

The current summer is becoming one of the wettest in Indiana's history – therefore causing major issues for Hoosier farmers and producers. The items listed below should act as a resource for those seeking to learn more about how to better prevent and be prepared for potential flooding.

ISDA is in constant contact with USDA Farm Services Agency (FSA) regarding disaster areas and relief. The USDA-FSA has the responsibility for making the official assessment of the damage, and they are in the process of this task now.

For even more information, please visit [Purdue Extension's website](#):

Listed Resources:

- Press Release: Governor Mike Pence Visits Northern Indiana Farms, Surveys Floods
- Cover Crops for Prevented Planting Acres (Purdue)
- Cover Crops to Improve Soil in Preventing Planting Fields (NRCS)
- Using Cover Crops to Benefit Pollinators (NRCS)

FOR IMMEDIATE RELEASE
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Governor Mike Pence Visits Northern Indiana Farms, Surveys Floods

Indianapolis – Governor Mike Pence is visiting farms in northern Indiana today to survey damage caused by recent heavy rains. He met with farmers at Culp Farm in Jasper County earlier today and will meet with Hoosier farmers in Plank Farm in Cass County to see how the heavy rains are causing significant crop damage and to gauge the potential economic impact to farmers across Indiana.

“Our farmers and agriculture industry are a major part of Indiana’s economy, and we are closely monitoring how the industry may be impacted by the heavy rains that have occurred across much of the state,” said Governor Pence. “Hoosier farmers can be assured that the state of Indiana will continue to work with the Farm Service Agency of the United States Department of Agriculture to provide the appropriate assistance to those farmers experiencing great losses.”

The Governor was joined by Congressman Todd Rokita, as well as Don Villwock of Indiana Farm Bureau and Patrick Pfingsten of the Indiana Soybean Alliance. Photos from today’s Jasper County farm visit can be found attached.

“In trying times like these, I have no doubt we will see the kindness and generosity of Hoosiers in communities across the state. While the flood damage I saw today is a temporary setback, I know our farmers will bounce back thanks to their strong work ethic and resiliency,” said Congressman Todd Rokita. “My office is trained for this type of situation and we are prepared to act in Washington and in the District should the damages require federal intervention.”

Farmers can submit crop damage reports to their county Farm Service Agency (FSA) offices as soon as possible to help measure the extent of damage to this year’s crop production. Federal programs that are available include:

Disaster Designation

Low interest emergency loans will be made available to all producers in counties where 30% or more of a single crop has been damaged according to the FSA.

Federal Crop Insurance

Failed crop areas of greater than 20 acres or 20% of the insured acreage are eligible for crop insurance claims.

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Cover Crops for Prevented Planting Acres



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URL: <https://ag.purdue.edu/agry/extension/Documents/PreventedPlantingCovers2015.pdf>

Excessive rainfall and prolonged ponding conditions this spring have resulted in many fields remaining unplanted to corn or soybeans this season. These “prevented planting” acres, while unfortunate for this year’s production, should be managed in ways to prevent further soil degradation and to increase soil productivity for next year. Cover crops are an excellent option for producers to consider for protecting their soil and increasing productive capacity for succeeding years. This article briefly describes the benefits of growing cover crops compared to leaving the soil bare and fallow, and then it provides guidance on selecting and seeding cover crops for prevented planting acres.

Producers are advised to check with FSA and their crop insurance agent about harvest or grazing restrictions for cover crops.

Prolonged and excessive rainfall and ponding can cause soil aggregates to break down, especially near the soil surface. Flooding and erosion remove valuable topsoil and all the nutrients, organic matter and soil organisms it contains. When these fields finally dry out, the surface becomes hard and crusted and is prone to further erosion by water or wind. If tillage is performed to control weeds and the soil is left bare, soil organic matter declines and nutrients can be lost through leaching, even on fields not subject to water erosion.

To rebuild lost productive capacity and improve soil health, growing a cover crop for the remainder of the season is crucial. **In fact, having something green and growing during all non-frozen times of the year is a key concept for improving soil health, decreasing nitrate leaching to drainage waters, and improving water quality.**

Improve soil structure and biological activity in topsoil

Cover crops protect the soil from further erosion by both water and wind. High biomass cover crops help build soil organic matter, improve soil aggregation, and stimulate soil biological activity by adding their roots and shoots to the soil. Fibrous roots enmesh soil particles and provide food for microorganisms which in turn produce polysaccharides and other “sticky” substances which stabilize soil aggregates. Cover crops also provide additional food for soil fauna such as earthworms. The roots and soil biological activity also increase soil porosity and decrease density near the soil surface, leading to improved infiltration into the soil. Both the root growth and top growth of the cover crops will contribute to building soil organic matter faster than if the soil is left bare or growing weeds.

