Summer 2012

The Precision Farming Magazine

eveling the Payment Generation

Buy Me Some Peanuts and an NTEGRA[®] Display

AND

Contents











Summer 2012

Buy Me Some Peanuts and an INTEGRA Displa	4 y
Crop Insurance Reporting Goes Paperles	7 ss
Investing in the Future	8
The Dirt on the Benefits of Soil Sampling	10
Leveling the Playing Field	14
Trash or Cash	18
The Future of Precision Agriculture: No Crystal Ball Required	22



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Customer service has always been the cornerstone of what makes Ag Leader stand out from other precision equipment manufacturers. When you call Ag Leader, you are not redirected to an overseas call center: you go straight to the home office in Ames, Iowa. You speak with someone located in the same building where your precision ag equipment is designed, manufactured and shipped. You talk to precision ag experts specially trained to troubleshoot and answer your questions in a way that's easy to understand. And you can take advantage of our service for your equipment's lifetime.

And now we're taking it to the next level by expanding our Tech Support operation.

This summer, Ag Leader plans to renovate space to accommodate more members to the current 45-member Tech Support team. We are projecting to bring an additional 14 staff members on board over the next two years. The Ag Leader Tech Support crew is divided into four channels – Hardware, Guidance, Software and Training. Our staff specializes in specific support areas so that we can provide a higher level of expertise to growers.

In addition, bringing on additional staff in all channels of Tech Support means a higher level of "live answer" service and a reduced hold-time during busy seasons when more immediate service is paramount.

In the meantime if you need Tech Support, here are our hours in effect until the harvest season begins: Monday – Friday, 7 a.m. to 6 p.m. CST.

Once harvest is underway, Ag Leader will expand our hours of operation and include weekend hours to make receiving the help you need as hassle-free as possible. Our goal is to keep you operating at peak performance all season long.

To reach our Tech Support team, call 515.232.5363 or e-mail support@agleader.com.

Best regards,

"When you call Ag Leader, you are not redirected to an overseas call center: you go straight to the home office in Ames, Iowa."



Al Myers

Buy Me Some Peanuts and an Here Peanuts and Buy Me Some Peanuts and Distant

If it weren't for their success nationwide, it would appear that Ag Leader products were made for peanut growers. "Automated steering is particularly important in peanuts because the vines get so big and bushy that it's hard to tell where the rows are when it comes time to dig them,"

e all know how well peanuts and baseball games go together. But it appears that peanuts and Ag Leader are a perfect combination, as well. At least that's true in Orangeburg County, South Carolina, where Jason Strock grows around 700 acres of peanuts. Like an advertisement for Ag Leader products, Strock lists two INTEGRA displays that are moved around between four tractors with ParaDvme[™] automated steering systems; SeedCommand[™] with individual row SureStop[®] clutches on his 12-row planter and an EDGE[™] display and DirectCommand's AutoSwath[™] on his John Deere 4720 sprayer.

While all three systems are also used on Strock's 1,500 acres of cotton, 200 acres of corn and 300 to 400 acres of soybeans, it was the peanut acres that really justified the purchases. The ability to use them elsewhere was just icing on the cake.

"I had an AutoFarm A5 automatic steering system for a few years, but just recently traded up to the INTEGRA and ParaDyme," he relates. "And I've already seen a vast improvement, not only on accuracy, but I've had fewer dropped signals too.

"Automated steering is particularly important in peanuts because the vines get so big and bushy that it's hard to tell where the rows are when it comes time to dig them," he explains. "That's especially true if we've had some wind that pushes all the vines to one side."

Strock says the standard procedure is to record the

waypoints when he plants the crop and then use those same lines when he comes back with the digger. That way, he can precisely follow the rows, no matter how hidden they may be at the time. Of course, the ParaDyme system is just as important at planting time, since he now strip tills all his crops.

"We tried strip tilling a couple years before we got the auto steer," he says. "And we could get the seed on the strip well enough to do a good job; but once we got the auto steer system, it's been perfect. Plus, you can put an employee on the tractor who has a lot less experience and he can still do a good job."

When it comes to planting, though, it seems the SeedCommand[™] system is just as important as automatic steering. Strock says the automatic row clutches not only save seed and prevent overpopulation on the end rows, but they allow him to leave a threeto four-foot gap at the ends of the rows on peanut fields.

"Peanut diggers work best when they can slide into the ground on bare dirt," he explains. "Otherwise, you're dragging vines and the digger just doesn't work as well. On the other hand. you can't dig the end rows until you get done with all the straight rows. So what most people do is leave a gap between the main rows and the end rows where you can drop the digger into the ground. The Ag Leader SureStop[®] row clutches do that automatically every time we come to the ends."

