

# Cover Crops Following the Summer 2012 Drought



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URL: <http://www.ag.purdue.edu/agry/extension/Documents/CoverCropsFollowingDrought.pdf>

## Why cover crops after drought?

The drought of 2012 has been the worst in many decades and will result in poor crop yields or crop failures across wide areas of Indiana and the Midwest in general. Besides the obvious impacts on crop yields, there are other effects of the drought that farmers should consider as they look ahead to this fall and next season. Fall-planted cover crops would be a good investment for many farmers this year, to benefit both their own farms and regional water quality.

For corn fields with poor yields this year, there will likely be much residual nitrate remaining in the soil at harvest time. This nitrate is subject to leaching out the bottom of the root zone during the fall, winter, and early spring. Although the soil is dry from this summer, the rain has begun to return, and typical precipitation in November through April will leach most of the nitrate below the root zone. These amounts of nitrate lost will likely be much larger this year than usual, leading to large nutrient loading to local waters and eventually to the Mississippi River and Gulf of Mexico. Numerous studies have shown the highest N losses in drainage waters after dry years.

But for farmers who lose the residual N, they are also losing the opportunity to trap that N and keep it in their fields for subsequent crop use. Cover crops are an excellent practice to scavenge residual N and recycle it through their plant biomass (shoots and roots). As the cover crops decompose next year, some of the N taken up by the cover crops will be released for use by the next cash crop, and some will go towards building soil organic matter. The amount of N uptake this fall and the amount of release next season depends on many factors including amount of residual N in the soil currently, the type of cover crop, amount of growth this fall (and spring, if winter –hardy cover crop), the stage of the cover crop at time of termination, and the decomposition rate of the cover crop in the spring.

**This is precisely the type of year when a cover crop is needed, to trap the much larger amount of residual N that will be present after the poor (corn) crop.** Cover crops will help the farmer recoup part of the fertilizer N investment from this season, and will provide some benefits in improving soil organic matter and soil biological activity. Poor cash crop yields also mean less crop residue returned to the soil, so cover crops can offset some of that loss, protecting against soil erosion and providing food for soil organisms. Although the emphasis is on cover crops after corn due to high residual N this year, cover crops will also be very useful after soybeans for adding organic matter and trapping N released by decomposing soybean residues, similar to benefits in normal rainfall years.

### Cover crop selection

Now that the rains have started again in most parts of the state, cover crops should be able to get established reasonably well. Several resources to help with cover crop selection include the Midwest Cover Crops Council Selector Tool (**ref. #1**), used for your county, the MCCC Cover Crops Field Guide (**ref. #2**), and the NRCS Seeding Tool (**ref. #3**). If the main focus of the cover crop is to scavenge N and build soil organic matter, then grasses such as oats, cereal rye, or annual ryegrass, perhaps mixed with oilseed radish, are good options. If fall grazing is desired, then turnips or crimson clover could be mixed with the oats and cereal rye. Farmers need to consider their next cash crop and have a plan for cover crop termination in the spring, as an important step before seeding cover crops this fall. Careful spring management is essential if cover crops are to be beneficial to the farmer and not pose major difficulties in planting the next crop.

The amount of N scavenged by these cover crops is difficult to predict but may be in the 50 to 100 lb N/acre range in a year like this one. Although the amount of N released by the cover crop for next year's crop is also difficult to predict, it may potentially be up to half of the N in the above-ground biomass, if the cover crops or cover crop mixture have a low C:N ratio and are terminated while in the vegetative state. A pre-sidedress nitrate test (PSNT) would be one way to help determine whether sidedress N applications could be reduced next year. See **ref. #4 and 5** for more details on cover crops, N cycling, and PSNT testing procedures and interpretations.

### Herbicide carryover and rotation restrictions

Some herbicides used for the summer crop 2012 may cause establishment problems for some cover crops. There is little research on the effects of many herbicides on the commonly grown cover crops. The herbicide label lists restricted planting intervals that should be followed if grazing or harvesting the cover crops is planned. More information can be found in "Herbicide rotation restrictions for cover crops and fall forage" (**ref. #6**).

### References

1. Midwest Cover Crops Council Selector Tool, [www.mccc.msu.edu](http://www.mccc.msu.edu), choose selector tool from left sidebar.
2. Midwest Cover Crops Council, "Cover Crops Field Guide", 2012, available from Purdue Extension Education Store, [www.the-education-store.com](http://www.the-education-store.com), or phone 1-888-EXT-INFO.
3. NRCS On-line Seeding Tool and Technical Notes <http://www.in.nrcs.usda.gov/news/publications/CoverCropSeedingTechnotes.pdf>, or contact your local NRCS office.
4. Eileen Kladviko. "Cover crops for nitrogen management", <http://www.ag.purdue.edu/agry/extension/Documents/CoverCropsNitrogen.pdf>
5. Sylvie M. Brouder and D.B. Mengel. The presidedress soil nitrate test for improving N management in corn, [www.agry.purdue.edu/ext/pubs/AY-314-W.pdf](http://www.agry.purdue.edu/ext/pubs/AY-314-W.pdf)
6. Travis Legleiter, Bill Johnson, and Keith Johnson. "Herbicide rotation restrictions for cover crops and fall forage", [https://ag.purdue.edu/btny/weedscience/Documents/Rotation\\_Restrictions.pdf](https://ag.purdue.edu/btny/weedscience/Documents/Rotation_Restrictions.pdf)

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