



LANDSCAPE CONSERVATION COOPERATIVES

Multi-LCC Mississippi River Basin / Gulf Hypoxia Initiative
High Impact Conservation Practices – Fact Sheets

Practice #1 – Cover Crops

Updated 18 February 2016 (draft for review)

WHAT ARE COVER CROPS?

At its most basic level, a cover crop is any plant that is grown during the non-cash crop growing season and often between rotations of more traditional crop varieties (e.g., corn and soybeans). The type of cover crop may vary, but in general they help to keep soil, water, and nutrients on the land by providing living root structures and biomass that help anchor soil and absorb water. Not only do the plants roots help to keep the soil in place and absorb water and nutrients, but the surface portion of the plant shields and protects the soil from the raindrop erosion.

WHY WHEAT?

As with any cover crop, an increase of living biomass in the fields helps prevent erosion and nutrient loss—wheat is no different. When grown as a cover crop, wheat provides weed control for other cash crops (especially in semi-arid regions) and works well in no-tillage or reduced-tillage fields. Winter wheat can also serve as a winter cover crop to reduce soil erosion. Whether grown strictly as a cover crop or as a “cash and cover” crop, wheat has multiple benefits that producers and conservationists will find attractive.

Important to the discussion of gulf hypoxia is the fact that wheat can serve as an excellent nutrient recycling mechanism. Wheat has heavy N uptake in the early growing season, removing that nutrient from the fields during a time of otherwise peak erosion and nutrient loading. Overall, wheat has the potential to absorb tens of pounds of N and K from agricultural fields, greatly reducing the amounts of those nutrients entering the waterways and eventually contributing to the hypoxia problem in the Gulf of Mexico. In addition, when managed appropriately the majority of these nutrients can be recycled into the soil, minimizing the amount of fertilizer application necessary for a cash crop.



WHY CAMELINA?

Camelina, known colloquially as false flax, is an oilseed plant that was once grown extensively rarely grown in large quantities. With comparable development patterns to oats, camelina can be planted as a winter cover crop in some milder climates across North America.



Like many cover crops, camelina makes use of excess water in the soil and provides a root structure that helps to stabilize the substrate and prevent erosion. In addition, research has shown that if used within a relay-cropping system, camelina can help to increase soybean yield by allowing earlier planting and a subsequently longer growing season.

WILDLIFE BENEFITS

The planting of any cover crop provides both a food source and critical habitat for many species of wildlife and wheat is no different. In particular, when planted in late summer or early fall and harvested in late June/early July, wheat can provide spring nesting habitat that is vital to many species of birds. Similarly, wheat can provide excellent feeding and cover habitat for upland birds, reducing their exposure to predators and the elements by providing large areas of continuous cover.

Camelina is a flowering oilseed plant—as a result, it can provide habitat for pollinators and other beneficial invertebrates. In addition, camelina can provide cover habitat for nesting birds and other small animals during vulnerable periods, as well as foraging habitat through the provision of insect prey.

INSTALLATION & COSTS

Purdue University estimates the average total costs for a cover crop, including contact herbicide for termination, should range from \$33-\$39, not considering any nitrogen offsets inherent in most cover crops. However, they also point out that most cover crops more than pay for themselves in soil and water quality benefits and especially in increased yields of the succeeding cash crop.

MONITORING (TBA)

Joint Ventures for birds?

LIMITATIONS/CONSIDERATIONS

Currently wheat is only common throughout the western part of the Mississippi River Basin. However, as a cover crop wheat has the potential to provide numerous wildlife and water

quality benefits while still providing a return to producers. Thus, there is the possibility that it would be beneficial to expand the usage of this cover crop further east into its historic range.

In addition to climate-based restrictions dependent on the particular species being utilized, cover crops, like any new technology, can be perceived by some producers as a risk. This is doubly true of a cover crop like camelina, which is relatively unknown and relatively unproven on a large, industrial agricultural scale. Thus, farmers may have difficulty acquiring camelina seed or they may lack the equipment to cultivate it properly. Furthermore, producers may need additional incentives to adopt camelina as a widespread cover crop.

To maximize conservation benefits for both soil and water resources, cover crops should be part of a conservation cropping system that includes no-till, integrated pest management, and comprehensive nutrient management where possible. In addition, to gain maximum wildlife benefits from wheat as a cover crop may require delayed harvest/termination of the cover crop and planting of the traditional cash crop. As a result, producers may require some sort of incentive in order to assume the risk inherent in delaying planting.

RESEARCH, PROGRAMS, AND MORE INFORMATION

Our Agricultural Program Manager (Eric Zach) is familiar with this program and just submitted a RCPP grant to expand the program into eastern Nebraska.

SARE. 2012. Managing cover crops profitably (3rd ed). Sustainable Agriculture Research and Education (SARE) Program. Retrieved from <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition/Text-Version/Nonlegume-Cover-Crops/Winter-Wheat>

Mannering, J.V., Griffith, D.R., and Johnson, K.D. 2007. Winter cover crops—their value and management. Purdue University Agronomy Extension Forage Information. Retrieved from <https://www.agry.purdue.edu/ext/forages/publications/ay247.htm>.

Researchers study benefits of double-cropping camelina, soybeans:

<http://www.biodieselmagazine.com/articles/406430/researchers-study-benefits-of-double-cropping-camelina-soybeans>

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_017623.pdf

http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/wapmcbr10960.pdf

http://plants.usda.gov/plantguide/pdf/pg_casa2.pdf

Ongoing research into wildlife impacts:

<https://apps.dot.state.nc.us/Projects/Research/ProjectInfo.aspx?ID=3564>

OPPORTUNITY AREAS

(TBA)

SOURCES

SARE. 2012. Managing cover crops profitably (3rd ed). Sustainable Agriculture Research and Education (SARE) Program. Retrieved from <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition/Text-Version/Nonlegume-Cover-Crops/Winter-Wheat>

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Researchers study benefits of double-cropping camelina, soybeans
<http://www.biodieselmagazine.com/articles/406430/researchers-study-benefits-of-double-cropping-camelina-soybeans>

USDA Plant Guide
http://plants.usda.gov/plantguide/pdf/pg_casa2.pdf