The final piece of the puzzle, of course, is the AutoSwath

South Carolina peanut grower Jason Strock uses an INTEGRA display to help him grow peanuts, cotton, corn and soybeans.

feature on his crop sprayer. Like SeedCommand, DirectCommand helps reduce input costs by eliminating overlap and waste. However, there's a bigger issue when the crop rotation program involves cotton and peanuts.

"Most of my corn is on my poorer ground and most of the sovbeans are in the fields that are the most distance away, since they don't require as much attention," he explains. "That means most of the main farm is rotated between cotton and peanuts. However, there's a herbicide called Cadre that we use on peanuts, which can cause problems in cotton if you have too much carryover. And that was one of the problems we were having before we put the Ag Leader system on the sprayer," he continues. "Where the sprayer was overlapping on the ends and points, the cotton was really being stunted. You might see a little effect from normal carryover, but it was

much worse where the sprayer had doubled up on chemical. Once I put AutoSwath on the sprayer, it cut down on that a lot. It also reduces the amount of fatigue too," he adds. "We've got an 80-foot boom on the sprayer, yet we've got a lot of small fields. So we'd always be watching the booms and flipping switches. Now, we just set it up and go."

Strock isn't the only peanut farmer in Orangeburg County who has seen a positive relationship between peanuts and Ag Leader. A few miles away, Lynn Felkel says he "took the plunge to precision ag with two new Ag Leader systems," even though he has used an A5 system for the past five years.

One is an INTEGRA display and ParaDyme steering system that he has already used for planting 300 acres of peanuts and 600 acres of corn. Since this is his first season with the RTK signal, he plans to use it in the same



manner as Strock when digging peanuts. That is finding the rows when the field is covered with thick, tangled vines.

Felkel says he also purchased an EDGE display that he uses in three different ways.

"I've got a spreader truck that I'm using with the EDGE display to variable-rate apply my fertilizer, as well as the gypsum and lime on peanuts," he says. "I'm also using the EDGE in my spray tractor with DirectCommand for swath control when I'm applying herbicides and fungicides," he adds, noting that he also uses it for burndown herbicide applications prior to planting.



Felkel says his final plan is to use one of the displays in his combine this fall in combination with a yield monitor something he has never had in the past.

"The combine was already set up to add a yield monitor," he says. "But rather than going through the combine dealer, I decided to give Ag Leader the headache of making it work," he adds in jest.

Felkel has little to worry about, though, as he insists everything else from Ag Leader works as predicted, including the SeedCommand system he uses for the same purpose as Jason Strock — to leave a gap between the main field and the end rows on peanuts so the digger has a place to start.

All in all, it seems like Ag Leader has made life a whole lot easier for peanut growers throughout the South, which means that baseball fans and Cracker Jack consumers have little to worry about when it comes to supply.



"Where the sprayer was overlapping on the ends and points, the cotton was really being stunted. We've got an 80-foot boom on the sprayer, yet we've got a lot of small fields. So we'd always be watching the booms and flipping switches. Now, we just set it up and go."

Lynn Felkel steers his tractor through 300 acres of peanuts and 600 acres of corn using a ParaDyme automated steering system.

Crop Insurance Reporting Goes Paperless

More farmers are swapping notepads for memory cards to report field data for crop insurance reporting. In exchange for going paperless, growers are now spending less time filing reports and getting more value from their investment in precision farming equipment.

For years, the crop insurance reporting process has essentially remained the same. Growers log field data (acres planted, planting dates, and crop tags) in notebooks or, in some cases, their heads. When it comes time to file reports, they can spend hours meeting with their crop insurance agents sorting through data and filling out paperwork. The process is later repeated for production reports after harvest season concludes.

This is a highly tedious process for all parties involved: the grower, the crop insurance agent, the insurance company and the Farm Services Agency (FSA). Such methods can also result in inaccurate reporting, if the grower can't recall exact dates or details. Over the last few years, Ag Leader has been conducting pilot programs with several insurance companies, including Rain and Hail, in order to refine a crop insurance export tool that is simple, secure and helps streamline the reporting process for growers, crop insurance agents, the insurance companies, and the FSA.

The crop insurance export tool allows growers to utilize SMS[™] Software to export field data collected on their monitors to the insurance companies and FSA, who then import the pertinent information into their GIS mapping systems to match the data with the right fields and populate the forms.

Dave Schuler, national marketing manager at Rain and Hail, likens it to using accounting software to streamline the tax filing process.

"I can roll the tax information onto a CD for my tax accountant and then my tax accountant can come back to me with questions," Schuler said. "The data chips on the displays allow



us to do the same thing now rather than having to produce boxes of paperwork."

To be sure, utilizing data collected on displays for crop insurance reporting isn't new. It's common for growers to print "cheat sheets" that their crop insurance agents can reference while manually entering the information. The new crop insurance export tool sends this information electronically, so the crop insurance agent can now simply upload the information that's required in the forms.

Schuler said the response so far from insurance agents has been very positive. "Once they imported data for the first time, they were surprised by how easy it was. They literally said, 'We must be missing some steps. It was just too easy."

