

AGRONOMIC Spotlight



Agronomic Considerations for Prevented Planting Acreage

Rain has kept growers out of the field this spring and many are now considering filing claims under prevented planting coverage. Before you file a claim, consider the economic implications and agronomic decisions that need to be made for future crops. If corn is planned for the following year, the risk for fallow syndrome also needs to be managed.

Economic Factors

It is important to discuss insurance coverage and options with your insurance agent before making a decision about prevented planting acres. There are generally three options to choose from: 1) take the prevented planting payment and do not harvest a crop on those acres, 2) plant corn after the planting deadline, or 3) plant an alternate crop instead. Additional resources are available online from Purdue University at www.agecon.purdue.edu. By clicking on Industry & Producers > Center for Commercial Ag > Resources & Tools > Farm Management, you can access additional information and a spreadsheet to help evaluate factors that may or may not make exercising the prevented planting provision an attractive option.

Weed Control

Managing weeds on prevented planting acreage before they go to seed should be a priority in order to limit additions to the weed seed bank. Options for managing weeds include herbicides, tillage, mowing, and planting cover crops.

Herbicide. If considering a cover crop, herbicide options may include a burn down and possibly an in-crop application. If no cover crop will be planted, then additional herbicide options are available. In this case, keep in mind annual maximum use rates. Roundup® brand agricultural herbicides, 2,4-D, and dicamba are common herbicide options. All three herbicides can be used as a burndown prior to certain cover crops, but Roundup® agricultural herbicides have the least restrictive plant-back restrictions (Table 1). Always read and follow pesticide label directions when determining plant back restrictions.

Tillage. On small weeds, tillage can be effective and has the benefit of no plant back restrictions. If weeds are larger, tillage can be used with a herbicide burndown to increase control. Waiting 5 to 7 days after the herbicide application to perform tillage allows time for translocation and can reduce the risk of inconsistent weed control. If a herbicide burndown will be applied following tillage, look for large weeds that were not controlled with tillage, but rather injured and left to regrow (Figure 1). Weed height may be underestimated due to part of the weed being buried below ground. Using tillage for season-long weed control, may be

detrimental to soil health by creating a layer of compaction underneath the tillage zone. Trips across the field with heavy equipment can also aggravate compaction issues. Maintaining a clean field throughout the season can increase the risk for wind and water erosion, as well as deterioration of organic matter as the soil is constantly being exposed to the elements.

Mowing. This tactic can be used with tillage or herbicides or used alone, as long as weeds are controlled before setting seed. Mowed weeds are likely older and more hardened off than what their height would indicate, so adjust herbicide rates as needed. Waiting 5 to 7 days after herbicide application to mow allows time for translocation and can reduce the risk of inconsistent weed control. The risk for erosion and fallow syndrome in corn would likely be less with mowing versus tillage.



Figure 1. Weed injured by tillage and allowed to regrow.

Cover Crops

Cover crops fall into four basic categories: legumes, non-legume broadleaves, grasses, and brassicas (Table 1). The benefits associated with cover crops vary with species. Potential benefits include: 1) providing nitrogen, 2) adding organic matter, 3) improving soil structure, 4) reducing soil erosion, 5) providing weed control, 6) managing nutrients, and 7) providing moisture-conserving mulch. Identifying the benefits that are most important to you will help determining which cover crop is your best option. Resources such as the Midwest Cover Crops Council website (www.mccc.msu.edu) and local extension agents can help determine which cover crops best fit your needs.

Fallow Syndrome

Symptoms of fallow syndrome in corn include reduced early growth and phosphorus (P) or zinc (Z) deficiency. These deficiencies are due to the decrease in vesicular arbuscular mycorrhizal fungi (VAM) populations. VAM helps corn roots absorb additional moisture and nutrients (especially P and Z).¹ Fallow syndrome is most common when corn is grown following fallow and/or flooded conditions, or a non-host crop. VAM

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populations decrease significantly when there is no host present. The time it takes for VAM populations to rebound is relative to the previous amount of decline in the population. The effects of fallow syndrome can be seen the year following an event that causes a decrease in VAM populations. After a subsequent season with normal growing conditions and a successful host crop (most agricultural plants and weeds; Brassica species and sugar beets are the exception), the symptoms of fallow syndrome are less likely to occur.

