

# 2018 AGRO EXPO

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## OFFICIAL SHOW GUIDE



A SPECIAL SUPPLEMENT TO

**Michigan**  
Farm News

AUGUST 14 & 15, 2018 | ST. JOHNS, MI  
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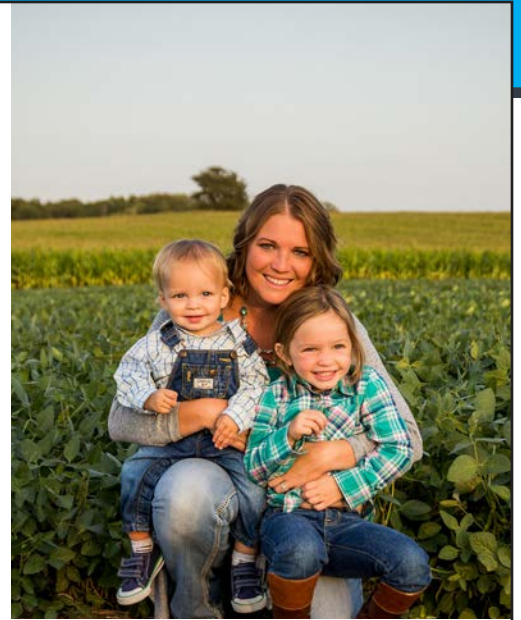
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## Complete the puzzle

At the end of every year in agriculture, we look back and assess what we could have done differently. The answer isn't always obvious or even in our control. It's not only farmers who stop and reflect on the previous season, the companies that provide your resources do the same. From the purchase of seed to the sale of your commodity, many people are involved in providing a piece to your farming puzzle.

New products can change and provide benefit to your operation, and there are certainly hundreds of proven products that would be new to you too. That's where the importance of collaboration comes into play. Whether it's a product expert, a neighbor achieving some level of success, or seeing a new technology in motion for yourself, these are all important pieces to evolving the processes on your farm.



Like your farm, the AgroExpo continues to evolve with new products of focus, new targeted learning opportunities, new faces, new philosophies. Again, stop and consider: If a product or service did not fit your farm's puzzle before, that does not mean it won't today. As your management plan has changed to face the new realities of our industry, the opportunities for collaboration and partnership have changed as well.

Be sure to check the show schedule and review the 'Planning Your Experience' article. You may want to block out both days for the AgroExpo, as there is a lot to experience again this year. We look forward to seeing you at the 2018 AgroExpo as we create a great platform to come and connect, discover, and innovate.

A handwritten signature in black ink, appearing to read 'Albert Bancroft'.