Corey Weddle, director of software solutions at Ag Leader, understands some growers may initially be reticent to transfer their information electronically, mainly because of uncertainty of what information is being sent and who will ultimately have access to the data. The crop insurance export tool, he said, is designed to protect growers' information.

"There are a lot of safeguards in the system to make sure their information doesn't become public," Weddle said. "There is a level of security that people will be very comfortable with."

Luke James, software sales manager at Ag Leader, agrees that once farmers realize how secure and convenient the export tool is, they will appreciate the added value it offers. "A lot of farmers are already collecting this information, so they might as well use it," James said. "It's a simple procedure to export the information. And since they already have the technology, they might as well take advantage of the added benefit. It's a big timesaver."

Weddle said the main challenge right now is that every insurance company has its own unique GIS system, some of which are more advanced than others. The forms are consistent across the board, but how each insurance company imports data and populates those forms varies.

The export tool Ag Leader has developed for Rain and Hail through their joint pilot program exports information in a specific data standard that matches Rain and Hail's systems. It's why agents can import and utilize data so easily.

"We're pretty excited about the position it puts us in competitively and very excited about the position it puts our agents and customers in," Schuler said.

As Ag Leader continues its pilot programs with various insurance companies, Weddle believes the company is moving closer to fully automated form populating, where growers will be able to submit one electronic file that meets the needs of both the insurance companies and the FSA.

"The ultimate goal is to almost have it where growers log in, choose which information they want to send, verify that it's correct, and go," Weddle said. "We're not there yet, but we're getting closer every year now."

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"If a farmer were upgrading equipment just to get new technology, then adding aftermarket precision technology might be a good idea."

here's a certain satisfaction in stretching a dollar. Even when times are good for producers and their families, keeping a watchful eye on expenses is just good business.

Today, producers are doing just that. Faced with the choice of buying new equipment loaded with new technology or adding the precision technology to older machinery to improve yield and efficiency, producers must decide which option is best. According to ag technology experts, it all depends on a number of factors. Randy Taylor, professor and extension ag engineer, **Biosystems and Agricultural** Engineering, Oklahoma State University, says his perception is that most farmers tend to buy new equipment when times are good, because it has to get them through when times are hard. They also buy new equipment when older machines are worn out; when dealers/ manufacturers offer incentives; because they are on a regular trade-in schedule, or for tax purposes (when times are good). Still, others believe aftermarket solutions are a clear choice.

"If a farmer were upgrading equipment just to get new technology, then adding aftermarket precision technology might be a good idea," he says. "It depends on the state of the equipment. For example, if I want section control on my planter, it would be less expensive to add it than buy a new planter with that option. However, if my planter is nearing the time when I would trade (wearing out), I should probably go ahead with the new planter," Taylor says. For dealers, knowing when to recommend a new machine versus an aftermarket solution is a judgment call — and one best made when they know the customer. While every producer is different, understanding the customer's mindset about this issue and whether or not they are in a position to buy new machinery is an important first step.

Brian Emmendorfer, general manager of St. Joe Tractor, a New Holland and Kinze dealer in St. Joseph, Missouri, says 80 percent of his precision technology business involves the aftermarket sale and installation of Ag Leader products. Emmendorfer says his customers often seek a retrofit or aftermarket factory installation to reduce seed and fertilizer costs. Last spring, for example, Emmendorfer says excessive winds from a storm ruined the stand that growers had planted in end rows, resulting in significant losses. That event, alone, spurred even more interest in adding precision ag technology, he says.

"If a grower doesn't have the means to trade up, they'll often add precision ag technology," Emmendorfer says. "But we take a number of things into consideration when discussing whether to trade up or add on, including the age of the combine, tractor or planter, the precision ag technology options they are interested in, whether we have a used piece of equipment already available with the technology they're looking for and whether the cost of adding it on would be more or less than the cost to buy used equipment."

Costs will vary, of course. For example, with advances in technology, Emmendorfer says the cost to add point row clutches to an eight-row Kinze planter averages \$16,000 versus the cost of a new Kinze planter and the cost of adding the point row clutches, since they do not come factory installed on new models. That option could cost a grower \$70,000.

"In this instance, adding the point row clutches to an older Kinze planter makes sense. And it will pay for itself in two to three years," Emmendorfer says.

Bill Ongstad, a Harvey, North Dakota, farmer, has had four of his 20-year-old combines retrofitted with precision ag technology. Ongstad, 61, and his son grow mostly pinto beans and wheat with some corn and soybeans on their 6,000-acre farm. They purchased used John Deere 8820s, the newest of which is a 1988 model, and installed Ag Leader yield monitors on two of the combines a few years ago for a total cost of \$8,000. The cost to purchase a new combine at the time, Ongstad says, would have been around \$200,000.

