

THE LEADING EDGE

www.yetterco.com · Yetter Manufacturing Inc · E-mail:info@yetterco.com

A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

Nitrogen Injection a Solution in Cool, Wet Springs

Although the spring of 2010 is just around the corner, producers cannot put the fall of 2009 behind them just yet. The late harvest prevented many growers from performing fall tillage or residue management, and in many fields, excessive residue is a barrier to progress. That, combined with a wet winter, is likely to leave soils cool and wet too far into the growing season.

Because of weather changes and variations in soil composition throughout fields, applying the same amount of nitrogen year after year is not the most efficient, cost-effective, or environmentally conscious option. To determine the right amount of nitrogen for different areas, combine the use of previous crop data, yield history, soil fertility, drainage, and late spring



Wet weather conditions in many areas has caused a number of growers to look for alternative Nitrogen application methods.

What wet soil means for nitrogen

Surface residue is problematic for surface nitrogen applications because the nutrient is especially susceptible to volatilization or may be taken up by the residue instead of used by the crop. Nitrogen is still a significant investment, and applying fertilizer that may

soil tests. Satellite imagery can enhance this data. Map out a nitrogen-management plan by compiling and comparing results and dividing fields into corresponding zones.

be lost before plants need it is not an agronomically or economically sound decision. Studies have shown that broadcast fertilizer applications also result in uneven height of the crop.

The best fertilizer management plans, especially anticipating a wet spring, are likely to include split applications. Staggering two or more smaller applications of nitrogen throughout the growing season often produces the best yields. Applying nitrogen pre-plant, during planting, or shortly after planting, are all options. An additional side-dressed injection application a little later in the season ensures crops never go hungry.

One method sure to penetrate surface residue and place nitrogen into the grow zone is with coulters. Knifing or injecting nitrogen increases the distance from the residue and may reduce the tendency toward immobilization and potential atmospheric loss due to volatilization. Eight years of data from a Canadian study indicate that injecting nitrogen contributes to yield increases of 15 bushels an acre.

The environmental benefits to injecting nitrogen are significant. The more conscious producers become of the effects their fertilizers are having on the environment, the more control they'll maintain over application rates. Failure to meter nitrogen applications will only lead to regulation.

Profitable Solution > Add high-capacity fertilizer hauling equipment to supply the applicator. It saves a great deal of time--there is no need to continually stop for refills. Look for high capacity fertilizer carts with tire tracking systems to reduce compaction.

Invest in the right tools for injection

Nitrogen injection can be accomplished with a variety of tools. One option is to apply nitrogen using a simple coulters and liquid injection system.

In such a system, the proper coulters are essential to cut the slot into which the fertilizer will be injected. A variety of coulters blade styles are available to fit the needs of every operation. Many manufacturers offer coulters that optimize fertilizer placement when a precision placement attachment such as a knife or nozzle is attached. Smooth, notched, and ripple coulters are ideal for fertilizer placement and cause minimal soil disturbance.

An important feature in fertilizer application attachments is adjustability. For example, coulters should be fully and easily adjustable for maximum down pressure with minimal soil disturbance. If equipped with a spring tine injector then the injection tip can be adjusted to apply fertilizer very close to the soil surface. If using a rear knife it should horizontally adjustable against the blade to prevent residue build-up.



Adding a coulters and spring mounted injector to existing toolbars is an easy and cost effective way to create a side-dressing toolbar.

If using a sold mounted injector be sure to choose a design that allows the tip to pivot and aim a fertilizer stream directly at the trench cut by the coulters. Pinpoint placement through an aimed stream eliminates the chance of splashing and fertilizer waste.

Stability is probably the most important factor in pinpoint placement. Consider coulters that provide steadiness with a parallel linkage design. Two parallel arms fix the position of the fertilizer knife relative to the field surface. The linkage flexes when the field contour changes, so the knife stays in the soil. A spring cushions the assembly to prevent damage from rocks and other obstructions.

William and Robb Hinton of Heathsville, Virginia, inject nitrogen with a fertilizer toolbar and injection system from Yetter Manufacturing. "It minimizes atmospheric loss, tie-up in residue, and potential run off, which would affect our natural resources. In conducting several field tests, we saw a solid bump of six bushels per acre when injecting nitrogen as opposed to lifting a toolbar to dribble nitrogen," said Robb.

Custom systems also an option

Producers can also consider creating their own fertilizer bar by adding fertilizer coulters to an existing toolbar. This lower-cost option is a great opportunity for a grower to build a toolbar to meet their needs at a fraction of the cost of a new machine.

Other items to consider when custom-building a fertilizer setup are pumps, monitors, tanks, trailers, etc.

Meet the spring of 2010 head on

Whether you choose to purchase a complete placement system, or piece one together from existing components, this spring is the year to consider nitrogen injection. Injection of nitrogen offers a solution for dealing with heavy residue cover and wet soil, two things likely to manifest in the spring of 2010. Producers who convert to injection have the option of split

To have a bigger window producers are looking at toolbars equipped with an injection system on high clearance sprayers allowing time to feed crops later in the growing season. High toolbars equipped with an injection system can take on the task of side-dressing as soon as plants emerge and continue well into the growing season.



Existing toolbars can be retrofitted with anhydrous coulters for high-speed application as well.

applications and will achieve precise placement, both of which will help producers reach their ultimate goal--increased yields.

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Yetter Manufacturing Co., Inc.
109 S. McDonough
Colchester, Illinois 62326
Phone: 800-447-5777
FAX: 309-776-3222
www.yetterco.com
E-mail: info@yetterco.com



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