Albert Bancroft  
AgroLiquid Senior Marketing Manager

## 2018 AGROEXPO STEERING COMMITTEE

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# GETTING TO AGROEXPO

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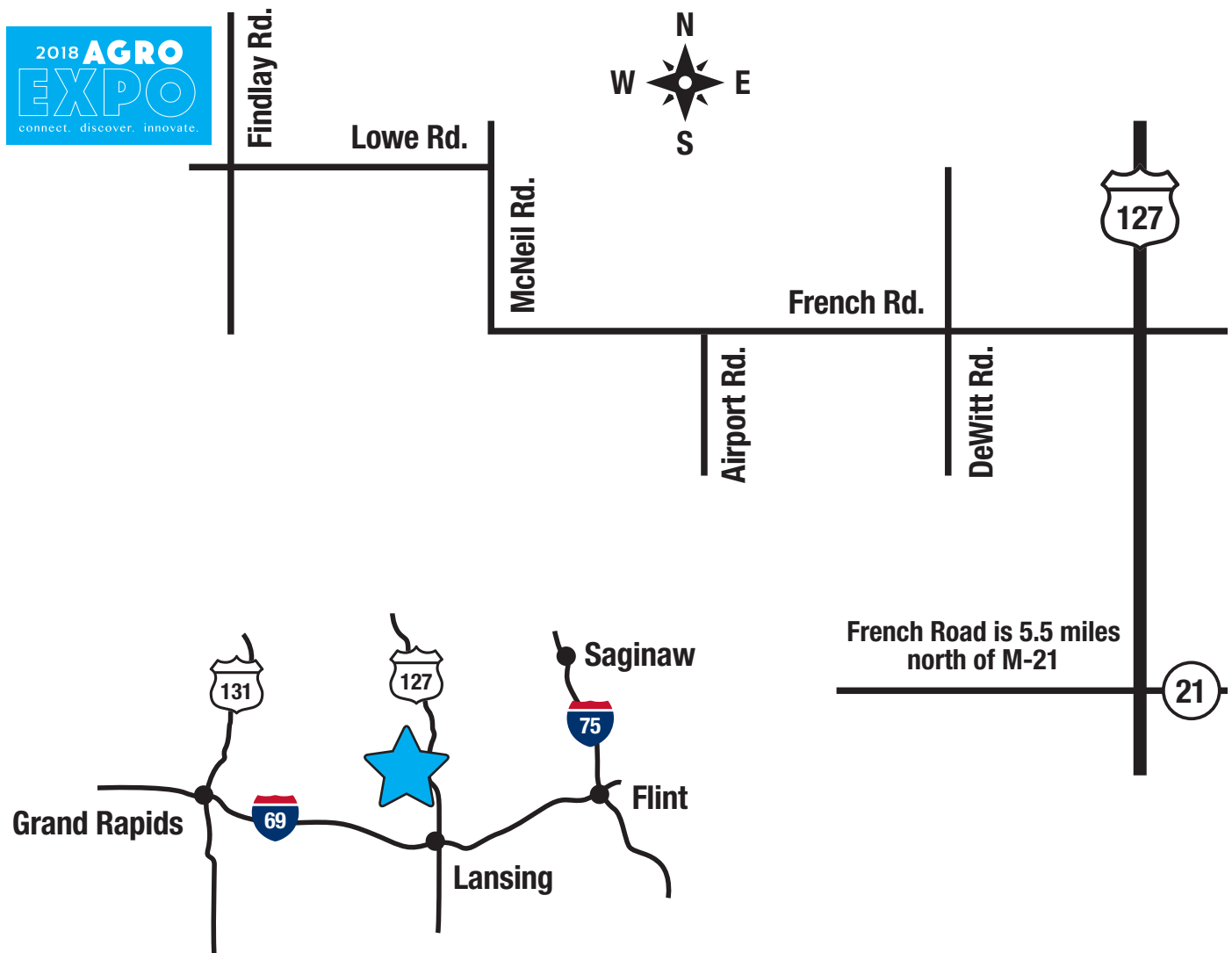
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## Coming from the north on US-127:

French Road is approximately 27 miles south of M-46 and 4 miles south of Uncle Johns Cider Mill.

## Coming from the south on US-127:

French Road is approximately 20 miles north of I-69 and 5.5 miles north of M-21.



## Tuesday, August 14

8:30 am	Show is open to attendees
9:00 am	Planting Demonstrations   Planting Area
9:00 – 9:30 am	<b>Late Season Corn Scouting   Crop Tent</b> <i>Justin Schneider, Agronomist, LG Seeds</i> <b>SPONSORED BY: LG SEEDS</b>
9:30 – 10:00 am	<b>Peering into the Future of Ag Technologies   Crop Tent</b> <i>Chad Berghoefer, Senior Field Agronomy Manager, DuPont Pioneer</i> <b>SPONSORED BY: DUPONT PIONEER</b>
10:00 – 11:00 am	<b>Risk Managing Your Operations   Speaker Barn</b> <i>David Reddel, Agronomist, Berkley Agribusiness Risk Specialists</i> <b>SPONSORED BY: DAVID CHAPMAN AGENCY</b>
12:30 – 1:30 pm	<b>In Hot Pursuit of High Corn Yield!   Speaker Barn</b> <i>Tony Vyn, Ph.D., Professor of Agronomy, Purdue University</i> <b>SPONSORED BY: DUPONT PIONEER</b>
1:30 pm	Tillage Demonstrations   Tillage Area
2:00 – 2:30 pm	<b>Phosphorus Management in Row Crops   Crop Tent</b> <i>Jason Koning, Regional Manager MI &amp; N. OH, Precision Planting</i> <b>SPONSORED BY: PRECISION PLANTING</b>
2:30 – 3:00 pm	<b>Soybean Cyst Nematode Strategies for Today   Crop Tent</b> <i>Karen Zuver &amp; Gary Brinkman, Field Agronomists, DuPont Pioneer</i> <b>SPONSORED BY: DUPONT PIONEER</b>
3:00 – 3:30 pm	<b>Top Disease and Insect Threats for 2018   Crop Tent</b> <i>Jason Fettig &amp; Steven Gower, Agronomists, DEKALB/Asgrow</i> <b>SPONSORED BY: DEKALB/ASGROW</b>
4:00 pm	Show Closes



