

Stacking of Continuous Living Cover Strategies



Stacking of Continuous Living Cover (CLC) strategies means using more than one strategy in the same vicinity at the same time. “In the same vicinity” can mean within a single field or portion of a field, or on a whole-farm basis. Stacking of CLC strategies can even be done on a larger landscape scale, such as on a series of neighboring farms or within a watershed.

Agroforestry, biomass, cover cropping, perennial forage, and perennial grain strategies can be linked together and coordinated with each other in many potential combinations of two, three, four, or all five strategies to achieve goals for farm income, soil health, water quality, species diversity, wildlife habitat, aesthetics, etc. For more information about how continuous living cover strategies can reinforce each other on a farm or larger landscape and create multiple benefits, see Asbjornsen et al. (2013).

Stacking and placement of CLC strategies can go hand-in-hand. When considering implementation of a single CLC strategy, it is desirable to look at choosing the planting location in order to gain maximum benefit from the strategy. The “Placement of Continuous Living Cover” chapter in this manual goes into greater detail about decision-making for siting CLC strategies. Once you stack a second CLC strategy onto the first, you need to also think about how those two strategies interact with each other in addition to where to place them both for maximum benefit. Stacking additional CLC strategies, of course, increases those interactions.

Trying to envision all of those interactions and placement decisions ahead of time could seem intimidating, but the experience of many farmers is that once they started adding CLC strategies, the interactions among them flowed naturally and contributed to the stability of their whole farming system. See below for summaries of how ten farmers stacked CLC on their farms; and then visit their case studies in this manual for more detail about how it works for them.

Kent and Linda Solberg, Verndale, MN.

The Solbergs started restoring a degraded soil through managed grazing and “outwintering” of cattle (feeding hay in the paddocks during the winter.) Adding the technique of short-duration grazing with a high rate of trampling of forage helped them

make progress in soil health and forage production. Their next step was using complex cover crop mixtures to facilitate renovation of pastures. These cover crops are typically grazed, and Kent plans cover crop mixtures that include annual warm-season grasses to use as cattle forage during the hot and dry part of summer. Now they are working on designing site-specific mixtures of perennials for their pastures, in addition to maintaining and improving their other strategies.

Fred Abels, Holland, IA.

Fred Abels added livestock to his operation, established permanent pastures, and started a rotational grazing system in 2003. He also uses a pasture that had existed on his farm since the 1930s. His winter cattle feed originally came from baling a friend's grassed waterways, but he added hayfields gradually from 2008 to 2010. He does some rotating of row-crop acres with hay. After experimenting with cover crops for several years, he became convinced of their value for improving soil health on his row-cropped acres; and planned to use them on 100% of cropped acres in 2014.

Brad, Sue, and Andrew Johnson farm; Osceola, WI.

The Johnsons started down the soil conservation path with reduced tillage, going fully to no-till in 1981. Then they withdrew some areas from cropping entirely, putting sensitive streambank areas into CRP. Now they are experimenting with cover cropping on their corn and soybean ground to protect soil and improve their efficiency of nitrogen use. Andrew is interested in multi-species mixtures of both cover crops and grain crops. They are looking towards Kernza™ perennial grain as a way to further protect sensitive soils and adapt to climate change.

Tony Thompson and Sonya Buller, Windom, MN.

Willow Lake Farm

No-till production was adopted in the 1980s. Tony pays careful attention to placement of cropping and conservation strategies. Wide buffers around wetlands and river headwaters were established with CRP contracts, and raises corn and soybeans on his flat lands. Cover crop experimentation is ongoing, and Tony is particularly interested in developing "prescription" treatments of cover crops for problem areas within fields.

Ted and Gretchen Johnson, Star Prairie, WI.

Grassed waterways were established by Ted's father in the 1950s under a contract with the Soil Conservation Service, the predecessor to today's NRCS. Those waterways are still in place. Strip cropping was discontinued because of a need to consolidate fields for custom harvest. Wide buffer areas protect the stream and those are not in a contract; they are cut for hay or haylage twice per year. Steep hillsides are in permanent cover. Most of the fields have some slope and are on a long rotation of alfalfa for four years and corn for two or three years. Cover crops are used in the alfalfa establishment year

on sloping fields, to protect soil. A winter cereal rye cover crop is used following corn silage. Experimentation with cover crops continues to try to find an optimum seeding strategy for their farm.

