

# Cover Crop Plan to Control Ephemeral Erosion

Nebraska Conservation Planning Sheet No. 340



April 2012

## Customer

Name: \_\_\_\_\_ Address: \_\_\_\_\_  
Farm \_\_\_\_\_ Tract \_\_\_\_\_ Field \_\_\_\_\_  
No. : \_\_\_\_\_ No. : \_\_\_\_\_ No. : \_\_\_\_\_  
Planned \_\_\_\_\_  
by: \_\_\_\_\_ Date: \_\_\_\_\_ Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

## What is a Cover crop plan to control ephemeral erosion?

Cover crops can be legumes or grasses, including small grains and other crop species, established just prior to or following harvest of an annual crop for seasonal soil protection, nutrient cycling or improving soil health.

Establishing cover crops in concentrated flow areas immediately following the harvest of a low residue crop can help control ephemeral gully erosion especially when combined with a continuous no-till cropping system.

They are grown for one year or less.



*Photo by CJ Mills, USDA-NRCS, Nebraska 2012*

## Purpose

- To control ephemeral gully erosion in crop fields
- To control erosion during periods when the harvested crop does not furnish adequate soil cover.
- To improve infiltration, thus reducing surface runoff from the soil.

## How Does This Practice Work?

Cover crops are established during the non-crop period, usually after the crop is harvested, but can be interseeded into a crop before harvest by aerial application or direct seeding. The growing cover protects the soil surface and improves infiltration reducing runoff and soil erosion which can eliminate or minimize ephemeral gully erosion and prevent offsite damage from sedimentation. Cover crops also improve soil aggregation making the soil more resistant to soil erosion processes.

## Where This Practices Applies and Its Limitations:

Cover crops are suited for use in any cropping system where there is opportunity for ample vegetative development, canopy and roots, to protect the soil surface from detachment of soil particles by erosion or runoff before they are terminated by cold or dry weather or in preparation for seeding the following crop.

Inadequate canopy cover or stem density of the vegetation will not provide sufficient soil protection or runoff reduction. A minimum of 50 percent canopy cover and 200 stems per square foot are required to produce the desired effects.

Actively growing cover crops can pump water out of the soil by transpiration, thereby modifying soil moisture during wet periods. However, use caution in situations where the cover crop could deplete soil moisture prior to seeding the subsequent crop.

## Cost of Establishing and Putting the Practice in Place:

The cost of establishing cover crops includes seedbed preparation, seed and planting. There may be an additional cost to terminate the cover crop in preparation for planting the following crop. Cost of establishment and maintenance for each cover crop ranges from \$4 to \$20 per acre

## Operation and Maintenance:

A cover crop needs to be seeded to a density high enough to protect the soil surface by plant canopy and have sufficient stem density to retard runoff and promote infiltration. Timely planting is important to minimize the time interval between crop harvest and cover crop establishment.

Timing the termination of the cover crop is also critical. The cover crop must be allowed to grow long enough to provide adequate cover to control erosion. At the same time it must be terminated early

enough to minimize the potential impact on the following crop, especially if soil moisture is limiting.

Termination of the cover crops is usually performed before seeding of the following crop. This can be done by application of herbicides, rolling and crimping or relying on temperature extremes.

For this practice to be effective in controlling ephemeral gully erosion, the following years crop must be no-till planted directly into the cover crop.

**Cover Crops**

The preferred cover crop for both concentrated flow areas and critical overland flow areas requiring treatment is fall-seeded cereal rye or winter wheat. Annual ryegrass has also been used, but some varieties have proven to be glyphosate resistant. Small grain should be seeded at a rate of 1 bu/ac drilled or 2 bu/ac broadcast no later than September 15 in Vegetative Zones I & II and October 15 in Vegetative Zones III & IV (Refer to the Nebraska Vegetative Zones Map located in Section I of the FOTG). If spring cover seeding is required, oats may be used at the same rate and should be planted as soon as possible following the earthwork, but generally not earlier than March 15. Cover

crops may be chemically destroyed (glyphosate) when they have produced adequate growth to stabilize critical areas (6 -8 inches is minimal; 12+ inches is optimal). In some cases, it will be necessary to apply the chemical after the spring crop has been planted. Appropriate crop varieties need to be selected to allow for this scenario.

Cover crops are strongly encouraged as part of any crop rotation containing low or fragile residue producing crops such as soybeans to provide additional stability to concentrated flow areas and prevent the necessity of damage repair or maintenance.

**Channel Shaping**

Channel shaping to produce a broad, shallow flow condition will reduce the potential for ephemeral erosion. Care should be taken during channel shaping operations to retain as much top soil as possible and to minimize fill placement in concentrated flow areas as un-compacted fill will tend to be unstable.

**Width of Cover Crop seeding**

Width is dependent on drainage size: a 20' width on drainage areas less than 10 acres, a 30' width if drainage areas are between 10 and 20 acres, or 40' in width if the drainage area is between 20 and 40 acres.

**Maintenance**

Annual inspection and maintenance of concentrated flow areas is important.

Where erosion has occurred to the extent that it will hinder planting of the next crop, maintenance should be completed immediately after harvest. This should be done with minimal tillage operations no deeper than the erosion which has occurred and no wider than necessary to make planting possible followed immediately by drilling a cover crop (as described above).

Use of a blade with rubber-tire compaction to shape eroded areas is the preferred method to accomplish repair of damage.

**If erosion damage is occurring even as the result of normal rainfall events of 2 – 4 inches, additional conservation treatment may be required in order to satisfy the Highly Erodible Land Compliance (HELC) requirements.**

	<b>Practice Name (Practice Code)</b>	<b>Implementation Notes</b>	<b>Timeframe</b>	<b>Acres needed to be seeded</b>
<input type="checkbox"/>	Cover crop (340) in conjunction with continuous no-till	Must be applied annually or as specified. Type: Seeding Rate:		
	Additional notes:			
<input type="checkbox"/>	Cover crop (340) following soybeans no-till	Must be applied annually or as specified. Type: Seeding Rate:		
	Additional notes:			

**See attached plan map showing the clearly identified (highlighted, outlined, etc.) areas where the cover crop needs to be established to control the identified Ephemeral Erosion.**

I/we concur to immediately implement the cover crop requirements and all other requirements specified in this plan and maintain them on a continuing basis.

Owner/Operator Date

Owner/Operator Date

Designated Conservationist Date