## Wednesday, August 15

8:30 am	Show is open to attendees
9:00 am	Planting Demonstrations   Planting Area
9:00 – 9:30 am	<b>Improving Alfalfa Establishment and Yields   Crop Tent</b> <i>Gary Freiburger, Regional Manager, Dairyland Seed Co.</i> <b>SPONSORED BY: DAIRYLAND SEED</b>
9:30 – 10:00 am	<b>Crop Nutrition   Crop Tent</b> <i>Greg Wetzel, Conklin Agrovantage</i> <b>SPONSORED BY: CONKLIN AGROVANTAGE</b>
10:00 – 11:00 am	<b>News About Michigan Agriculture for Michigan Agriculture   Speaker Barn</b> <i>Pat Driscoll, Editorial Director &amp; Terry Henne, Contributing Broadcaster, MAIN</i> <b>SPONSORED BY: MICHIGAN AGRICULTURE INFORMATION NETWORK (MAIN)</b>
12:30 – 1:30 pm	<b>Estate Planning and Asset Succession   Speaker Barn</b> <i>Mike Fraleigh, Attorney at Law, Fraleigh Law</i> <b>SPONSORED BY: FRALEIGH LAW</b>
1:30 pm	Tillage Demonstrations   Tillage Area
2:00 – 2:30 pm	<b>Managing Organic Matter Variability   Crop Tent</b> <i>Jason Koning, Regional Manager MI &amp; N. OH, Precision Planting</i> <b>SPONSORED BY: PRECISION PLANTING</b>
2:30 – 3:00 pm	<b>Using Technology to Make Quick, Easy Decisions   Crop Tent</b> <i>Jake Isley, Climate FieldView</i> <b>SPONSORED BY: DEKALB/ASGROW</b>
3:00 – 3:30 pm	<b>Sulfur – Why is it Such a Big Deal?   Crop Tent</b> <i>John Leif, Field Agronomy Manager &amp; Tim Duckert, Field Agronomy Research Manager, AgroLiquid</i> <b>SPONSORED BY: AGROLIQUID</b>
4:00 pm	Show Closes

## Tuesday, August 14

### RISK MANAGING YOUR OPERATIONS

10:00 AM | SPEAKER BARN

**David Reddel, Agronomist, Berkley Agribusiness Risk Specialists**

David will discuss pest resistance concerns, lessons learned with Dicamba in 2017, and finding our path forward.

### IN HOT PURSUIT OF HIGH CORN YIELD! MANAGING FOR THE TOP OF CORN YIELD

12:30 PM | SPEAKER BARN

**Tony Vyn, Ph.D., Professor of Agronomy, Purdue University**

Identify key factors in achieving exceptional corn performance. Plus learn from a grower panel of Michigan NCGA Corn Yield Contest winners as they share what 300-400+ bu/A contest corn has taught them in chasing high yields on their whole farms. Featuring Drozd Farms, Allegan, MI; Ferguson Farms, Allenton, MI; Don Stall, Charlotte, MI

### LATE SEASON CORN SCOUTING

9:00 AM | CROP TENT

**Justin Schneider, Agronomist, LG Seeds**

Who, What, When Where & Why?

### PEERING INTO THE FUTURE OF AG TECHNOLOGIES

9:30 AM | CROP TENT

**Chad Berghoefer, Senior Field Agronomy Manager, DuPont Pioneer**

Take a glimpse into what the future likely holds for high-tech agriculture in the next decade and beyond. Explore the current and future very practical applications for managing fertility, pests, crop stress and related management systems. Chad will look at aerial and satellite imagery, in-field data, robotics, and much more.