"We felt we really needed the yield monitors because they allowed us to collect important data for use in making decisions," Ongstad says. "I know our dealer wants to sell combines, but they understand that it's not always possible for us to buy new."

According to Ongstad, retrofitting two of his combines with yield monitors improved his yield by 10 percent and reduced the amount of fertilizer he used by 10 percent since he knew where to apply it.

Despite the current "good times" for some growers, buying new

machinery just doesn't match their current business and financial planning, especially for those who know commodity prices are ever changing. As such, considering aftermarket options is just good business, says Adam Gittins, precision ag manager for Heartland Technology Solutions' (HTS) Precision Agriculture Division in Harlan, Iowa.

"In almost all instances, it makes sense to consider aftermarket precision ag if you're strictly trying to upgrade the technology," Gittins says. "Ag Leader does a good job of being color blind, making precision ag products that fit just about any brand. For example, we can put a yield monitor on every John Deere combine from the late 1970s and newer. We can install auto steer on tractors from the 1990s on and install precision ag technology on planters from the late 1970s and early 1980s. That's why they are our primary vendor."

In rare instances, HTS can install precision technology from Ag Leader that OEMs have not yet included from the factory on new farm equipment. In 2011, for example, Ag Leader introduced OptRx[™] crop sensors, which measure and record data about crops in real-time using the reflectance of light shone on the growing plants. The data, in turn, is used for real-time variable-rate applications of nitrogen based on plant vigor. In the end, says Gittins, it's all about spending money to make money.

"If a grower is content with the machine they have, there's really no compelling reason to upgrade to new equipment. But adding precision technology *will* make you money!" Gittins says.

The Dirt on the Benefits of Soil Sampling

"Using the grid sampling has really helped us," says Kurtz. "We had another field that was always lagging behind; and with the data we gathered, we were finally able to even it out last year."

emember digging in the dirt as a kid to see what you could find? Today, that same challenge is aided by cutting-edge, computer software technology designed to make a grower's efforts more effective and profitable.

Valuable data gleaned from soil samples has already helped growers make critical decisions in their farming operations. However, the challenge is to match variations in plant responses with soil characteristics. Fortunately, such testing now allows growers to detect variations in crop yields that occur across a field and to use variable application rates and micromanagement techniques in an attempt to achieve a more efficient use of fertilizer.

Oregon, Missouri, farmer Brad Kurtz and his father began grid sampling and soil testing their 1,500-acre corn and soybean rotation (with a little wheat) in 2004 and gained valuable data about a section of land that had long been a trouble spot for the two.

"We started with just one field, which covers part bottom and part hill ground. It has always given us problems," says Kurtz. "We got a lot of bang for our buck after testing that area. We found out that the two parts needed different fertilizer. Since then, we've added fields and are on a four-year testing cycle."

Kurtz collects the soil himself and sends it off to a lab. The information is then sent to Record Harvest, a consulting service that provides precision

soil analysis. As part of their service, Record Harvest feeds the data into Ag Leader's SMS™ Basic and Advanced Software and provides Kurtz with a complete set of computerized crop nutrient recommendations tailored to his specific crop and field. This allows Kurtz to make key decisions on planting population, fertilizer application, tillage and more. Kurtz additionally receives colorcoded fertility and nutrient recommendation maps, as well as variable-rate maps that can be delivered directly to his fertilizer dealer. The data is also saved for future tracking and comparisons.

"Using the grid sampling has really helped us," says Kurtz. "We had another field that was always lagging behind, and with the data we gathered, we were finally able to even it out last year. I have to attribute the big improvement to our soil testing and grid sampling. We know, too, not to overpopulate certain areas of that field, which saves us money on both seed and fertilizer."

Kurtz says that the invaluable data they collect and analyze through SMS is like "finding another piece of the puzzle" in his farming operation. Sometimes, in addition to answering questions, the SMS analysis raises questions, which is actually a good thing, Kurtz says.

Soil sampling is a vital component in precision farming in that it helps producers understand that nutrient concentrations in the soil may account for yield variation



The Dirt on the Benefits of Soil Sampling



and can often be corrected. Even if certain sections can't be corrected, growers are armed with the information and can plan appropriately to avoid over-seeding and overfertilizing. Soil test data can be used to generate a map of soil fertility status, which is typically accomplished with a sampling area of 20 acres.

Jerry Dishman II, who owns and operates Dishman Fertilizer, Inc., a retail fertilizer company in Helena, Missouri, notes that soil testing is as much about understanding the capabilities of the ground as it is about knowing that there's limited potential for certain sections, which allows farmers to adjust.

"You find problem areas and you

fix it — or not," says Dishman. "We fertilize based on what the section is capable of."