Potential yield loss from fallow syndrome has not been widely studied. In one study, corn was planted into fields that were fallow due to floods the prior year.² The crop received only 25 pounds P/acre in starter fertilizer, showed P deficiency symptoms, and yielded 32 bu/acre less than the non-flooded field. When 60 to 80 pounds P/acre were applied as a starter fertilizer, the yield penalty from low VAM populations ranged from 7 to 16 bu/acre and plants did not have symptoms of P deficiency.

Fallow Syndrome: Management Options

Plant a Cover Crop. Planting a cover crop provides a host for VAM to reproduce. Healthier cover crops generally result in a greater increase in VAM populations. Therefore, planting a cover crop as early as feasible is preferred. If it is not possible to plant a cover crop in mid-summer, a late summer or early fall planting can still help increase VAM populations. Brassica crops, which are an extremely poor host for VAM, should not be used as a cover crop if the intention is to raise VAM populations.

Band P with Starter Fertilizer. Applying 60 to 80 pounds P/acre as a starter fertilizer can help overcome the effects of fallow syndrome.³ That rate is equivalent to approximately 16 to 21 gallons of 10-34-0 fertilizer. When applying these high rates, the starter should be applied using a 2x2 placement (2 inches below and 2 inches to the side of the seed row), not in furrow.

Plant a Different Crop. While most crops are hosts to VAM, some crops are more tolerant to low VAM populations. Soybean and sorghum show less of a negative response to low VAM populations and may be viable options. If planting soybean, inoculate with *Bradyrhizobium japonicum* to help ensure adequate nodulation.⁷

Inoculants. VAM fungal inoculants are generally not feasible based on availability and cost.

Table 1. Cover crop⁴/herbicide combinations that can have plant-back restrictions of 0 to 45 days.

Roundup® Agricultural Herbicides	2,4-D	Dicamba
Legumes		
Alfalfa		
Clovers (white, red, etc.)		
Cowpea		
Field peas		
Hairy vetch		
Mung beans		
Soybean		
Sweetclover		
Non-Legume Broadleaves		
Buckwheat		
Flax		
Grasses		
Annual ryegrass	Annual ryegrass	Annual ryegrass
Barley	Barley	Barley
Japanese millet		Japanese millet
Pearl millet		Pearl millet
Oats	Oats	Oats
Sorghum sudangrass	Sorghum sudangrass	Sorghum sudangrass
Sudangrass	Sudangrass	Sudangrass
Wheat	Wheat	Wheat
Brassicac		
Mustards		
Kale		
Turnip		
Winter canola		

Sources: ¹ Gelderman, R. and Bly, A. April 2010. Crop nutrient considerations for wet or flooded fields. South Dakota State University Extension. ExEx8166. <http://sdces.sdstate.edu/verified/5/30/13/>; ² Ellis, J.R. 1998. Post flood syndrome and vesicular-arbuscular mycorrhizal fungi. Journal of Production Agriculture. Volume 11, no. 2: 200-204; ³ Too much of one good thing brings too little of another. 1998. Ag Answers. Ohio State and Purdue Extension. Online: <http://www.agriculture.purdue.edu/verified/5/30/13/>; ⁴ Midwest Cover Crops Council. <http://www.mccc.msu.edu/verified/5/30/13/>; ⁵ McCauley, A. et al. 2004. Sustainable agriculture, nutrient management module number 15. Montana State University Extension Service. 4449-15; ⁶ Clark, A. 2007. Managing cover crops profitably. Sustainable Agricultural Network, Beltsville, MD, Handbook Series 9; ⁷ Sawyer, J. et al. 2011. Flooded Soil Syndrome. Iowa State University Extension & University of Nebraska Extension. Online: <http://flood.unl.edu/verified/6/5/13/>.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup® is a registered trademark of Monsanto Technology LLC. Leaf Design® is a registered trademark of Monsanto Company. All other trademarks are the property of their respective owners. ©2013 Monsanto Company. 06052013MEA.