



# AgVantage Green Notes



Volume 14, Issue 11

## AgroKey, Westland, and Growers Co-op Annual Stockholders Meetings

The Annual Stockholders Meetings for each of the partners of Ceres Solutions will be held near the end of November into early December.

**Growers Co-op will hold their Annual Stockholders Meeting Monday November 24th** at the 4-H building of the Sullivan County Fairgrounds. Dinner will begin at 6:30 p.m.; a business meeting will follow. Don Villwock, President of the Indiana Farm Bureau Inc. will be the guest speaker for the evening. Please RSVP by November 21st to the Ceres Solutions (formerly Growers Co-op) branch you do business with by November 21st. Carla's Country Catering will be catering the meal.

**AgroKey Co-op will hold their Annual Stockholders Meeting Tuesday November 25th** at the Knights of Columbus Hall in Rensselaer. Breakfast will start at 7:00 a.m.

**Westland Co-op will hold their Annual Stockholders Meeting Wednesday December 3** at the Beef House Restaurant in Covington, IN. The business meeting will start at 4:30 p.m. with a buffet supper following at 5:00 p.m.

At each business meeting Ceres Solutions CEO Jeff Troike will briefly discuss the 2007-08 financials of Ceres Solutions.

Also at each meeting you as a stockholder will be responsible for electing any open board positions for each of the individual partners boards. Once selected each partner board will select those representatives that will sit on the Ceres Solutions board of directors.

As a stockholder you do have a say in the direction of Ceres Solutions through your individual partner board member and your partner board Ceres Solutions board members. We hope to see you there!

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## Deep Banding of P and K Fertilizers in a Strip Till System—Good, Bad or Indifferent

Both Jeff Nagel and I (Betsy Bower) have fielded several calls concerning the advantages of deep banding P and K fertilizers in a strip till system. There have been claims from strip-till unit manufacturers that you need just a partial rate of your normal fertilizer when switching to strip tillage (because of increased efficiency of the fertilizer in the band). So what is up? What does the research indicate?

To start with strip tillage in conjunction with deep banding of fertilizer has followed a slow adoption curve because research from Illinois, Indiana, Iowa, Missouri, Nebraska and Wisconsin has shown an inconsistent yield benefit from deep banding of P and K fertilizers in a corn and soybean rotation as compared to surface broadcast applications with normal rates of fertilizer. And there is not much research available using reduced rates of fertilizer, especially long term data.

So how does one decide if strip tillage with deep banding of P, K and even N is the right investment for an operation? The following are some excerpts from an article (from C. R. Boomsma, M. Canepa and Tony Vyn, Purdue) discussing the factors affecting the relative benefit of deep-banding versus broadcast applications of P and K fertilizers for corn and soybeans.

**So what do we know?** - Deep banding of fertilizer does play a positive role in conservation tillage systems where there is no or limited mixing of the soil surface after broadcast fertilizer applications. Deep banding of P and K fertilizer from 4 to as much as 12 has the following potential advantages a) reduced fixation and stratification of available

P and exchangeable K in soil, b) increased P and K soil test levels in a consistent zone of nutrient enrichment, c) potentially higher plant P and K uptake from deeper soil horizons during dry years and d) more timely planting when used in conjunction with strip tillage systems.

**P and K Soil-test levels**— Soil test levels for P and K have a major effect on crop response to deep banding. It has been shown that banding P in a typical starter band has been shown to benefit yields especially when soil test levels are low to medium. In soil with levels in the medium to high range, starter banded P yield benefits have shown to disappear. Research in Iowa has shown that deep-banding of K 6-8" below the soil surface has increased corn yields even in soil test levels ranging from optimum and very high for exchangeable K. However, corn yields did not increase in response to deep-banded P in soils that were high in available P. In other words responses to deep banding of P and K can vary by nutrient at different soil test levels.

**Soil Properties and P and K availability**—Benefits from deep-banding of P and K depend on inherent soil properties such as pH, texture, and CEC, with each nutrient being affected differently. P is a relatively immobile nutrient that becomes less soluble over time. Over-time P is adsorbed in soil by calcium, magnesium, aluminum, and iron with the type of adsorption varying with soil pH.