### PHOSPHORUS MANAGEMENT IN ROW CROPS

2:00 PM | CROP TENT

**Jason Koning, Regional Manager, Precision Planting**

Phosphorus management in row crops is critical to early development. Here we will discuss how banded applications with the planter can help mitigate stress to a young corn plant during ear development, resulting in higher yields. We will also discuss how nitrogen fits into your corn crop's early season nutrient plan.

### SOYBEAN CYST NEMATODE (SCN) STRATEGIES FOR TODAY

2:30 PM | CROP TENT

**Karen Zuver & Gary Brinkman, Field Agronomists, DuPont Pioneer**

Zuver and Brinkman will discuss the latest tools in controlling, managing, and mitigating yield losses from SCN.

### TOP DISEASE AND INSECT THREATS FOR THE 2018 CORN AND SOYBEAN CROP

3:00 PM | CROP TENT

**Jason Fettig & Steve Gower, Agronomists, DEKALB/Asgrow**

This session will cover timely, yield-limiting threats to corn and soybeans, what to do about them this season, and ways to avoid them in 2019.



## Wednesday, August 15

### NEWS ABOUT MICHIGAN AGRICULTURE FOR MICHIGAN AGRICULTURE

10:00 AM | SPEAKER BARN

**Pat Driscoll, Editorial Director & Terry Henne, Contributing Broadcaster, MAIN**

Known for its timely coverage of all things Michigan agriculture, the Michigan Agriculture Information Network (MAIN) will be on stage tackling the biggest topics of the day for Michigan farmers. It will all start with MSU Extension Agriculture Meteorologist Jeff Andresen, who will put as many tea leaves and wooly caterpillars on the table as he can to help us understand what our harvest season may hold. Jeff's presentation will conclude with a burst of hot air as MAIN Editorial Director Pat Driscoll takes the stage with a host of guests discussing the hottest issues of the moment.

### ESTATE PLANNING AND ASSET SUCCESSION

12:30 PM | SPEAKER BARN

**Mike Fraleigh, Attorney at Law, Fraleigh Law**

The ag community faces increasing risk due to financial challenges, the changing role of government and agriculture programs, changes in production technology, global competition, complex environmental regulations, an uncertain tax environment, liability exposure, and the list goes on and on. As part of a family that has been farming for four generations, Mike has a unique understanding of the issues the ag community faces. He will discuss how to go about developing a plan that meets both your business and family goals.

### IMPROVING ALFALFA ESTABLISHMENT AND YIELDS

9:00 AM | CROP TENT

**Gary Freiburger, Regional Manager, Dairyland Seed Co.**

From field selection to preparing and establishing a stand—what are the very basics of producing alfalfa? What are the potential pitfalls?

### CROP NUTRITION

9:30 AM | CROP TENT

**Greg Wetzel, Conklin Agrovantage**

Providing the right source of crop nutrients at the right time is critical to supplying the fertilizers needed to meet your crop yield goals. Greg will take a look at crop nutrient options with proven field response, and how to incorporate them in your management plan.

### MANAGING ORGANIC MATTER VARIABILITY

2:00 PM | CROP TENT

**Jason Koning, Regional Manager, Precision Planting**

Organic matter provides many benefits to crops including mineralized nutrients and water holding capacity. Here we will discuss different strategies for identifying and managing organic matter variability throughout the field including variable rate technology & hybrid selection.

# GUEST SPEAKERS

## Wednesday, August 15

### USING TECHNOLOGY TO MAKE QUICK, EASY DECISIONS

2:30 PM | CROP TENT

**Jake Isley, Climate FieldView**

Jake will take a closer look at taking data collection seamlessly from the cab to the books, and how the available technology can play a pivotal role in getting a return on your input investments.

### SULFUR – WHY IS IT SUCH A BIG DEAL?

3:00 PM | CROP TENT

**John Leif, Field Agronomy Manager & Tim Duckert, Field Agronomy Research Manager, AgroLiquid**

Sulfur could be referred to as the fourth essential nutrient – after N, P, and K. This yield-limiting nutrient is a critical component to a crop nutrition plan. John and Tim will take a look at the importance of sulfur, how and when to apply this critical nutrient.

