Highly Erodible Land (HEL) Compliance and Preventative Planting Acres

All USDA participants who farm fields designated as Highly Erodible Land (HEL) are responsible to certify that they have implemented a conservation system which reduces soil erosion to an acceptable level. The wet conditions this spring which followed the drought conditions of 2012 may result in some producers not being able to successfully implement all required conservation practices. Failure to fully implement all required conservation practices could put these producers at risk of being in non-compliance.

Due to the late wet spring several acres were not planted. The total acres are unknown until all acres are certified with FSA. Initial information received from each of the NRCS area offices suggests that the Southeast part of the state has been impacted the most. Counties hardest hit include Freeborn, Steele, Mower, Olmsted, Faribault, and Winona.

Not only were acres left unplanted but crop rotations could have been adjusted as well. There may have been HEL fields that had soybeans planted after soybeans instead of corn, late planted corn may be harvested for silage. These crop rotation changes could result in a lowered amount of residue on the soil surface leaving fields more susceptible to sheet, rill and wind erosion. In additional acres where hay was scheduled in the rotation may be delayed from planting.

In situations where a significant area is adversely affected by natural conditions which limit producers' ability to apply or maintain conservation practices on HEL fields the State Conservationist, in consultation with the State Technical Committee, is responsible to develop interim guidelines.

Proposed Guidelines

- For HEL fields where rotations changes will result in less crop residue left on the soil surface, producers must limit 2013 fall tillage to have sufficient residues over winter and in the spring of 2014.

- For HEL fields where no crop is planted, due to “prevented planted” conditions, producers will implement conservation practice 340, Cover Crop to minimize soil erosion impacts.

- Any HEL fields checked for compliance this year that have not successfully applied all required conservation practices, due to adverse weather condition, will be granted a variance but will be subject to be reviewed again next year.
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NRCS has issued a fact sheet on the use of cover crops in preventative planting fields. The fact sheet promotes the use of cover crops to protect from soil erosion and for soil

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Cover Crops to Improve Soil in Prevented Planting Fields

Natural Resources Conservation Service (NRCS)
St. Paul, Minnesota

FACT SHEET
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Prolonged rain and flooding has resulted in many fields that will go unplanted this year. Farmers in this situation need to weigh not only their program and insurance options ("prevented planting"), but should also assess agronomic options to ensure long-term productivity from this difficult situation.

Producers should explore the benefits of planting a cover crop that has the potential to capture applied nutrients, fix nitrogen, build organic matter, control weeds, control erosion and/or improve soil quality during the remainder of the season. These together can build considerable yield potential for the following crops. With the potential "prevented planting" payment and the improved yield potential following a full season cover crop, their economic potential for the whole rotation could be considerable.

Producers are advised to check with USDA's Farm Service Agency (FSA) and Risk Management Agency (RMA) on prevented planting requirements and harvest restrictions for cover crops.

The 4 keys to soil health are:

1. Disturb the soil less
2. Feed the soil with living plants as much as possible
3. Increase diversity
4. Keep the soil covered

Building vs. Losing Topsoil

As excessive rainfall runoff or flood waters cut across unprotected fields, the top soil may have been lost from erosion and scouring. With the productive topsoil lost, so too are the nutrients, organic matter, and soil biology. If tillage is applied to these water damaged fields to control weeds or smooth them out, even relatively flat soils will lose carbon, nitrogen and biomass.

The above-ground biomass, or vegetation, of cover crops will help protect the soil from further sun, wind, and water damage.

Selecting high biomass cover crop mixes will rebuild topsoil. Cover crops, especially if no-tilled, will add organic biomass both above and below ground to rebuild topsoil quicker than if left to grow weeds or

especially if left with no cover.

Avoid removing biomass from the field by harvesting for forage or grain, which will reduce the organic matter benefits, and instead consider killing or mowing prior to seed-head formation, particularly if reseeding could be incompatible with subsequent crops. This will also ensure rapid decomposition and leave more nutrients in the below-ground plant material that are available to soil organisms and subsequent crops.

Soil Biology, Structure and Compaction

Many fields saturated for long periods lose soil organisms that create soil macro-pores and cycle nutrients and lose beneficial soil biology, such as mycorrhizal fungi and rhizobia bacteria that build structure and tilth. Without these organisms, the soils are very subject to compaction, crusting, and high bulk density problems.

Some fields may be so compacted that remediation activities are needed. However, cover crops, whether used alone or in conjunction with other compaction remediation activities, are essential to rebuild healthy soil structure.

The roots of cover crops help to penetrate compacted

zones, hold soil aggregates together, and sustain healthy organisms to restore soil structure. Growing roots are essential to reestablish the mycorrhizae in the soil and to create pathways for air and water to move through the soil profile, which are key components to restoring the soil's functional properties and will keep the pathways open to result in a quicker fix of the compacted layers.

Building vs. Losing Nitrogen

Cover crops can build organic nitrogen, and/or sequester residual Nitrogen in the soil.

A legume or legume mix planted in early summer can easily provide 60-100% of the needed Nitrogen of a following corn crop.

A brassica or grass, or brassica + grass mix can scavenge over 40 pounds of residual N from the soil, and even more in situations where manure or preplant nutrients have been recently applied. Additionally, this results in a more rapid gain in total soil biomass and a higher total nutrient availability for subsequent crops.