As Dishman accumulated sufficient data in his part of the state. he and others learned that certain areas are rich with Sharpsburg soil — deep, moderately, well-drained ground commonly used for growing cultivated crops. It's found along ridge tops in southwestern lowa. northwestern Missouri. northeastern Kansas and southeastern Nebraska. Through the beauty of soil sampling and the ability to find those areas rich with Sharpsburg soil, growers are now able to increase their vields in those sections and offset other areas incapable of producing significant yield.

"We found that un-eroded, ridge top soil is just the way the glacier left it!" Dishman says. "We could really maximize our yield there. Conversely, we found a number of spots of eroded soil with a pH variation. However, after the first four-year mapping period, we were able to go in with a grid soil map and bring those areas back to their maximum potential."

While many growers contract with service firms like Record Harvest to analyze and make prescriptions for planting, David Banks, another Oregon, Missouri, producer, uses the SMS software technology on his own. Fortunately, SMS was designed to support as many systems and data sources as a grower needs to make accurate decisions in the future, whether it be data from planting, fertilizing, spraying, harvest or guidance. Because SMS can house it all and organize it for easy access, Banks says he finds satisfaction in taking samples, sending it the lab and discovering what he needs or doesn't need — to improve his yield.

At age 60, Banks only recently started using the software, and now SMS Mobile, to sample the soil on the 2,500acre farm he shares in partnership with his brothersin-law, B.J. and Bert Bailey. Today, 4B Farms — which once included the Baileys' late father, Bob Bailey as the fourth "B" — rotates corn and soybeans on land in both the Missouri river bottom and the rolling hills east of the river. A strong advocate of variablerate fertilizer applications, Banks now makes his own prescriptions based on models provided by the University of Missouri Extension. Through soil analysis, he learned parts of their land were lagging in phosphate. When corrected, Banks says it made a significant difference in his yield.

"Our yields have increased dramatically — 30 percent in some areas," Banks says, noting the advantage of the SMS Mobile hand-held device and accessories. "By applying the needed nutrients to the low testing areas of the field, it has raised the yield in those spots by 35 to 45 bushels/acre, which has helped our overall field average immensely. When you multiply the increase by \$6, that is a good return."

Further, Banks says the data he receives from soil samples "takes the confusion out of what to take out or put in." To keep the information current, he now retests the soil every four years, or every two rotations.

"I find it very interesting to use this technology on my own and know what our farm needs in terms of soil nutrients," Banks concludes. "It's certainly paid for itself and improved our bottom line." "Our yields have increased dramatically — 30 percent in some areas," Banks says, noting the advantage of the SMS Mobile handheld device and accessories. "By applying the needed nutrients to the low testing areas of the field, it has raised the yield in those spots by 35 to 45 bushels/acre, which has helped our overall field average immensely. When you multiply the increase by \$6, that is a good return."



Leveling the Paying Field



Consistent emergence is one of the key features of Ag Leader's new hydraulic down force system.

'Thanks to Ag Leader's hydraulic down force system, though, we got our beans consistently planted in moist soil; and didn't have to replant anything. We probably had a 90 to 95 percent stand on all the soybeans.

The hydraulic down force system installed on their 16-row John Deere planter may just be a test unit, but Erik Grudle says Ag Leader may still have a hard time getting it back. Despite the fact that their 900 acres of corn is divided between the Missouri River bottom near Percival. Iowa, and the rolling hills north

of Sidney, Iowa, Erik and his dad, Randy Grudle, have never seen such consistency in emergence and corn height. Both credit the new Ag Leader hydraulic down force system that they were privileged to

* *********

test this spring prior to its introduction later this year.

"We had air bags on the planter before this," Erik explains. "And our biggest problem with those had to be with corn-on-corn. It wasn't uncommon to find seed laying on top of the ground and almost never at the depth that I wanted.

"With this system, I don't know as I've ever found corn laying on the surface," he continues. "In fact, it's a rare occasion to find corn seed that's not right there at two inches. As a result, the emergence was tremendous. Virtually all of it came up at the same time."

Although the Grudles rotate

much of the 1,700 acres of Iowa farm ground between corn and soybeans, Erik notes that the acres not rotated are planted corn-on-corn, which tends to leave a lot of root balls on the surface.

"We used to no-till everything," Randy explains. "But when the

residue got so thick, due to higher plant populations and newer hybrids, we decided we needed to do something."

corn-on-corn

Consequently, the Grudles' tillage

program now consists of using a ripper on all of their bottom ground in the fall to break up the hardpan. That's followed with a vertical tillage machine on all the corn fields to size stalks and mix the residue with a small amount of soil.

"Occasionally, we'll vertical-till the soybean stubble prior to planting corn," Erik relates. "But most of the time soybean fields are planted no-till."

However, when corn and soybeans are being planted in fields that have been ripped, Erik uses an Ag Leader INTEGRA display and ParaDyme steering system on an RTK signal to

place the seed right on top of the ripped zones, which are on the same 30-inch spacing.

