

THE LEADING EDGE

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A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

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Build a Fertilizer Management Plan That Makes Ergonomic and Agronomic Sense

Smart producers know that the work they do out of the field is just as important as the hands-on work in the field. The best equipment and the cooperation of Mother Nature will only take crops so far.

One important aspect of farm management is a fertilizer plan that meets the unique needs of each field's soil and takes into consideration recent weather patterns. Ideally, each year producers will reevaluate application techniques as well as the specific combinations of fertilizers to be applied. This step ensures that your fertilizer management plan still makes agronomic and economic sense.

Don't wait. Now is the time to start making next spring's fertilizer plan.

Where to Begin

Never underestimate the importance of soil tests. Although it requires an up-front cost to sample soil, the cost of fertilizer is rising. Applying fertilizer based on the results of soil samples ensures extra fertilizer is not applied where it is not needed, which makes economic sense. Placing nutrients in the fields that need it brings the best return on your investment.

Another important piece of the management plan to review is your crop mix. Corn and wheat need more nitrogen than soybeans. Using spreadsheets to break down the costs associated with different crop mixes can help track the expense and potential profits associated with various scenarios.

Finally, producers should take advantage of any expert resources available.

Schedule meetings with crop advisers and fertilizer dealers, valuable assets in today's constantly changing ag industry. Your state's universities probably offer a wealth of information online, including recommend- ations for



The first step of developing a fertilizer management plan is taking soil samples to find out the current fertility of the land.

appropriate application rates in your region, reviews on fertilizer regulations, and even nutrient calculators.

Options for Application

1. **In the fall, broadcast fertilize potassium (P) and Phosphorous (K) and then apply ammonia (NH₃) with a knife machine.**

PROS: Often considered the traditional method, this process requires tillage to work the fertilizer into the soil. For conventional-tillage producers, this presents no problem.

CONS: For the conservation tillage crowd, tillage is a major downfall. Tillage passes cost money, and there is risk that the nutrients, especially nitrogen (N), will become volatile and leach.

TOTAL PASSES BETWEEN COMBINE AND PLANTER: 5-6

2. **In the fall, broadcast fertilize P and K, and then strip till NH₃.**

PROS: This method requires no additional tillage, and fewer trips are made through the field than with the conventional method outlined above. Another benefit is that no further investment in equipment is required--most broadcast fertilizer spreaders are supplied by the dealer for a minimal rental cost per acre.

CONS: Stratification in the upper levels of the soil profile is a concern with fall-applied P and K. And while volatilization is not as common or severe with P and K as for NH₃, it is possible. The broadcasting method of application is not site-specific, so the whole field must be fertilized, rather than areas where return-on-invest (ROI) is optimal.

TOTAL PASSES BETWEEN COMBINE AND PLANTER: 2

3. **Strip till N, P, and K simultaneously.**

PROS: All fertilizer application is completed in one pass, which reduces both time demand and possible compaction.

CONS: This method will almost certainly require the handling of at least two different products, such as NH₃ and dry P and K. The cost of a machine with this capability is likely to be significant.

TOTAL PASSES BETWEEN COMBINE AND PLANTER: 1



One pass, 100% of the needed fertilizer, all the required tillage. Strip-till is an efficient method to achieve all of these requirements.

4. **Strip till P and K in the fall and apply N pre-plant, when planting, or via side-dressing.**

PROS: N application after tillage is complete means there is no risk of nitrogen volatilization. Also, producers know where the nutrients have been placed relative to the growing crops. Variable-rate application is an option with this method--producers can choose to not apply to areas where nitrogen levels are good, or to low-yielding areas where potential for ROI is low. From an agronomic standpoint, this method is very logical.

CONS: Although common, two passes for fertilizer application could be considered a drawback. Weather and labor demands may make it difficult to find the time in the busy spring to apply nitrogen.

TOTAL PASSES BETWEEN COMBINE AND PLANTER: 1-3

5. **Broadcast P and K in the fall and then apply N either with the planter or via side-dressing.**

PROS: This method requires no tillage, and there is no ground disturbance, leaving the erosion-protecting residue cover intact.

CONS: Conventional-tillage producers will find this method is not a match for growing corn.

TOTAL PASSES BETWEEN COMBINE AND PLANTER: 1-2

6. **Apply all needed fertilizer with the planter.**

PROS: This low-labor option cuts down on compaction because there are no extra passes through the field.

CONS: It is difficult to apply this much fertilizer while trying to plant, and most fertilizer-analyses do not account for simultaneous application while planting. While sound in theory, the logistics are limiting.

TOTAL PASSES BETWEEN COMBINE AND PLANTER: 0

More to Consider with N: Pre-Plant, Side-Dress, or Fall Application

Fall application of nitrogen in the form of anhydrous ammonia makes sense if fertilizer prices are expected to rise in the spring or if the spring production schedule makes it difficult for producers to consider application closer to planting. As stated, potential for loss with fall-applied nitrogen



Side-dressing is the most efficient usage of nitrogen. New

is high. Consider adding nitrification or urease inhibitors if they are not cost-prohibitive.

products introduced has allowed more growers to adopt this practice of fertilizer application in recent years.

One of the most critical decisions regarding fertilizer application is when to apply. Precision fertilizer injection equipment and a pass through the field before planting puts fertilizer in the optimum place for seeds and young roots to access needed nutrients. Phosphorous and potassium do not move well through soil, and are optimal candidates for pre-plant injection. If starter fertilizer cannot be applied because of a wet spring, consider a side-dress application.

Side-dressing post-planting, especially of nitrogen for corn, is more economical, more efficient, and more environmentally sound than applying all N in the fall or as a pre-plant, according to agronomists. But many producers question whether or not application can be completed in the window between when the soil is dry enough and when the corn is too tall.

One option to get into the field early for post-plant side-dressing is to apply nitrogen using a simple coulter and liquid injection system. This avoids flipping small chunks of soil onto vulnerable small plants. Mounting toolbars equipped with an injection system to high clearance sprayers will also buy some time to side-dress later in the growing season. If anhydrous is the preferred fertilizer then newer style single disc coulters can be used in much the same fashion as liquid injection coulters have been used in the past.

Plan for Higher Profits

It's easy to see how a fertilizer management plan has the potential to make a huge economic and agronomic impact, for better or worse. These are just a few of the matters that producers have to consider when making fertilizer decisions. New fertilizing options may be available that haven't previously been offered so that should also be considered. It's worth the time investment each year to carefully evaluate your fertilizer plan and make sure each step helps you reach your agricultural goals.

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