Increase permeability and decrease compaction

Deep rooted cover crops can penetrate compacted layers and provide deep, continuous channels for water percolation and root penetration of subsequent cash crops. Prevented planting acres have a longer time window for these tap-rooted crops to grow than is present after typical soybean or corn harvest dates, and so the benefits can be substantially greater than possible in a normal year. If fields have so much compaction that deep tillage or subsoiling is required to remediate the condition, planting a deep rooted cover crop after the tillage operation will help stabilize the gains in permeability, rebuild soil structure, and stimulate soil biological activity along root channels.

Build soil nitrogen

Cover crops can build soil nitrogen by fixing atmospheric N (legumes) or by trapping residual soil N to prevent it from leaching into drainage waters. A legume or legume mix planted in early summer may provide more than half of the required N for next year's corn crop. Brassicas or grasses can trap or scavenge over 40 pounds of residual N from the soil originating from fertilizer or soil organic matter mineralization and even larger amounts where manure was recently applied. This protects water quality, and some of the scavenged N will be available to succeeding cash crops while the rest helps build soil organic matter.

Selecting cover crops

When selecting which cover crops to plant, producers should consider their main purposes of the cover crops for their situation. Grasses usually provide the greatest amount of biomass both below and above ground and will build soil organic matter most quickly. Summer grasses such as sorghum-sudangrass and millets are good choices for early summer plantings while the more familiar cereal grains and annual ryegrass can be planted mid- to late-summer. Legumes will fix atmospheric nitrogen that can be used by next year's cash crop. Cowpeas are an excellent choice for mid-summer plantings, while hairy vetch, crimson clover, and winter peas can be planted through late summer. Be sure to inoculate all legume seed. Brassicas such as daikon radish, turnip, rapeseed and canola have tap roots that help break up tillage pans and improve permeability while being excellent nitrogen scavengers and can be planted mid- to late-summer. Note that planting daikon radish too early (before August) may result in the plant bolting and producing seed or in producing tubers larger than desired. Daikon radish should always be planted in a mixture with a grass, both to reduce the N losses during the rapid decomposition of the radish, and to maintain some surface residue cover after the radish decomposition.

Often a mix of cover crops provides more benefits than a single species, and producers should consider a mix including two or three of the plant classes discussed above. These species mixes stimulate soil biological activity more quickly due to the diversity of crop and root types. A mix of a fibrous-rooted grass and a legume or brassica with a tap root will produce soil improvement throughout the soil profile.

There are several tools to help producers select cover crops for their situation in Indiana. The Midwest Cover Crops Council has a selector tool that was built starting with Indiana conditions and experience. Producers enter their state and county, and are provided with a chart of various cover crops and their planting date windows. Producers can further narrow the list by inputting up to three desired purposes of the covers, such as N scavenger or soil builder, and selecting from that list. A few common mixes are also included in that chart. The Indiana NRCS Seeding Tool also provides guidance on cover crop species and allows more flexibility in determining mixes. With prevented

planting there are obviously many more choices for cover crops than when seeding after corn or soybean harvest.

Other considerations for cover crop choices include whether the cover crop will winterkill or will overwinter. The advantage of those that winterkill is that the producer does not need to terminate them in the spring, but the overwintering species will continue to provide some additional growth and benefit next spring. Some summer planted cover crops may need to be managed by mowing or killing before seedhead formation to prevent them from becoming a weed next year. If residual herbicides were applied this year, producers should consult herbicide labels for plant back restrictions, as some covers are sensitive to some of the residual herbicides. Growers should also check with their crop insurance agents and FSA to understand any harvest or grazing restrictions related to cover crops on prevented planting acres.

Seeding cover crops

For prevented planting conditions it is best to seed the cover crop with a drill or planter to assure good soil seed contact. This is especially important given the crusted, hard top soil often present after prolonged soil ponding.

Conclusions

Cover crops can be an excellent management tool to improve soil productivity under any conditions but especially on prevented planting acres. Producers are encouraged to utilize the opportunity to rebuild soil productive capacity after a difficult spring by growing cover crops for the remainder of the growing season.