"With the ripper and vertical tillage, we still leave most of the residue on the surface," he explains. "As a result, you'd really see the planter boxes bounce up and down on the air bags as the gauge wheels hit those root balls. We didn't see

near as much bounce, though, with the hydraulic down force system."

Dramatic Variation

Erik says what surprised him most was the amount of variation across the width of the planter bar.

"Sometimes I saw the center



"We had air bags on the planter before this," Erik explains. "And our biggest problem with those had to be with corn-on-corn. It wasn't uncommon to find seed laying on top of the ground and almost never at the depth that I wanted."

section reading 300 pounds when the outside ends were at 80," says Erik, who does most of the planting. "Other times, it would be under 100 pounds all the way across. I think 385 pounds was as high as I ever saw it go and 80 was about as low as it ever went. But it was almost always the center section, where the tires ran, that required the most down pressure."

Ironically, Erik says the hydraulic down force system also increased the value of his threebushel seed boxes, which are an optional replacement for the standard 1½-bushel boxes.

"We originally bought the larger boxes so we could run longer between stops," he explains. "But then you go to these crop seminars where they tell you that you shouldn't fill them all the way, because when they are close to empty, you're not going to be planting at the right depth. That seems to be true, whether you have springs or the air bags. As the boxes near the point of being empty, there's definitely less down pressure.

"Well, with this system, you don't have to worry about it because it accounts for the weight of the seed in the box," he adds.

Grudle says that even though the air bags can be adjusted from the cab, it's hard to know where to set them. Plus, there's no variation across the width of the planter.

"Having seen how the hydraulic system is constantly changing as I was going across the field, I can't imagine how bad of a job I was doing with the air bags," Erik says. "I had to be greasing the sidewall in a lot of places."

Grudle says he can't help but think the hydraulic down force system will have a positive affect on yields. Through the use of minimum tillage, better hybrids and variable-rate fertilizer, the Grudles have already boosted average corn yields to around 185 bushels per acre, with soybeans averaging around 50 bushels. He sees the ability to control planting depth as another tool.

"Actually, we probably saw a bigger impact from the hydraulic down force system in soybeans because of conditions than we did in corn," Erik adds, noting that soybeans are also planted in 30-inch rows. "It was so dry this spring that a lot of farmers in this area had to replant soybeans. Others were lucky to get a 60 percent stand.

"Thanks to Ag Leader's hydraulic down force system, though, we got our beans consistently planted in moist soil; and didn't have to replant anything. We probably had a 90 to 95 percent stand on all the soybeans." Of course, most farmers don't face the differences in soil types that the Grudles have to deal with, either. While the Loess Hills near their home farm consists of light soils that were deposited by the wind over several million years, the river bottom fields some 10 miles away are flat as a board and consist of heavy, black soil.

"We already variable-rate both our dry fertilizer and the anhydrous ammonia," Erik says. "I want to variable-rate my seed population, too, but I'm just not there yet."

Of course, when that time comes, Grudle will most likely turn once again to Adam Gittins, precision ag sales manager for HTS Precision Ag Solutions. Not only has Gittins worked with customers like the Grudles to test and market Ag Leader products, but as a farmer himself, Gittins often uses what he sells. That was certainly the case with the Ag Leader hydraulic down force system when he installed a test unit on his own 16-row Kinze planter with bulk fill.

First-Hand Experience

"Ag Leader has a number of test units out on John Deere planters, but mine is one of only two on Kinze planters," Gittins relates. "We had a few issues, but because I've tried and worked with these systems myself, I've got an in-depth knowledge of the products and when I go to sell them, I'm very comfortable knowing that they will do what I say they will ... because I've seen it on my own farm."

Gittins says the biggest surprise on his part was discovering how poorly he had been adjusting the springs on his row units in the past.

"I'd just set the springs for an average and leave them there for the rest of the planting season," he admits. "As I would watch the display with the hydraulic system, though, I discovered that I often had the pressure set too heavy or too light, and often in the same field.

"Ag Leader does a fantastic job of testing products prior to putting them on the market, which is why we as a dealer have aligned ourselves so closely with them," Gittins continues. "They've got really innovative ideas and are continually bringing products like this hydraulic down pressure system to market. But they're doing it the right way," he concludes. "Instead of just throwing it out there and expecting it to work in all the various conditions, they're running a small, controlled number of trials that we can follow and perfect. I'm already getting a lot of questions about hydraulic down pressure, so I'm looking forward to being able to sell it."







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Trash or Gash

As the market for bioenergy expands, the value of corn stover has also increased, prompting producers to ask, "How much is too much?" "The only effective treatment — bale and remove increased yield by 16 percent compared to the no residue management control."

here's no doubt that corn prices have improved in the past few years as cash grain has hovered around \$6.50 per bushel. However, an ever-increasing amount of grain isn't the only thing of value coming off of North American cornfields.

Corn stover has long been used for roughage in cattle feed and for bedding material. However, with the improvement in cellulose digestion technology, which makes ethanol production possible from plant residues, the agricultural sector could face both opportunities and challenges in the coming years.

