley cropping is a practice that could support multiple CLC strategies. By definition, alley cropping is the planting of a vegetative crop in areas between rows of a woody species. Because of the woody species rows, alley cropping automatically has an agroforestry component. The areas between the woody species rows could be planted to a perennial forage crop, a biomass crop, or a perennial grain. If annual row crops or small grains are planted between the woody rows, then cover crops could be used along with those annual crops. Therefore, alley cropping is a practice with potential to support CLC in each of the five CLC categories. Alley cropping will also support "stacking" of CLC strategies.</p> <ul style="list-style-type: none"> • Number of CLC strategies# = 5
<p>327 Conservation Cover <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 314 Brush Management ▪ 342 Critical Area Planting ▪ 612 Tree and Shrub Establishment ▪ 645 Upland Wildlife Habitat Management 	<p>Conservation Cover was developed to protect soil and water resources on lands that require permanent cover. While the NRCS states that it is not to be used for forage production, the Practice Standards do mention that "Periodic removal of some products such as high value trees, medicinal herbs, nuts, and fruits is permitted..." and therefore supports CLC in an agroforestry system. Conservation Cover has the potential to be used to support CLC for the planting of perennial forages, however it is unclear whether NRCS allows haying or grazing and it therefore may not apply to CLC.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 1
<p>328 Conservation Crop Rotation <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 330 Contour Farming ▪ 340 Cover Crops ▪ 329 Residue and Tillage Management, No Till ▪ 345 Residue and Tillage Management, Reduced Till ▪ 600 Terraces 	<p>Conservation Crop Rotation is defined by the NRCS as "a planned sequence of crops grown on the same ground over a period of time." This conservation practice supports the use of CLC strategies cover crops, pasture & forage, biomass as well as perennial grains.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 4
<p>332 Contour Buffer Strips <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 412 Grassed Waterway 	<p>Contour Buffer Strips uses herbaceous vegetative cover to prevent erosion and improve water infiltration on hillslopes. This practice has the potential to be used as</p>

<ul style="list-style-type: none"> ▪ 595 Integrated Pest Management ▪ 329 Residue and Tillage management, No-Till ▪ 345 Residue and Tillage Management, Reduced Till 	<p>a forage crop with some restrictions on time of harvest. Additional CLC strategies include biomass and perennial grain production.</p> <ul style="list-style-type: none"> • Number of CLC strategies= 3
<p>340 Cover Crop <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 328 Conservation Crop Rotation ▪ 329 Residue and Tillage management, No-Till ▪ 345 Residue and Tillage Management, Reduced Till ▪ 590 Nutrient Management ▪ 595 Integrated Pest Management 	<p>Cover Crops are grown during times of the year when no cash crop is being grown. The benefits of growing cover crops are many, including improved soil health and water infiltration. Some cover crops can be harvested for sale or provide forage for livestock.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 2
<p>342 Critical Area Planting <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 484 Mulching ▪ 590 Nutrient Management ▪ 315 Herbaceous Weed Control 	<p>Critical Area Planting deals with the seeding and establishment of permanent vegetation in highly erodible areas, or areas where establishing vegetation is difficult. Areas of steep slope and/or rough terrain qualify for this practice. An agroforestry crop that is hand-picked, such as fruits or nuts or grazing by sheep or goats may be opportunities to integrate a harvestable crop along with this practice.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 2
<p>589c Cross-Wind Trap Strips <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 328 Conservation Crop Rotation ▪ 340 Cover Crop ▪ 329 Residue and Tillage management, No-Till ▪ 345 Residue and Tillage Management, Reduced Till ▪ 645 Upland Wildlife Habitat Management ▪ 315 Herbaceous Weed Control 	<p>Cross Wind Trap Strips are herbaceous strips planted perpendicular to the prevailing winds to prevent wind erosion and protect growing crops. Potential CLC strategies to be used with Cross Wind Trap Strips include biomass, pasture & forage, and perennial grains.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>647 Early Successional Habitat Development/Management <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 386 Field Borders ▪ 511 Forage Harvest Management ▪ 460 Land Clearing ▪ 595 Integrated Pest Management ▪ 612 Tree/Shrub Establishment ▪ 645 Upland Wildlife Habitat Management 	<p>The purpose of the Early Successional Habitat Development/Management practice is to create and maintain wildlife habitat and/or natural communities. Grazing can be used as a management strategy and there is potential to use this practice in an agroforestry setting.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 2
<p>386 Field Border <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 328 Conservation Crop Rotation 	<p>Field Borders provide many ecosystem services and can be profitable as well. Plant field borders to prevent wind and water erosion, protect soil and water quality.</p>