Therefore deep banding of P will likely be most beneficial in soils with a high P fixation capacity like soils with a soil pH < 5.5 or a high soil

# Starter Fertilizers Benefits and Options

**So where and why do we use starter fertilizer?** - Starter fertilizer is recommended in no-till or strip-till methods of planting particularly when planting early, before April 1st in the southern half of IN and May 1st in the northern half of IN. We use starter fertilizer in these tillage/ planting operations because typically the soil in the planting zone is cooler and wetter as compared with soil that has had some tillage. In this situation starter fertilizer with a typical 2x2 placement provides nutrients in a concentrated zone for slow growing corn roots in conjunction with reduced microbial soil activity of nutrient mineralization (in other words in cool soils soil microbes are not able to release organically bound nutrients) and helps improve corn establishment and uniformity. By improving corn stand establishment and uniformity we can get the whole corn field to V6 at the same time and be in the hunt for high yields (what we all need in this day and time). Corn response to starter fertilizer in 11 Indiana starter studies indicated a significant yield response in 8 of 11 no-till studies and only 1 in 11 conventional corn studies.

Starter fertilizer is also recommended when soil test P and K levels are low to very low. A positive yield response is expected any time soil test P levels are less than 20 lb/ A and soil test K levels are less than 150 lb/A exchangeable K regardless of time of planting and tillage system used.

In cases where soil test P and K levels are good and conventional tillage is used for early planting, starter fertilizer can still be used as a way of providing nutrients close to the seed and replacing some of the broadcast fertilizer needs.

**So what should be in the starter fertilizer mix?** Generally most starter fertilizers have had a combination of N and P. Some dry start-

ers have the flexibility of including K. There are some liquid K sources available, however K in starter has not been used much in our area.

In Indiana the data indicates most of the yield response comes from having nitrogen in the 2X2 zone. But most of these studies have been in soils not limited by P levels.

**So what is the best starter combination?** There is no best starter combination. Every operation manager needs to decide that him/ herself depending on soil test levels, tillage type at planting, earliness of planting, how he/ she wants to manage the broadcast application.

General recommendations include having 20-40 lb/A of actual N. Be sure to stay on the heavy N side if no-till or strip till. Include 10-20 lb/A of P2O5 if overcoming low soil temperatures (no-till and strip-till). On heavier soils the total amount of salts (N + K2O) should be not more than 100 lb/A; on sandy soils the total amount of salts should be no more than 70 lb/A. Be sure to take credit for the nitrogen and phosphorus you apply in the starter. When crop input prices were more economical we did not always take the credit.

**What about pop-up fertilizers?** Pop-up fertilizers such as Growers AgVantage 8-24-4 is a low salt solution that can be placed directly on the seed at 3-5 gal/A. In the past the cost per lb of nutrient was much higher than a 10-34-0 in a traditional 2X2 starter. These products do provide N, P and K from emergence to about V5. They have been a good solution for Growers that updated a planter without adding starter fertilizer equipment.

See your local Ceres Solutions Crops Professionals to help decide your best value in agronomics and economics for your starter.

## Current PARP Opportunities in November and December

The following is a list of current PARP opportunities from now until December 31, 2008. Remember to keep a your private applicator certification you must attend 3—2hour PARP sessions in 5 years. No more than 2 PARP sessions can be attended in one year. To check for more events see the PARP calendar on the Private Applicator Recertification Calendar within the Purdue Pesticide Programs website. Most of these sessions are located in the southern part of Ceres Solutions trade territory. Remember the fee for each PARP is \$10.

**Nov. 20th—9:30 a.m.-3:25 p.m.** at the Washington Community Building, Washington IN. Topics include Transporting Pesticides, Chaining Down the Load, Exploding Poly Tanks, Preventing Well Contamination, Manure Management, Alternative Heating and IN Soybean Alliance. For more info contact Jane Ann Beard—812-254-4780 Ext 3.

**Dec 2—Bi-State Crop Management Seminar—9:30 a.m.** Beef

House in Covington. Topics include Pest Management and Control, Pest Identification Game Show, Pesticide Disposal, Pesticide Record-keeping. Registration is \$15 + \$10 PARP fee. For more info contact Amanda Bailey-800-340-8155 or Amanda Smith—765-793-2297.