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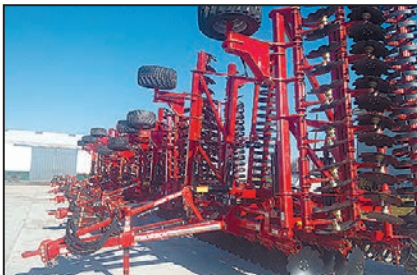
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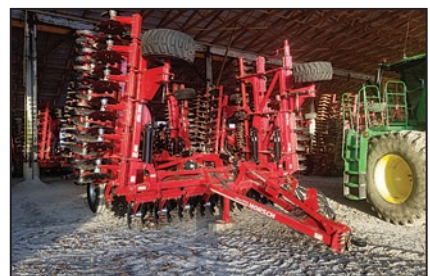
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# 2018 **AGRO** **EXPO**

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## Plan your AgroExpo experience

**There is a lot to experience at the 2018 AgroExpo—make sure you don't miss anything!**

### WHERE TO START

Your first stop should be at one of the Information tents. There is a packet of information available to visitors, and this is a great time to take a moment to get your bearings. Identify where you are, and where all the AgroExpo attractions are located. You can also use this time to take advantage of the shade in these tents, and to circle the speakers or in-field demos you are interested in seeing. Also, if you have any questions at any point—the folks in these tents can help.



### EDUCATIONAL SESSIONS

Throughout the AgroExpo, there are educational opportunities that will focus on providing practical, usable information on a number of topics. These sessions will range in length from 15-minute 'What's New' presentations by agribusinesses, to 30-minute in-depth, crop-specific discussions in the Crop Tent, to thought-provoking and informative talks in the Main Barn. Be sure to review the descriptions of these sessions in this Show Guide.



### FIELD DEMOS

Numerous in-field experiences and demonstrations are planned throughout the AgroExpo to provide hands-on opportunities to see how these new technologies can be incorporated into a management strategy. There are live planter demonstrations, as well as a variety of tillage equipment that will run at various times. Again, be sure to review this entire Guide to know when and where you can see this equipment in the field.





## TRADE SHOW

New equipment, technology and information—you can find it all in the trade show area of the AgroExpo. A record number of vendors are bringing their best people and newest methods, advancements and technology to the AgroExpo. You get to see it all in one place!



## MEALS

Always an important consideration—where is the best food? Well, that depends on your preference, and luckily the AgroExpo has several food trucks to choose from for a variety of delicious options. The food trucks are centrally located and there is a tent area available to sit, enjoy good food and the company of others in the ag industry.



## NETWORK

The AgroExpo is an opportunity to come together with others in the ag industry. Sit down next to someone new at lunch, strike up a conversation at the tillage demo, take advantage of the ideas and experiences of other attendees and exhibitors. These connections and interactions could be your most valuable take-away from the AgroExpo.

**Most of all, enjoy your time at the AgroExpo. Agriculture has a lot to show off. Make the most of this rare day off in mid-summer and appreciate everything our industry has to offer, and in one place, at the 2018 AgroExpo.**

# New planter tech gives seed the best start

## FARM NEWS MEDIA

It's never been all that complicated. Plant a seed, add a few inputs to help it grow, wait for the right time and harvest it. Hard to improve on such simplicity, right?

While such basics are unchanging, you might just see something new at AgroExpo this year. New planter technology will be on display, and it seems unlikely that people who watch new planters work will leave unimpressed.

"Planter technology is taking huge strides," said Tim Duckert, AgroLiquid's organizer of demonstrations for this year's third-annual AgroExpo. "The whole purpose of the expo is so farmers can learn about those strides and stay ahead of the competition. So our advisory board suggested that we offer the newest in planting technology this year. We believe that when farmers are educated on the new technology and see how it can be utilized on their farms, it enhances their acres and their bottom lines."

Featuring the latest in precision planting, AgroExpo's planter demonstration will feature several of the highest-tech offerings on the market today.

Precision Planting, headquartered in central Illinois, Duckert said, will bring a John Deere planter and air drill, both of which focus on speed and efficiency.

