

Lay the Groundwork for 2013

After drought, fall prep is even more important

In recent years, weather extremes, either dry or wet, have been the norm—and that is not changing any time soon. In a study conducted by *No-Till Farmer*, 211 of 313 (67 percent) farmers believe that the weather is becoming increasingly volatile. This means that managing moisture levels, fertilizer application, and soil compaction will become more important than ever.¹

Residue management for moisture control

Especially in years like 2012, when the USDA estimates that in Iowa, corn yields will be down 18 percent from 2011 and soybeans down 14.9 percent, and in Illinois, 26.1 percent and 21.3 percent respectively, it is important to make every drop of water count.²

Effective residue management is a good place to start. If you want to take advantage of the benefits of leaving residue on the ground over the winter, such as reduced erosion, improved soil quality, better water infiltration, and more—there are several options.

- **With the combine** – Properly spreading and sizing residue in the fall saves both the time and expense associated with extra tillage passes. As platforms and drapers continue to get bigger, adjust choppers and spreaders accordingly. It's also worth considering stalk rollers that knock over stalks, putting them in close contact with the ground, which results in better residue breakdown over the winter.
- **With vertical tillage** – You can still combat excess residue this fall by using a vertical tillage (VT) tool to cut and size residue. Most shallow, coulter-based VT tools have fairly low horsepower requirements and can be operated at relatively fast speeds of 6 to 10 mph. A



Vertical tillage in the fall can help manage extra residue, facilitate stalk breakdown, and fight compaction.

quick pass at this speed will provide more soil-to-residue contact and better breakdown over the winter. Residue is chopped to a manageable size but left on the soil surface as an erosion-preventing cover.

Even if the drought ends and there are heavy spring rains in 2013, residue is a good way to prevent soil erosion. Wet or dry, residue management has advantages.

Fight compaction for healthy soil

Compacted soil and too little rain are a bad combination. In dry soil, plants are already fighting to grow healthy roots, and a packed seedbed compounds the issue and leads to stunted root systems. Dry soil is also highly prone to compaction: as moisture leaves the soil, the soil collapses, and the drier the soil, the deeper the compaction goes. It's a good idea this fall to look at how badly compacted your soil is and how you can avoid it in the future.

If compaction is unavoidable, a pass with a vertical tillage tool in the fall goes a long way toward alleviating the effects of this yield-robbing culprit. A second pass ahead of the planter in the spring further aerates soil. If the year turns out to be dry, soil will be prepared to handle it.

The best course of action, though, is to avoid compaction in the first place by operating heavy equipment along controlled traffic paths and avoiding extra passes through the field.

Take aim at multiple problems with cover crops

Cover crops can help with both moisture management and compaction, as well as several other issues. The use of cover crops is experiencing a revival as sustainable agriculture practices gain momentum. Different cover crops provide different benefits. Producers considering cover crops must have a clear goal in mind and choose the cover crop to match.

Cover crops can:

- Generate additional residue cover that reduces water evaporation when moisture is scarce.
- Improve soil structure and break up compaction.
- Protect the soil during winter months.
- Mobilize and recycle nutrients.
- Serve as a crop rotation.
- Control weeds and pests—an increasing problem as winters become warmer.



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Adjusting fertilizer planning

Fertilizer planning is always crucial for crop production, but in a dry year like 2012, there are extra factors to consider. Due to lack of moisture, plant uptake of fertilizer was less than normal—so you may have to add less for next season. Determining how much to add can be tricky, and the answer depends on your crop rotation and how badly your crops were affected by the drought.

Corn following soybeans – In fields where corn is planted following soybeans, no more or less than normal nitrogen (N) is needed, because soybeans do not leave excess N in the soil, even in dry years. The Corn N Rate Calculator (<http://extension.agron.iastate.edu/soilfertility/nrate.aspx> [3]) can be used to calculate the maximum return to nitrogen (MRTN) or profitable nitrogen rate range.