**Dec 4—Vegetable Growers Meeting—**SW Purdue Ag Center, Vincennes IN. Dinner starts at 6 p.m., Program at 7 p.m. Topics include Gummy Stem Blight in Melons, Fungicide Resistance, Resistant Varieties, Sweet corn Insect Management, Clean Sweep Pesticide Disposal. For more info contact Stayce Johnson 812-882-3509.

**Dec 8—Ag Outlook Breakfast—**Community Methodist Church – Vincennes IN, Breakfast Outlook 7:30 a.m., PARP 9:00 a.m. Topics—Fungicide Resistance, Soybean Diseases, Clean Sweep Pesticide Disposal. For more info contact Stayce Johnson 812-882-3509

## Applying Roundup Burndowns in Late Fall

Now is an ideal time to apply a non-residual burndown product like Roundup and 2,4-D. Applications could have easily been started a few weeks earlier and can continue typically through Thanksgiving. The benefits of fall Roundup with 2,4-D include providing winter annual weed control through late fall and winter and well into the spring as well as the best opportunity to control perennial weeds.

A typical recommendation would include 16 oz/A Roundup PowerMax or WeatherMax plus 0.67 pt of E-99 and the adjuvant Alliance at 4 qt/ 100 gal of spray solution.

Although this week may be a little cold for Roundup applications we still may have a few weeks left in late November early December to

apply a fall burndown. The following are a few reminders to ensure success:

- Begin applications late mornings on days when high temps are projected to reach into the 50's or higher. Complete applications by late afternoon when day time temps begin to drop
- Increase rates of Roundup from 16 to 22 oz/A with later applications when day time temps are cooler or larger weeds are present
- For heavy dandelion or perennial weed pressure, use 22 oz/A of Roundup PowerMax/ WeatherMax and 1.3 pt/A of E-99

# Advanced Coating Zinc for Croplan Genetics Seed Corn

Next spring, growers who plant newly released Croplan Genetics corn hybrids will be getting and added from Advance Coating Zinc. Advance Coating Zinc is a micronutrient seed treatment which will be applied to Croplan Genetics seed corn at no added cost to the grower. Advance Coating Zinc has been tested in Answer Plot testing program, on University trials and on farm strip trials for the last three years with very good results. (We have looked at Advance Coating Zinc in the Farmersburg that last two years. In 2007 we saw good results. This past year, we had enough replanting in the corn seed treatment plot that results were inconclusive.) In the 2007 Answer Plot Seed treatment studies, Advance Coating Zinc added 1 bu/A more on all comparisons but when looking at the plots that had a response to zinc, Advance Coating Zinc added 8 bu/A extra yield. An 8 bu/A yield response is often comparable to the average corn borer Bt or CRW trait response in the Answer plots.

Similar studies were conducted at the University of Minnesota in 2005 which concluded at 7 bu/A yield response on a high zinc testing soil, and a North Dakota State University study in 2007 added 11 bu/A yield. Along with yield benefits, Advance Coating Zinc has shown early season growth and development. Early season visual since deficiencies have also been reduced with Advance Coating Zinc. And-

vance coating Zinc is not a substitute for a good zinc nutrition program like 10% zinc added to starter, zinc sulfate surface broadcast or Max IN ZMB applied foliar with glyphosate but it can be a supplement to a total program.

Why Zinc? Zinc responses have been documented across many different soils and hybrids in the past couple of years. Zinc is essential in auxin production and the transformation of carbohydrates in plants. One of the most important functions of zinc in the corn plant is that it is a vital part of the enzyme system that regulates plant growth. A corn plant early in its life has a lot of cell reproduction and cell differentiation and has a big demand for zinc. If a portion of the plant's zinc needs is placed on the seed so a plant can utilize it early when the zinc demand is great, it can lead to better early season vigor and better root development. Advance Coating Zinc can deliver the early season zinc a plant needs to help with early season vigor and establish a corn plant to produce the top end yield every grower is looking for.

See you Ceres Solutions Crops Professional if you have more questions for more detail.

## 2008 Clean Water Indiana Funding Still Available for On Farm Conservation

There is still funding available to help do conservation work on the farm. Do you live or have a farm(s) along the Wabash River from Posey Co to Allen and Adams County? Have you intensively soil sampled, seeded cover crops, no-tilled, tried a new conservation piece of tillage equipment, modified your existing equipment to perform conservation planting, etc or tried the pre-side dress nitrogen testing as a way to manage nitrogen in manured fields? Or do you plan to do any of the aforementioned practices (except cover crops) yet this winter. Then you could be eligible to receive some funding for those practices.