Gene Schriefer, Dodgeville, WI.

Gene started out with grazing, primarily of sheep but gradually shifted to beef cattle. He uses a rotational grazing system with permanent pastures on his sloping areas, and short-duration grazing with a high stocking rate has improved his pastures. He employs an agroforestry strategy of using wooded areas as shade for livestock during hot spells in summer. Cropland on the ridge-tops has been converted to hay and pasture with a seven- to eight-year reseeding schedule. He uses a cover crop mixture of three to seven species along with a small grain crop in the reseeding year, and the cover crop is grazed after small grain harvest. He is experimenting with an improved big bluestem variety on 12 acres with an eye toward winter grazing for the cattle as well as a forage that can withstand a summer drought.

Tom and Irene Frantzen, New Hampton, IA.

Agroforestry is an important strategy for the Frantzen farm. It has been certified organic since 1995 and a key piece of their system is the 66'-wide shelterbelt that surrounds the majority of the property. It serves as their required buffer for organic production, but also provides species diversity, wildlife habitat, and protection against extreme weather. It proved its worth in the flooding of 2008, slowing down rushing floodwater and giving it a chance to spread out and deposit sediment on their fields. They use a five-year crop rotation on their 355 tillable acres, with two of those years in perennial forage. A winter cereal rye cover crop is routinely used on corn stubble following silage harvest and then tilled in prior to soybean planting the following May. Cover crops are also used as a weapon against specific weed problems; for instance, sorghum-sudangrass followed by two years in hay to combat giant ragweed.

John and Beverly Gilbert, Buckeye, IA.

Gibraltar Farms

John Gilbert says there are a lot of things they just never stopped doing: crop rotation, small grains in rotation, grassed waterways, and annual and perennial forage mixtures. Those strategies form their baseline of continuous living cover. In addition they have expanded their grassed waterway system, added some permanent pasture and a rotational grazing scheme for their cattle, and established grassed headlands for their cropped areas. The grassed headlands where equipment turns are connected to the grassed waterway system, and all are harvested for cattle feed. Wetland establishment with a buffer area near the stream was established more recently. Wooded areas are used by the cattle for shelter, but future plans include more intensive management of the woodlots for income. Currently they are experimenting with cover crops, and host some cover crop test plots for Iowa State University.

Jim and LeeAnn VanDerPol, Kerkhoven, MN.

Pastures A'Plenty Farm

The VanDerPols got started in continuous living cover by establishing a pasture mix on a low-lying field where tillage and harvest equipment frequently got stuck. They gradually expanded the pasture system up to 30 paddocks and do managed rotational grazing of beef cattle. Their sow herd also has access to some paddocks. Next they implemented a six-year rotation on their cropland, which includes three years in hay. They added an agroforestry strategy in the form of windbreaks, which help reduce winter wind erosion on cropped areas and allow them to expand areas where cattle can be wintered. Future goals include increasing the species diversity of their pastures and adding a winter annual grain to their crop rotation to increase winter cover on their fields.

Mary Jo and Luverne Forbord, Starbuck, MN.

Prairie Horizons Farm

The Forbords started out with preservation of prairie remnants and re-establishment of prairie areas on their farm. They converted cropped fields to perennial forage, and established a managed rotational grazing system for beef cattle. Some of their land is available to researchers for testing biomass crops, monitoring species diversity, and studying prairie establishment. They have agroforestry components in the form of windbreaks and an orchard featuring native fruits. Their goal is to continually move toward perennialization, putting more fields in perennials and adding more strategies that build on and reinforce each other. Maintaining the profitability and ecology of the system as a whole is important to their vision for their farm.

Reference:

Targeting perennial vegetation in agricultural landscapes for enhancing ecosystem services. 2014. Heidi Asbjornsen, V. Hernandez-Santana, Matthew Z. Liebman, J. Bayala, and J. Chen. *Renewable Agriculture and Food Systems*. 29(02):101-125.