

# Agronomy "Crib" Notes

June 2013 – Cover Crops to Improve Soil in  
Prevented Planting Fields– Issue 5

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When prolonged rain and flooding results in fields that will go unplanted, farmers need to weigh not only their program and insurance options (“prevented planting”), but also try to accomplish something positive from the situation.

Producers should explore the benefits of planting a cover crop to “prevented planting” fields. **Cover crops have the potential to fix and/or hold onto unused nitrogen, build organic matter, control weeds, control erosion and/or improve soil health during the remainder of the season.** Together these together will lead to long-term productivity and can build considerable “rotational yield advantage” for the crops that follow. The potential “prevented planting” payment and the improved yield potential following a full season “green manure” crop could provide an economic rebound from the extreme weather conditions in this and future crop years. **Producers must check with Farm Service Agency (FSA) and their crop insurance agent/Risk Management Agency (RMA) on planting and harvest restrictions for cover crops related to prevented planting acres.**



*Green, growing vegetation... year around; a key to soil health!*

The above-ground biomass of cover crops help protect the soil from further sun, wind and water damage for the rest of the year. As excessive rainfall or flood waters cut across unprotected fields, the top soil may have already been lost from erosion and scouring. With the productive topsoil lost, so too are the nutrients, organic matter, and soil biology. If tillage alone is applied to these water-damaged fields to control weeds or smooth them out, even relatively flat soils will lose even more of these items that are critical to the farm’s long-term profitability.

Selecting high bio-mass cover crop mixes will help rebuild topsoil. Cover crops, especially if part of a quality no-till system, will add organic biomass both above and below ground to rebuild topsoil quicker than if left to grow weeds and especially if managed for no cover.

**Avoid harvesting the cover crops for forage or grain which will reduce the organic matter benefits.** Instead, consider killing or mowing cover crops 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 available to soil organisms and subsequent crops.

Insured prevented planted acres that are seeded to forages could be used for grazing after the approved release date (check with RMA). These fields, if grazed properly by managing the grazing height and monitoring soil moisture conditions, may gain some additional soil health benefits from the added ruminant bioflora supplied by livestock.

Non-insured acreage could be used for grazing earlier (with an eye on proper animal management) to provide the added benefits of extended rest on normally used pastures and availability of quality forage for that time of year.

Adding manure prior to planting the cover crop could also benefit the field while the cover crops help tie up nutrients until the subsequent crop.

Fields saturated for long periods lose soil organisms such as earthworms that create soil macro-pores and cycle nutrients. Beneficial soil biology, such as mycorrhizal fungi and rhizobia bacteria that build structure and tilth, may also be lost. Without these organisms, the soils are subject to compaction, crusting, and high bulk density.

Some fields may be so compacted or eroded that deep tillage, or other remediation activities, are planned. However, cover crops, whether used alone or in conjunction with other compaction remediation, 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. Cover crops provide these key components to restore the soil's functional properties and keep the recently deep-tilled layers more open, resulting in a quicker fix of the compacted layers.

**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.

Legumes, alone or in combination with grasses, can provide quick soil biology/biota restoration and nitrogen fixation. This 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 nitrogen prior to a killing frost. For later plantings, an over wintering legume such as Austrian winter pea should be considered. Make sure all legume seed is freshly inoculated.

A mix of brassicas and grass(s) can scavenge over 40 pounds of residual N from the soil, and even more in situations where manure or pre-plant nutrients have been recently applied. This results in a more rapid gain in total plant biomass and organic matter regeneration and more likely retain nutrients for subsequent crops. Brassicas like Daikon Radish, provide excellent weed control and nitrogen scavenging potential. The tap roots are excellent at penetrating tillage pans and dense soil layers. Remember that planting too early (prior to August) may cause the cover crop to bolt and produce seed, or produce larger tubers. A grass cover crop in the mix is essential to reduce nitrogen loss after the start of the brassica decomposition.

**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. Choose a mix of at least: one grass (fibrous root systems), plus a legume and a brassica (each with tap roots), to provide the widest range of benefits.

Planting wildlife friendly cover crops such as buckwheat, legumes or brassicas and leaving the growth through flower and/or the grain can be a very valuable winter food source for a wide variety of wildlife and pollinators. Just remember that allowing cover crops to produce seed may not be desirable in many cropping situations.

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 seeding is with a drill or planter to get the best placement and seed-to-soil contact. This will also address concern about crusted soil.

#### **Selecting Cover Crop plant species and seeding rates:**

1. Select the species, or mix for the desired attributes described in the selected criteria, from the Midwest Cover Crop Council Decision Tool at: <http://mccc.msu.edu/selectorINTRO.html> and/or
2. The rates for the desired % of each species in a mix can be calculated with the IN Seed Calculator ([http://efotg.sc.egov.usda.gov/references/public/IN/IN\\_NRCS\\_Seeding\\_Calculator.xlsm](http://efotg.sc.egov.usda.gov/references/public/IN/IN_NRCS_Seeding_Calculator.xlsm))

## **Reminders!**

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