Last year the Clean Water Indiana an Indiana State Department of Agriculture Program initiated a program to support growers who wanted to try some sort of conservation on their farms without seeking federal funds. In fact acres involved in this program cannot already be in the NRCS programs Environmental Quality Incentive Program or the Conservation Reserve Program.

The Clean Water Indiana Conservation Consulting Initiative Program focuses on several practices targeted to improve nutrient and sediment retention including:

- Nutrient management—intensive soil sampling using 2.5 acre grids with variable rate application of lime, P and K
- Residue management—seeding cover crops, using an innovative piece of tillage equipment to sustain surface residue, or modifying existing equipment to sustain surface residue
- Pre-side dress nitrogen testing to improve nitrogen management
- Applying for a filter or buffer strip for CRP and CREP

Funding for 2008 is still available. A grower can receive a \$0.50 per acre for any of these practices or a combination of these practices up to 500 acres. So you as a grower can receive up to \$250 total. \$250 does not sound like much, but it will help pay for several intensively soil sampled acres or part of your equipment to modify existing equipment. In this day and age \$250 is \$250 and might as well be use by you. For more information see your local Ceres Solutions Professional.

## Alternative Financing Options Currently Available

Ceres Solutions, Croplan Genetics and Monsanto have some alternative financing options to help provide more financing alternatives for seed, seed and crop protection or even a complete operating loan.

With this years current crop input prices several of you may be interested in looking at alternative financing options for some of your inputs like seed and sees plus crop protection. These options could help you maximize your predominate operating loan on other crop inputs like crop nutrients.

Croplan Genetics is offering a 0% interest loan on Croplan Seed.

AgriSpan is a new suite of financial products by ProPartners Financial developed specifically for agribusiness and producers. AgriSpan financing could be used to get gap financing or a complete operating loan. With the AgriSpan suite of products the interest rate will vary depending on the loan amount, the quality of the loan, the security of the loan, the current prime rate, etc.

Monsanto has two loan programs Farm Flex and Farm Flex +. Farm Flex is an interest free loan on seed. Where as Farm Flex +, a financing program by Farm Plan allows you to finance both Monsanto seed and Monsanto Crop Protection.

If you are interested in investigating any or all of these programs please see you local Ceres Solutions Crops Professional for more details on which program(s) may suit your needs best.

***“Can anyone remember when times were not hard and money not scarce?” Ralph Waldo Emerson***

# Grain Update

USDA Summary—Nov 10, 2008

Estimates in Million Bushels

Corn	Nov USDA—08/09	Oct USDA—08/09
Carry-in	1624	1624
Production	12,020	12,033
Total Supply	13,673	13,673
Feed and Residual	5,300	5,300
Ethanol	4,000	4,000
Exports	1,900	1,950
Total Use	12,535	12,585
Carry-out	1,124	1,088
<b>Soybeans</b>		
Carry-in	205	205
Production	2,921	2,938
Total Supply	1,333	3,150
Crush	1,745	1,760
Exports	1,020	1,020
Seed	90	90
Residual	72	75
Total Use	2,928	2,945
Carry-out	205	205
<b>Wheat</b>		
Carry-in	306	306
Production	2,500	2,500
Total Supply	2,905	2,905
Food	960	960
Seed	82	84
Feed & Resid	260	260
Exports	1,000	1,000
Total Use	2,302	2,304
Carry-out	603	601

## Deep-banding of P and K cont.

pH > 7.3 and a high clay content. In such soils deep banding of P can result in greater efficiency of P because less P becomes in contact with P-fixing soil particles and the applied P is likely to be closer to plant roots. K too can diffuse a greater distance in soils than P. Plant roots can therefore take advantage of more distant K sources. K can also be fixed between sheets of 2:1 expanding clays.

For both P and K a grower should have a good understanding of his soil and understand the limitations of the availability of P and K.

