

## Using Cover Crops to Protect and Improve Prevented Planting Fields

Prolonged and heavy rainfall in the spring and early summer can cause widespread flooding and severe cropland damage and may make it difficult or impossible to plant crops in a timely fashion. Farmers in this situation need to weigh not only their program and insurance options (“prevented planting”) but should also assess agronomic options that will protect and improve the soil and ensure long term productivity.

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 health and biology during the remainder of the season. These together can build considerable yield potential for following crops.

Producers are advised to check with USDA’s Farm Service Agency (FSA) administering the Emergency Conservation Program (ECP) if applicable and their crop insurance agent on prevented planting requirements as well as haying, grazing or harvest restrictions for cover crops grown on prevented planting acres. USDA’s Risk Management Agency (RMA) has posted frequently asked questions on delayed and prevented planting for producers on their website.

<https://www.rma.usda.gov/News-Room/Frequently-Asked-Questions/Flooding>

### Advantages of growing cover crops on prevented planting acres include:

#### 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, or sediment and debris may have been deposited over the top of the original soil.

Variable depths of deposited material can cause management issues as well. If applicable, consult with FSA about ECP prior to work. It is recommended sediment and debris be removed to achieve a consistent field condition after the work is completed. Working within the prevented planting requirements, cover crops are the best choice for fields which must be left fallow for the remainder of the growing season.



If tillage is applied to flood-damaged fields to smooth them out, recognize the need to cover the field surface with a cover crop to prevent soil erosion and the further loss of carbon, nitrogen and residue.

When crop residue and productive topsoil are lost, so too are the nutrients, organic matter, and soil biology. Selecting high bio-mass cover crop mixes will add organic biomass both above and below ground to rebuild topsoil much more quickly than if the area is left untreated. The above-ground biomass of cover crops will help protect the soil from further sun, wind and water damage while the below ground biomass will begin the process of rebuilding soil aggregates and provide much needed food for soil organisms. The addition of manure or compost prior to planting the cover crop can further stimulate the recovery process.

Although harvesting cover crop biomass for forage may be allowed (check with your insurance agent regarding restrictions for harvesting cover crops on prevented planting acres), mechanical harvest of the biomass is discouraged as this will remove nutrients and decrease the soil health benefits. Grazing cover crops does not have the same negative impact that mechanical harvest would and actually provides some additional soil health benefits from the added bio flora supplied by the livestock providing that the livestock are managed correctly. Avoid overgrazing and keep livestock off during periods of wet weather. Non-insured acreage could possibly be utilized for grazing earlier with similar results.



## Enhancing Soil Biology, Improving Structure and Reducing Compaction



Many fields saturated for long periods may lose beneficial soil organisms such as mycorrhizae fungi and rhizobia bacteria that aid in nutrient cycling and facilitate the creation of water stable soil aggregates. Cover crops can help restore soil biology especially when used in conjunction with manure or compost.

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 re-establish the mycorrhizae in the soil and to create pathways for air and water to move through the soil profile, which is key to restoring the soil's functionality.

### 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 help fix nitrogen for the next cash crop. Make sure all legume seed is properly inoculated.

Cover crops, including annual grasses and brassicas, can scavenge residual N from the soil and should definitely be considered in situations where manure or pre-plant nutrients have been applied. Additionally, this results in a more rapid gain in total soil biomass and a higher total nutrient availability for subsequent crops.

### Herbicide Concerns

Ensure herbicides used with crops in the rotation are compatible with cover crop selections and purpose(s). Some herbicides will carry over in the soil and restrict cover crop establishment, uses, and growth.

## 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 with a tap root will usually provide the widest range of benefits.

Planting flowering cover crop species such as buckwheat or brassicas can be a valuable food source for a wide variety of pollinators. Leaving the standing residue and/or the grain can provide food and cover for wildlife during the winter.

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 N prior to a killing frost. For later plantings, an over wintering legume such as vetch or winter pea should be considered. Make sure all legume seed is inoculated.

Brassicas provide excellent weed control and nitrogen scavenging potential. The tap roots are also excellent at penetrating tillage pans and dense soil layers. However, planting them early (prior to August) may cause them to bolt and produce seed.

### Seeding and Establishment



One of the challenges of 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 address concerns about good seed-to-soil contact. However, broadcasting seed in wet conditions can allow for more timely applications.

### Additional References

Midwest Cover Crop Council: [www.mccc.msu.edu](http://www.mccc.msu.edu)

Sustainable Agriculture Research and Education (SARE): *Managing Cover Crops Profitably*. <https://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>

## Species Selection Guide for Summer and Fall Seeded Cover Crops

Crop Type	Species	Planting Date								Frost Tolerance
		1-Jul	15-Jul	1-Aug	15-Aug	1-Sep	15-Sep	1-Oct	15-Oct	
Cool Season Grasses	Barley, spring									to 15-20 F
	Oats									to 25 F
	Cereal rye									yes
	Ryegrass (annual)									to 0 F
	Triticale, spring									to 15-20 F
	Triticale									yes
	Wheat (winter)									yes
Cool Season Legumes	Clover, sweet									yes
	Clover, arrowleaf									to 0-10 F
	Clover, Balansa									
	Clover, Berseem/Persian									to 10-20 F
	Clover, Crimson									to 0-10 F
	Clover, Red									yes
	Chickling Vetch									to 15-20 F
	Faba bean									to 20-25 F
	Lentils, spring									to 10-15 F
	Lentils, winter									to 0 F
	Pea, spring									no
	Pea, winter									yes
	Vetch, common									to 10-15 F
	Vetch, Hairy									yes
Vetch, Woollypod (Lana)									to 10-15 F	
Cool Season Brassicas	Rapeseed/canola									to 10-15 F
	African Cabbage									to 15-20 F
	Hybrid brassicas									to 10-15 F
	Mustard									no
	Collards									to 10-15 F
	Radish									to 15-20 F
	Turnips									to 10-15 F
Other Cool Season Broadleaves	Flax									to 20-25 F
	Phacelia									to 20-25 F
Warm Season Grasses	Corn (BMR)									no
	Millet, foxtail (German)									no
	Millet, pearl									no
	Millet, proso									no
	Sorghum, grain or forage									no
	Sudangrass									no
Sorghum-sudan hybrid									no	
Warm Season Legumes	Cowpea									no
	Mung beans									no
	Soybean									no
	Sunn Hemp									no
Other Warm Season Broadleaves	Buckwheat									no
	Safflower									to 25 F
	Sunflower									no

Species best suited for those planting dates.

Species that can be planted on those planting dates.

**Note:** Planting cool season legumes or broadleaves after September 15<sup>th</sup> may have limited success and they should be planted with a cool season grass such as rye, wheat or triticale.