<ul style="list-style-type: none"> ▪ 329 Residue and Tillage management, No-Till ▪ 345 Residue and Tillage Management, Reduced Till ▪ 647 Early Successional Habitat Development/Management ▪ 645 Upland Wildlife Habitat Management ▪ 644 Wetland Wildlife Habitat Management 	<p>Harvest perennial grains, biomass, and/or forage.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 4
<p>393 Filter Strip <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 590 Nutrient Management ▪ 595 Integrated pest management ▪ 633 Waste Recycling ▪ 329 Residue and Tillage management, No-Till ▪ 345 Residue and Tillage Management, Reduced Till 	<p>Filter Strips are planted to remove contaminants from overland flow. The strip should be permanent, herbaceous vegetation. It is not clear whether perennial grains for harvest are allowable. In some cases the strips can be grazed.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 2
<p>512 Forage and Biomass Planting <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 511 Forage and Biomass Harvest ▪ 315 Herbaceous Weed Control ▪ 590 Nutrient Management ▪ 528 Prescribed Grazing ▪ 645 Upland Wildlife Habitat Management 	<p>Forage and Biomass Planting is a multi-purpose practice. Reduce erosion while increasing livestock health and/or produce feedstock for biofuel or energy production. CLC strategies supported are biomass, pasture & forage, and perennial grains.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>511 Forage Harvest Management <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 528 Prescribed Grazing ▪ 590 Nutrient Management ▪ 633 Waste Utilization 	<p>Forage Harvest Management includes timely cutting and removal of forages and biomass from the field as hay, greenchop, or insilage with the goal of optimizing the desired forage stand, plant community, and stand life. This practice can support CLC farming through the management of forages, biomass, and perennial grains.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>412 Grassed Waterway <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 600 Terrace ▪ 362 Diversion ▪ 342 Critical Area Planting ▪ ...”and other erosion control practices” 	<p>A Grassed Waterway is a shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity. Prescribed grazing can be practiced on the waterways. Perennial grains and biomass crops are potentially suitable vegetation for grassed waterways, but it is unclear whether or not harvest is allowable.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>422 Hedgerow Planting <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 612 Tree/Shrub Establishment ▪ 645 Upland Wildlife Habitat Management 	<p>Hedgerow Planting has many purposes including, but not limited to: living fences, barriers to noise and dust, and wildlife/pollinator habitat. The CLC practice that can be supported here is agroforestry if a harvestable fruit or nut crop is planted.</p>

	<ul style="list-style-type: none"> Number of CLC strategies = 1
<p>603 Herbaceous Wind Barriers <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> 328 Conservation Crop Rotation 340 Cover Crop 329 Residue and Tillage management, No-Till 345 Residue and Tillage Management, Reduced Till 645 Upland Wildlife Habitat Management 315 Herbaceous Weed Control 	<p>Herbaceous Wind Barriers are strips of herbaceous plants planted across prevailing winds. The purpose is to reduce wind erosion, protect crops, and to control snow deposition to increase plant-available moisture. Potential CLC strategies include perennial grain, pasture & forage, and biomass.</p> <ul style="list-style-type: none"> Number of CLC strategies = 3
<p>595 Integrated Pest Management <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> 328 Conservation Crop Rotation 590 Nutrient Management 327 Conservation Cover 340 Cover Crop 	<p>Integrated Pest Management uses practices that prevent, avoid, monitor, and suppress pests. Some of these practices support CLC farming such as using cover crops, agroforestry, biomass production, pasture & forage, and perennial grains.</p> <ul style="list-style-type: none"> Number of CLC strategies = 5
<p>379 Multi-Story Cropping <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> 666 Forest Stand Improvement 612 Tree/Shrub Establishment 660 Tree/Shrub Pruning 490 Tree/Shrub Site Preparation 472 Access Control 	<p>Multistory 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 the timber crop as a long-term economic investment. This practice does not apply to land that is grazed. Possible CLC strategies include agroforestry, biomass production, perennial grains, and cover crops.</p> <ul style="list-style-type: none"> Number of CLC strategies = 4
<p>528 Prescribed Grazing <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> 314 Brush Management 512 Forage and Biomass Planting 550 Range Planting 382 Fence 	<p>Prescribed Grazing can be implemented to meet financial as well as conservation objectives. Prescribed grazing could be applied using cover crops, pasture & forage, and perennial grain CLC strategies.</p> <ul style="list-style-type: none"> Number of CLC strategies = 3
<p>550 Range Planting <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> 314 Brush Management 548 Grazing Land Mechanical Treatment 338 Prescribed Burning 528 Prescribed Grazing 	<p>Range planting is establishment of adapted perennial vegetation on grazing land. This practice applies to rangeland, native or naturalized pasture, grazed forest, or other suitable land areas where the principle method of vegetation management is grazing. Applicable CLC strategies include perennial grain, grazing & forage, and possibly agroforestry.</p> <ul style="list-style-type: none"> Number of CLC strategies = 3
<p>391 Riparian Forest Buffer <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> 390 Riparian Herbaceous Cover 395 Stream Habitat Improvement and Management 	<p>A Riparian Forest Buffer is an area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies. Plant trees suitable for timber, fruit, or nut crops to add income. CLC practice agroforestry applies here and possibly biomass</p>