**P and K stratification, soil moisture and soil temperature**—Continued broadcast application of P and K can result in the accumulation of these nutrients near the soil surface. This accumulation known as stratification can result from minimal mixing of surface fertilizer and the cycling of nutrients from the previous plant residues. Stratification in no-till/ strip till is not necessarily problematic especially when soil test levels are medium to high in the upper soil layers, water availability is adequate during periods of rapid nutrient uptake, and soil temps are comparable to conventional tillage. However, if surface and subsoil P and K levels are low to very low, surface soil layers become dry due to drought, and early root growth and nutrient uptake in the upper soil levels are restricted due to low soil temps or compaction, deep banding of nutrients is justified and can be advantageous. Deep banding in this situation can enrich nutrient concentrations at great soil depths, provide adequate P and K to deeper-growing roots during dry conditions near the soil surface and provide P and K in concentrated zones of limited root growth resulting from compaction. It is also fair to say that in a rain-fed corn production system in the Midwest, soil from 6-12" may be drier than soil in the upper 6" during periods of high P and K uptake resulting in better nutrient utilization from surface broadcast applications.

**Crop Species and Cultivar**—Yield responses to deep-banding of P and K vary by both crop species and cultivar. At low soil test levels near the soil surface, deep banding of P and K has shown a yield advantage over broadcast application. However, at medium to high soil test levels and adequate rainfall the yield advantage disappears.

Soybeans usually respond more to broadcast applications than deep banding unlike corn. However deep banding of K has periodically resulted in greater yields than broadcast fertilizer on both low and high K soils. However, it is not advised soybean farmers switch from narrow to wide rows because of the yield reduction common to wide rows (particularly in more challenging soils like sandy soils and low organic matter-lower CEC soils—Betsy Bower).

The level of yield soybean yield response by deep banded P and K may be minimized if no-till soybeans are planted over the previous corn rows. However, when soybean rows are in close proximity to K fertilizer bands, deep-banding of K can be more effective than surface broadcasting.

Growth and yield response of corn to P and K application have been shown to vary by cultivar. For example a corn hybrid with good early-season cold tolerance that can sustain root growth in a no-till environment can result in a greater response to deep-banding of P and K than a hybrid with poor root development.

**Strip tillage and Fertilizer Application Method**—Although equipment can be purchased to apply P and K with a strip tillage unit, it has yet to show a distinct yield advantage over planter-applied P and K in a strip tillage environment.

**Starter Fertilizer**—Starter fertilizer is typically recommended for no-till and strip-till systems especially when early planting occurs because placing nutrients near the seed improves early plant growth and uniformity by improving nutrient availability. Like deep-banding starter application improves nutrient use efficiency through reduced P and K fixation.

When starter P and K are applied, crop responses to the deep-banding of P and K are likely to be reduced. The 2X2 placement of fertilizer encourages root proliferation in the zone of nutrient enrichment, potentially limiting root growth deeper into the soil where deep-banding of P and K may have been applied unless dry conditions encourage roots growth at deeper depths. Research has shown that deep banding P and K do not provide the same early-season growth response as a 2X2 starter placement.

**Consistent Nutrient Build-up and Automatic Guidance Systems**—Deep banding of P and K can result in improved nutrient use efficiency. Consistent deep banding over multiple years can build soil test levels particularly when the band is in the same position each year of application as compared to random banding or moving the band year to year.

RTK and automatic guidance system that provide sub inch accuracy not only pass to pass but year to year can provide the most flexibility with deep banding of P and K as well as planting.

**Conclusions**—Deep banding of P and K will not improve corn and soybean productivity or grower profitability in all situations. However, deep-banding fertilization will likely be most beneficial **when a number of the following conditions** are met:

- soil test P and K levels are low to medium
- The soil has a high P and or K fixation capacity
- Subsoil P and K levels are low due to nutrient stratification
- Surface soil layers are dry due to below-normal rainfall but the zone of deep-banding stays moist for root growth and high nutrient uptake rates
- Low surface soil temps restrict early growth and nutrient uptake
- The row crop being planted has been more than 10" away from previous corn rows or fertilizer bands
- The cultivar planted exhibits good early-season cold tolerance and extensive root growth in dry conditions
- Strip-tillage is integrated into the cropping system
- Starter P and K are not applied and
- Automatic guidance is used for tillage, fertilization and planting operations

Note all of the above conditions need to be present for a deep-banding system to improve crop productivity and farm profitability, but a positive response is more likely when a great number of conditions are met.