Choose your cover crops, seeding dates and rates, with the following tools:

Midwest Cover Crops Council Decision Tool, <http://www.mccc.msu.edu/selectorINTRO.html>
(choose cover crops for your particular goals, planting dates for your county)

Indiana NRCS Cover Crops Seeding Calculator, calculate seeding rates for each species in a mix, (http://efotg.sc.egov.usda.gov/references/public/IN/IN_NRCS_Cover_Crops_Seeding_Calculator.xlsm)

Additional Resources

- Midwest Cover Crops Council: <http://www.mccc.msu.edu>
- Midwest Cover Crops Field Guide, 2nd ed. Available from Education Store, Purdue Extension.
- Herbicide carryover— A good Extension publication from Penn State that fits Indiana is: <http://extension.psu.edu/plants/crops/soil-management/cover-crops/herbicide-persistence/herbicide-carryover-table>
- Purdue Extension cover crops: https://ag.purdue.edu/agry/extension/Pages/cover_crops.aspx
- Indiana NRCS Agronomy page: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/in/technical/ecoscience/agronomy/>

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Cover Crops to Improve Soil in Prevented Planting Fields

Prolonged rain and flooding may result 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 also their 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 fix and/or hold-on to nitrogen, build organic matter, control weeds, control erosion and/or improve soil health during the remainder of the season. These together can build considerable yield potential for following crops. With the potential “prevented planting” payment and the improved yield potential following a full season “green manure” crop, the economic potential for the whole rotation could be considerable.



Producers must check with Farm Service Agency (FSA) and their crop insurance agent on planting, grazing and harvest restrictions for cover crops related to prevented planting acres.

A key soil health concept is to ensure that there is vegetation, green and growing, during all times of the year.

Building vs. Loss of 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 of cover crops will help protect the soil from further sun, wind and water damage.

Selecting high bio-mass cover crop mixes will 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 or especially if left with no cover.

Avoid harvesting the cover crop biomass for forage (*Insured cropland may have harvest and grazing restrictions*), which will reduce the organic matter benefits. Instead, consider killing or mowing cover crops prior to seed-head formation 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.

Insured prevented planting acres, which could be utilized for grazing after it is released by the crop insurance company (*be sure to check RMA guidelines*), could gain some additional soil health benefits from the added bioflora supplied by the livestock if managed correctly, and soil moisture conditions are monitored. Non-insured acreage could possibly be utilized for grazing earlier with similar results. The addition of animal waste products prior to planting the cover crop could also have similar benefits. Both would help tie up nutrients until the subsequent crop.

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 deep tillage or other remediation activities are planned. 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 are key components to restoring the soil's functional properties and will keep the recently deep-tilled layers more open to result in a quicker fix of the compacted layers.

Building vs. Loss of 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 with a tap root will usually 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 late fall and 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.

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 when it will be terminated. For later plantings, an over wintering legume such as Austrian winter pea should be considered. Make sure all legume seed is freshly inoculated.

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 them too early (prior to August) may cause them to *bolt* and produce seed, or produce larger than desirable (vs. desired) tubers. To reduce nitrogen loss after the start of the brassica decomposition, a grass should be planted with it to maintain the nitrogen storage until the subsequent crop.

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 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.

Choose plant species (Cover Crops) from the following lists:

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>
2. The rates for the desired % of each species in a mix can be calculated with the **IN Cover Crops Seeding Calculator** (http://efotg.sc.egov.usda.gov/references/public/IN/IN_NRCS_Cover_Crops_Seeding_Calculator.xlsm)

Additional References:

- Midwest Cover Crop Council: <http://www.mccc.msu.edu/>
- Indiana NRCS Agronomy page: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/in/technical/ecoscience/agronomy/>
- USDA-RMA-2012 *Prevented Planting Handbook* http://www.rma.usda.gov/handbooks/25000/2012/12_25370-1h.pdf.
- Indiana Conservation Cropping Systems Initiative - <http://ccsin.iaswcd.org/>
- Sustainable Agriculture Research and Education (SARE): *Managing Cover Crops Profitably* - <http://www.sare.org/publications/>
- Natural Resources Conservation Service - Field Office Technical Guide: <http://efotg.nrcs.usda.gov/treemenuFS.aspx>