<ul style="list-style-type: none"> ▪ 580 Streambank and Shoreline Protection ▪ 612 Tree/Shrub Establishment 	<p>production.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 1
<p>390 Riparian Herbaceous Cover <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 327 Conservation Cover ▪ 382 Fence ▪ 472 Use Exclusion ▪ 644 Wetland Wildlife Habitat Management ▪ 528 Prescribed Grazing ▪ 580 Stream bank and Shoreline Protection ▪ 578 Stream Crossing ▪ 614 Watering Facility 	<p>Riparian Herbaceous Cover consists of grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats. Perennial grains and biomass crops could be planted as CLC strategies. Additionally, the area can be grazed with limitations.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>381 Silvopasture Establishment <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 666 Forest Stand Improvement ▪ 612 Tree/Shrub Establishment ▪ 660 Tree/Shrub Pruning ▪ 512 Forage and Biomass Planting ▪ 528 Prescribed Grazing 	<p>Silvopasture establishment involves establishing a combination of trees or shrubs, and compatible forages on the same acreage. Agroforestry, pasture & forage, and perennial grains could all be stacked as CLC farming under this practice.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>612 Tree & Shrub Establishment <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 660 Tree/Shrub Pruning ▪ 595 Integrated Pest management ▪ 666 Forest Stand Improvement ▪ 590 Nutrient Management ▪ 472 Access Control 	<p>Tree and Shrub Establishment is establishing woody plants by planting or seeding. One could apply this practice in an agroforestry setting, woody biomass production, or pasture & forage (silvopasture).</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>490 Tree & Shrub Site Preparation <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 612 Tree/Shrub Establishment ▪ 384 Woody Residue Treatment ▪ 645 Upland Wildlife Habitat Management ▪ 380 Windbreak/Shelterbelt Establishment 	<p>Tree/shrub site preparation involves the treatment of areas to improve site conditions for establishing trees and/or shrubs. This practice could be used in conjunction with Tree & Shrub Establishment (612) and would therefore apply to the same CLC strategies: agroforestry, biomass, and pasture & forage (silvopasture).</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>645 Upland Wildlife Habitat Management <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 614 Watering Facility ▪ 643 Restoration, Management of Rare or Declining Habitats ▪ 472 Use Exclusion ▪ ...”and many more” 	<p>Upland wildlife habitat management offers guidance on establishing and managing upland habitats and connectivity within the landscape for wildlife. A farmer could put together a plan that includes woody-species corridors for wildlife movement, perennial forage areas, vegetative strips harvestable as biomass after the nesting season, and could also use cover cropping as part of a plan to create a season-long food supply for</p>