Corn following corn – Corn-on-corn fields are more complicated, and the amount of N needed depends on how severely the crops were affected by drought conditions. In fields where crop growth was relatively normal, producers can use the Corn N Rate Calculator or other normal methods of calculation. If you are uncertain about how much N was left in the field, or if less-than-normal rainfall persists into next year, you could use the low end of the Corn N Rate Calculator profitability range for the 2013 rate recommendation.

If the crop was affected by drought, less N than usual may have been taken up, leaving large amounts in the fields. Producers, of course, want to know how much of that will be available for their crops next year. You can estimate how much is left in your field by figuring that on average, a bushel of corn removes 0.66 pounds of nitrogen. Multiply your yield by 0.66, then subtract from the total N that was applied

to the field that season. Remember also that only about 50 percent of that is likely to be available for the next growing season if precipitation is normal or below normal.³

A more reliable way to measure a field's N levels is directly sampling the soil—though this is still not 100 percent accurate. Take samples of a minimum of 2 feet, with 3 feet being preferable. Because the levels may vary widely across the field, take at least 12 samples to obtain a reliable average. Spring soil sampling could also be considered, but deeper profiles may be necessary to account for N that has leached further down in the soil.⁴

A third method is stalk nitrate testing, which is effective in normal years, but due to drought conditions the test results are likely to be artificially high this season.

Application

There are many choices for how to apply the nutrients plants need to grow. For fall nitrogen application, anhydrous is a popular choice because nitrification is delayed when it is applied in soils below 50 degrees. Anhydrous is also still the most economical choice for supplying crops with nitrogen. However, experts typically warn that application of fall anhydrous in sandy or poorly drained soils could result in significant nutrient loss by spring planting.

Due to the uncertainties surrounding the weather and estimating fertilizer needs, many producers are turning to split applications of nitrogen, applying part of their fertilizer in the fall and then waiting to see if the weather will require extra nutrients in-season. In dry years, farmers can refrain from side-dressing in-season, since the fertilizer will not have the moisture and soil biology to take effect. If the weather is more moderate, side-dressing has huge benefits.

Many producers also choose to take care of their additional phosphorus (P) and potassium (K) nutrient requirements soon after harvest. Fall P and K application works well in soils with little or no “fixing capacity,” therefore P and K applied in the fall are equally available for crops the next year (or several years, in some cases).

Some producers apply both dry products like potash and DAP with a spreader and then use tillage to incorporate it. An anhydrous applicator or a strip-till machine may then be used to apply the anhydrous to the soil. However,



Strip-till to gain efficiency: Yetter Maverick HR Plus™ units allow producers to apply anhydrous and dry fertilizer while creating next year's seedbed.

increasingly farmers are finding that when using strip-till, they can apply anhydrous and dry fertilizer products at the same time with the right equipment.

Keep on your toes

It seems like a contradiction—planning ahead to face uncertainty. But as the last few years have shown, using effective residue and fertilizer management, as well as controlling compaction and taking advantage of cover crops, can equip farmers and crops to face whatever challenges Mother Nature sends their way.

ENDNOTES

1. "Pro Farmer Midwest Crop Tour Yield Report and Results," Top Producer, September 2012, <www.TopProducer-Online.com>, accessed on September 14, 2012.
2. "Pro Farmer Midwest Crop Tour Yield Report and Results."
3. "Nitrogen rate adjustments for 2012," University of Illinois, August 22, 2012, <<http://www.agprofessional.com/resource-centers/crop-fertility/news/Nitrogen-rate-adjustments-for-2012-corn-crop-166878086.html>>, accessed on September 14, 2012.
4. John Sawyer and Antonio P. Mallarino, "Soil fertility management issues following drought," Iowa State University, August 29, 2012, <<http://www.agprofessional.com/resource-centers/crop-fertility/news/Soil-fertility-management-issues-following-drought-167837485.html>>, accessed on September 14, 2012.

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