On the plus side, corn offers the greatest potential for commercial bioenergy production since it produces at least 1.7 times more residue than other leading cereals. Unfortunately, while the use of corn stover offers the potential for a "new" highvalue agricultural product, the long-term effects of harvesting stover on soil health and environmental sustainability are still in question — which has prompted both the USDA and a number of universities

to conduct their own studies on the effects of crop residue removal on soil health.

One study, conducted in Chazy, New York, evaluated the effects of 32 years of corn stover harvest versus stover return on soil health under plowing and no-till systems on a Raynham silt loam. Initiated long before bioenergy was even an issue, the study was intended to investigate the different tillage systems under silage and grain production systems. However, it is just as valuable today for evaluating soil health when corn stover is harvested for biomass energy.

The experiment consisted of four treatments replicated in four blocks, which involved both plowing and no-till with stover returned and harvested in each situation.

According to authors of the study, "We conclude that, on a silt loam soil in a temperate climate, long-term stover harvest had lower adverse impacts on soil health than long-term tillage. Stover harvest appears to be sustainable when practiced



under no tillage management. In real commercial farm situations, management strategies such as crop rotation, cover cropping and additions of organic amendments can help improve soil health, making stover use as feedstock for energy industries a more viable and sustainable option."

The fact is, removal of corn residue may even be good for the crop, particularly if a producer is growing corn on corn. According to Andy Heggenstaller, agronomy research manager at DuPont Pioneer, "Corn residues are a major factor contributing to lower yields for corn following corn compared to corn rotated with soybean, particularly under no-till management."

As a result, DuPont Pioneer participated in a four-year study to evaluate the effects of residue management practices and hybrids on stand density and yield for no-till continuous corn. Conducted

Trash or Ca\$h

at the Bradford Research and Extension Center near Columbia, Missouri, the trials evaluated five different residue management treatments spraying 40 lb/acre liquid N on the residue in the fall, fine chopping of stalks in the fall, removing approximately half of the stover by baling in the fall, using row cleaners when planting in spring and no residue management.

"Averaged over the four years of the study, grain yields were 151, 152, 154, 157 and 174 bushels/acre respectively for the none, row cleaners, fall N, fall stalk chop, and mow and bale treatments," Heggenstaller relates. "The only effective treatment — bale and remove increased yield by 16 percent compared to the no residue management control."

While too much residue can have an adverse affect due to higher risk of pest infestation, allelopathic (toxic) effects and reduced soil temperatures, too little residue is just as detrimental. A certain amount is still needed to prevent soil erosion, reduce evaporation, encourage beneficial soil organisms and provide organic matter and nutrients.

Harrison Pettit, vice president of business development at Oregon-based PowerStock, insists that with 14 years of experience behind them, they're very careful not to remove too much residue when baling stover for the biomass energy sector. A division of Pacific Ag Solutions, the largest ag residue and forage harvesting company in the country, PowerStock provides supply chain solutions to biomass consumers in Washington, Oregon, Iowa and Kansas.

"There is no uniform answer on the amount of residue you can remove in what we refer to as a 'sustainable level of harvest,'" Pettit says. "It's uniquely characterized by location, which depends on soil type, rainfall, climate, crop rotation, tillage practices, field grade or slope, etc."

Pettit says there are very few places where a producer would want to remove more than 50 percent of the residue ... 60 percent at the most.

"As an example, in southwest Kansas, where it's often very dry and windy and corn is grown under irrigation, there's actually a problem with the corn stalks breaking down," he explains. "So you're better off taking a meaningful amount off to lower the burden of incorporation."

In contrast, Pettit says they found areas in North Dakota where removing 25 percent of the residue was the limit. That,





of course, puts the burden on Pettit and his partners to balance the lower yield with the cost of labor and equipment.

Hence, Pettit can readily see the value of soil testing, yield monitoring and field mapping with tools like those available from Ag Leader. Not only can a producer map yields and moisture, but maps can also be created to show different hybrids and varieties, soil type, tillage functions, etc.

The USDA estimates that approximately 2.3 tons/acre of stover (dry matter) needs to remain in the field to sustain soil organic matter under continuous corn with no-till/ conservation tillage. As an example, it's estimated that corn producing 170 bushels/ acre of grain will yield four tons/acre of stover. In this case, only about 40 percent of the stover could be harvested sustainably (4.0-2.3)/4.0 = 0.425). However, a field producing 210 bushels/ acre of grain will produce approximately five tons of stover per acre, which means over 50 percent of the residue could be removed.