Cover Crop Species Guidance

Cover crop selection and management should focus on maximizing both above and below-ground biomass and encouraging nutrient cycling as deep in the soil profile as possible. Choosing a mix of a grass with a fibrous root system and a legume or brassica (plants found in the mustard family including but not limited to radishes, mustards, turnips, and canola) with a tap root will usually provide the widest range of benefits.

Planting wildlife friendly cover crops such as buckwheat or brassicas and leaving the growth and/or the grain can be a very valuable winter food source for a wide variety of wildlife and pollinators.

Legumes alone or in combination with grasses can provide quicker soil biology/biota restoration and Nitrogen fixation. Nitrogen fixation is directly related to growth and development of the legume. An early summer planted legume such as cow peas, will grow rapidly and fix a good amount of Nitrogen prior to a killing frost when it will be terminated. For later plantings, an over wintering legume such as Red Clover should be considered. Make sure all legume seed is inoculated.

Brassicas provide excellent weed control and nitrogen scavenging potential. The tap roots are excellent at penetrating tillage pans and dense soil layers.

Seeding and Establishment

One of the challenges an early to mid-summer seeding is the timeliness of rainfall after seeding for germination. It is best if the seed is drilled. This will also address concern about crusted soil and seed-to-soil contact.

Additional References

Midwest Cover Crop Council: www.mccc.msu.edu

Sustainable Agriculture Research and Education (SARE): *Managing Cover Crops Profitably* www.sare.org/publications

Natural Resources Conservation Service - Field Office Technical Guide (eFOTG): efotg.nrcs.usda.gov/treemenuFS.aspx

Cover Crops to Improve Soil in Prevented Planting Fields

Use the following table and/or the Cover Crop Decision Tool- Minnesota at:
http://mcccdev.anr.msu.edu/VertIndex.php

Cover Crops Recommendations

Species	Rate Drilled lbs./ac. of PLS[1]	Rate Broadcast lbs./ac. of PLS[1]	Seeding Dates North of I-94	Seeding Dates South of I-94
SUMMER COVER PLANTING BEGINNING IN JUNE				
Buckwheat (WB)	45-60	53-84	6/15-8/15	6/1-9/1
Millet (WG)	20-25	28-35	6/1-8/1	5/15-8/1
[2]Sudangrass and Sorghum/Sudangrass(WG)	25-30	35-42	6/1-8/1	5/15-8/1
Cow Peas (WB)	30-90	42-126	6/1-8/15	5/15-9/1
Soybeans (WB)	30-40	42-56	6/15-8/15	6/1-9/1
SUMMER COVER PLANTING BEGINNING IN JULY				
Spring Barley (CG)	50-75	70-105	7/15-8/15	7/15-8/15
Flax (CB)	30-50	42-70	7/15-9/1	7/15-9/15
Oats (CG)	30-50	42-70	7/15-8/15	7/15-9/1
Annual Ryegrass (CG)	15-50	21-70	7/15-8/15	7/15-9/1
Winter Cereal Ryegrass (CG)	55-100	77-140	7/15-10/15	7/15-11/1
Winter Triticale (CG)	50-90	70-126	7/15-10/15	7/15-11/1
Spring Wheat (CG)	50-90	70-126	7/15-8/15	7/15-8/15
SUMMER COVER PLANTING BEGINNING IN AUGUST				
Winter Barley (CG)	50-75	70-105	8/15-10/1	8/15-10/15
Yellow Mustard (CB)	4-8	5-11	8/1-9/1	8/1-9/15
Radish (CB)	8-15	11-21	8/1-9/1	8/1-9/15
Rapeseed/Canola (CB)	2-5	3-7	8/1-9/1	8/1-9/15
Forage Type Turnip	1-4	2-5	8/1-9/1	8/1-9/15
Alfalfa (CB)	12-16	17-22	8/1-8/15	8/1-8/15
Berseem Clover (CB)	8-15	11-21	8/1-9/1	8/1-9/15
Crimson Clover (CB)	10-15	14-21	8/1-9/1	8/1-9/15
Red Clover (CB)	8-12	11-17	8/15-9/1	8/15-9/15
White Clover (CB)	5-8	7-11	8/1-8/15	8/1-8/15
Field/Winter Pea (CB)	30-90	42-126	8/1-9/15	8/1-10/1
Sweetclover (CB)	6-10	8-14	8/1-8/15	8/1-8/15
Hairy Vetch (CB)	15-25	21-35	8/1-8/15	8/1-8/15

[1]Pure Live Seed (PLS). [2]Concern with grazing after frost. Cool Season Grass (CG); Cool Season Broadleaf (CB); Warm Season Grass (WG); Warm Season Broadleaf (WB).

This is not an all-inclusive list of species. See Midwest Cover Crop Council-Cover Crop Decision Tool-Cover Crop Selector for Minnesota Counties. It is recommended that you plant diverse cover crop mixes. The rates listed are for pure stand seedings. When developing a cover crop mix, take the percent desired by the pure stand rate to determine seeding rate by species. (Example: 60% Cereal Rye, 40% Radish would have a seeding rate of .6 x 75 = 45 lbs cereal rye and .4x8=3.2 lbs radish)