	<p>wildlife.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 5
<p>739 Vegetated Subsurface Drain Outlet <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 554 Drainage Water Management ▪ 590 Nutrient Management ▪ 340 Cover Crop 	<p>A Vegetated Subsurface Drain Outlet diverts drainage outlets to distribute the drainage discharge. The purpose is to reduce nitrate loading and to restore or maintain soil saturation levels. These structures must be covered with permanent vegetation such as perennial grain, biomass crop, or native prairie plants. This area can be harvested as forage, biomass, perennial grain, or grazed with some limitations. These structures support CLC strategies pasture & forage, biomass, and perennial grains.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 3
<p>601 Vegetative Barriers <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 595 Integrated Pest Management ▪ 590 Nutrient Management ▪ 328 Crop Rotation ▪ 329 Residue and Tillage management, No-Till ▪ 345 Residue and Tillage Management, Reduced Till 	<p>A vegetative barrier is a permanent strip of stiff, dense vegetation established along the general contour of slopes or across concentrated flow areas. Due to the types of vegetation required for this practice, it is not suitable for grazing or woody plants. However, a non-woody biomass crop might be a good option for this practice.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 1
<p>380 Windbreak/Shelterbelt Establishment <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 328 Conservation Crop Rotation ▪ 340 Cover Crop ▪ 344 Residue Management ▪ 490 Tree/Shrub Site Preparation ▪ 612 Tree/Shrub Establishment ▪ 660 Tree/Shrub Pruning ▪ 645 Upland Wildlife Management 	<p>Windbreaks or shelterbelts are single to multiple rows of trees and possibly shrubs planted in a linear fashion. Use this practice to protect grazing livestock and/or consider using species that provide additional income such as fruit and nut trees and shrubs. In this way, windbreaks and shelterbelts support the agroforestry and silvopasture components of CLC.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 2
<p>650 Windbreak/Shelterbelt Renovation <u>Commonly Associated Practices</u></p> <ul style="list-style-type: none"> ▪ 328 Conservation Crop Rotation ▪ 340 Cover Crop ▪ 344 Residue Management ▪ 490 Tree/Shrub Site Preparation ▪ 612 Tree/Shrub Establishment ▪ 660 Tree/Shrub Pruning ▪ 645 Upland Wildlife Management 	<p>When renovating windbreaks or shelterbelts, incorporate species that diversify and create added income such as fruit and nut species of shrubs or trees. Like Windbreak/Shelterbelt Establishment (380) this practice can support agroforestry and silvopasture CLC strategies.</p> <ul style="list-style-type: none"> • Number of CLC strategies = 2
<p>†NRCS headquarters has a comprehensive list of approved conservation practices. Each state chooses which practices it will fund based on state conservation priorities. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/equip/</p> <p>‡ Associated practices were found on the NRCS “Info Sheet/Practice Overview” documents for each</p>	

EQIP practice. Documents can be found here:

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/references/?cid=nrcs143_026849

§ CLC is the practice of integrating summer row crops, winter annual crops, and perennial crops with the goal of keeping farm fields covered and rooted in place continuously throughout the year.

<http://greenlandsbluwaters.net/>

¶ More information and details regarding NRCS conservation practices can be found in the Conservation Standards on the NRCS web site.

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/references/?cid=nrcs143_026849

Number of CLC strategies represents the number of Continuous Living Cover strategies that might be funded under the EQIP practice.

("Conservation Practices" | NRCS)

("Field Office Technical Guide (FOTG)" | NRCS)

BIBLIOGRAPHY

Asbjornsen, H., V. Hernandez-Santana, M. Liebman, J. Bayala, J. Chen, M. Helmers, C. k. Ong, and L. a. Schulte. 2014. **Targeting perennial vegetation in agricultural landscapes for enhancing ecosystem services**. *Renew. Agric. Food Syst.* 29(02): 101–125 Available at http://journals.cambridge.org/article_S1742170512000385 (verified 14 July 2015).

Conservation Practices | NRCS. Available at

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/references/?cid=nrcs143_026849 (verified 16 June 2015).

Environmental Quality Incentives Program | NRCS. Available at

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/> (verified 29 July 2015).

EQIP - General Contracting Guidance Document - FY 2015 (MN)

Field Office Technical Guide (FOTG) | NRCS. Available at

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/> (verified 16 June 2015).

FY2015 Payment Scenario Descriptions for Planners - Illinois

Helmers, M.J., X. Zhou, H. Asbjornsen, R. Kolka, M.D. Tomer, and R.M. Cruse. 2012. **Sediment Removal by Prairie Filter Strips in Row-Cropped Ephemeral Watersheds**. *J. Environ. Qual.* 41(5): 1531 Available at <https://www.agronomy.org/publications/jeq/abstracts/41/5/1531> (verified 7 July 2015).

Iowa Environmental Quality Incentives Program (EQIP) List of Eligible Practices and Payment Schedule FY2015

MO 2015 EQIP Environmental Quality Incentives Program Policy

Pimentel, D. 2006. **Soil Erosion: A Food and Environmental Threat**. Environ. Dev. Sustain. 8(1): 119–137 Available at <http://link.springer.com.ezp3.lib.umn.edu/article/10.1007/s10668-005-1262-8> (verified 10 July 2015).

The Center for Agroforestry at the University of Missouri. Available at <http://www.centerforagroforestry.org/practices/> (verified 29 June 2015).

United States Department of Agriculture Natural Resource Conservation Service. 2006. **A Seat at the Table for Conservation Policy - State Technical committees and Local Work Groups**. Available at http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_018303.pdf (verified 15 July 2015).

STRIPS. A Landowner's Guide to Prairie Conservation Strips. Available at <http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2014-11-landowners-guide-prairie-conservation-strips.pdf> (verified 29 July 2015).

WI EQIP FY15 Cost List