"The best place for us to start on issues of sustainability is to be operating in fields with very high grain yields," he explains. "Most of the research shows there is a one-to-one relationship between grain yield and residue production. So if you start in an area with higherthan-normal grain yields, then you already know you're going to have a large amount of residue there. "Of course we also work very closely with the (NRCS) Natural Resources Conservation Service and the state universities to help determine a sustainable level for each area," he adds. "We always go to a third party for advice; so it's not the grower saying 'Take as much as you want' or us saying 'We need to take this much to cover expenses.'"

Despite the parent company's 25 years of experience, though, don't expect a pat answer on residue harvest sustainability from Pettit or his partners. His response will likely be, "It depends."

Pull up the yield maps, soil profile maps and weather trends, however, and he can give you a lot better answer. "Most of the research shows there is a one-to-one relationship between grain yield and residue production. So if you start in an area with higher-than-normal grain yields, then you already know you're going to have a large amount of residue there."





The Future of Precision Agriculture: NO CRYSTAL BALL RECUTED



hat does the future hold for precision agriculture? How will Ag Leader contribute to it? No need to seek out a fortuneteller. Al Myers, the founder and President of Ag Leader Technology, has a clear vision. And here's what he has to say about it:

Where do you see the future of precision agriculture headed?

AM: Precision products and practices have been adopted by a significant number of growers. It's now to the point where it can be considered mainstream technology that is being adopted by the "practical majority." In the future, it will be required technology, which must be used to maintain a profitable operation over a long-term basis.

The next revolution in precision technologies will be real-time connectivity between machines in the field, between field machines and the office. or between machines and the farm owner, manager, consultant or supplier. This will happen through wireless communication technologies being built into new machines or retrofitted onto older machines. Just as evervone in a modern office can communicate with any associate on-site or in other locations through the internet,

field machinery will be able to communicate with any other machine, person or computer which needs to know what it's doing, or needs to send it data or retrieve data from it.

What are the top things you'd like to accomplish (or see happen in the industry) in the future?

AM: My number-one objective is to keep Ag Leader on a sensible and profitable growth path so that it continues to be a viable independent company that can stay independent forever. I want to see Ag Leader continue to strengthen its position as a full line supplier of precision products. My objective is to have the best and most complete line of precision products available to the market. Ag Leader always has been a supplier of premium products, and we will continue to be that kind of a supplier. want us to be able to supply the best of everything that a grower may need in the way of precision technologies.

I would also like to see Ag Leader continue to increase its global presence. We have done business internationally for many years, but we are starting to make investments in major foreign markets by hiring employees in several of the major overseas ag markets,

"My objective is to have the best and most complete line of precision products available to the market. Ag Leader always has been a supplier of premium products, and we will continue to be that kind of a supplier." such as Europe, Australia and South America.

Do you ever see yourself completely "retiring"?

AM: I have no plans to completely retire. I love what I have created with Ag Leader too much to ever consider walking away from any involvement with it. However, I do continue to grow a capable staff and I trust them to run the day-to-day operations. In the last 20 years, my role has changed from that of doing a fair amount of detailed work myself, to that of making sure the organization is properly staffed, managed and working on the right objectives.

If you could say one thing to every grower about precision farming, what would you say?

AM: Precision farming practices are here to stay and are going to be required for growers who make their primary living on the farm to grow and be profitable. Whether you enjoy using the technology or not, you need it to stay profitable in the face of rising costs. If you need assistance making it all work for you, make sure you align yourself with a local dealer or consultant who can keep it all working smoothly.

Since I started Ag Leader 20 years ago, there is a whole new generation of young folks who grew up with technology and love to work with it. The value of keeping your precision technology working properly and expanding the ways you use it has great potential value, and you need to make sure it is giving you the return that it should. Gradually expand your use of precision technologies, rather than holding back and waiting to make the big jump someday. If you adopt it gradually, your transition will be easier.





Next year's profits start with this year's harvest data. And, if profit-per-acre is the name of the game, you can't afford less than the most proven precision farming system in the industry this fall. Ag Leader displays, software and precision farming tools help you work smarter during harvest so you can make more profitable decisions. We call that the Value of Data[™]. Take the next step with your precision farming system. Visit your expert Ag Leader dealer before this harvest season.



SMS[™] Software Discover the Value of Data[™] and turn field data into charts, maps and reports that allow you to make more profitable decisions.

SM

VERSA[™]/INTEGRA[™] Displays

Map hybrid/variety yield and moisture data and view results in real-time. Identify opportunities to improve profitability based on variables like seed performance or field drainage. AutoSwathTM for Harvest Record harvest data based on number of rows being harvested, improving accuracy at point rows or with partial swaths.



Automated Steering/Guidance Increase harvest windows with ParaDyme® automated steering, OnTrac2+ assisted steering and GPS systems.



RIP THIS AD OUT Take it to your local Ag Leader dealer and ask about a precision farming package customized for you. You'll get a **FREE** Ag Leader multi-tool with fold-out USB drive.* Visit www.AgLeader.com to find your closest dealer.



Learn more and find your local Ag Leader dealer www.AgLeader.com