"We'll have at least those two things at Expo," said Jason Koning, Precision Planting's regional manager for Michigan and Northern Ohio. "We'll have a 16-row John Deere 1770 and Precision Planting equipment on it such as the vS2 v-drive, Speedtube Delta Force, Flowsense and 2020 Speedsense."

The vSet 2, Koning said, is the most accurate singulation meter on the market, and enables the farmer to be less concerned about maintenance.

"It's a highly durable meter that will

singulate any crop you want to plant in rows," he said.

Available since 2011, the vSet2 has proven popular and efficient, with company claims of 99.7 percent singulation in corn, Koning said.

The v-drive in the Expo demonstration field is in essence the electric drive for the vSet meter, he said. It offers variable-rate population seeding, turn compensation and more.

"It allows us to remove the entire ground-drive system on the planter," he said. "That eliminates maintenance variability from chains, shafts and sprockets."

The speedtube added to the planter, Koning said, can easily allow farmers to increase planting speed seven or eight miles per hour.

"That's a huge improvement, allowing farmers to get the seed in the ground when weather and soil conditions allow," he said. "It also allows farmers to stick with the planter they have instead of buying a much bigger planter when they want that efficiency."

By adding the Flowsense product to

the planter, farmers can better monitor how much liquid fertilizer is being used per acre, Koning said.

"Before this came out two years ago, farmers had a red ball system that allowed them to know if their liquid was flowing or not, but this tells them row-by-row," he said.

Precision Planting will also demonstrate the Delta Force product, Koning said.

"Delta Force is a row-by-row downforce that allows us to plant seed at accurate depths while eliminating compaction," he said. "It has both lift and down-direction ability."

The company also will demonstrate the Seederforce air seeder on a grain drill.

"This product has only been out for one season now, and we think farmers will like it for this fall's wheat planting," he said. "We took what we learned about a planter and applied it to the air seeder by adding hydraulic downforce and population monitoring."

While there's plenty to see there, a local company hopes to be the star of the show. Gratiot Agricultural





Professional Services (GAPS) will feature custom-made planters.

Mostly involved with seed sales since 1998, GAPS started its custom-built planter business in April, when it unveiled its "Intelli Planter," a 16-row planter featuring 30-inch row spacing.

The idea came about when the Ithaca Monosem production facility, was sold to John Deere, which closed it, said Michael Boettger, sales manager with GAPS.

"When Monosem in Ithaca was bought, eventually it was shut down," Boettger said. "So we teamed up with some of the local resources because we wanted to be in the business of building custom corn planters from the ground up. We started our conversations in mid-January, and by the end of February, we pulled the trigger. We were showcasing the idea

when a farmer told us to put a price tag on it, so we built one. We had only a verbal commitment and zero hardware. Just a toolbar. Nothing else. But we built it, and that farmer did his planting with it this year."

While it may not be that first planter on display at AgroExpo, there will be demonstrations with a planter that will be open for anything a farmer wants.

"Our planter will encompass whatever equipment someone wants to build onto our specs," Boettger said. "We start with our standard options, and from there, we will build it to suit the farmer. We have the ability to make any planter size and configuration to meet a farmer's specifications."

Options can include an in-furrow fertilizer system, using the Precision Planting fertilizer system, along with precision v-drive and a delta-force air



seeding system.

Best of all, Boettger said, the equipment is built in mid-Michigan.

"I think we probably should have a Pure Michigan sticker on it," he said. "The toolbar is sourced from Ithaca, as are all the systems we build."

An added attraction is that the design behind every finished planter are conceived in Michigan.



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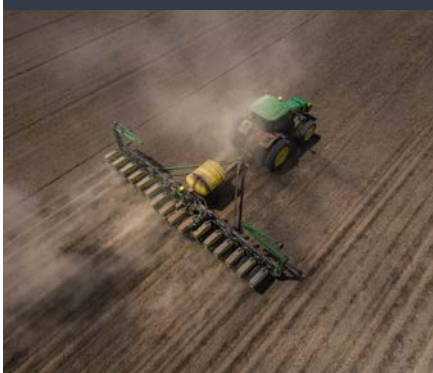


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### RELIABILITY

For more than 40 years, MAC has been a trusted partner to farmers in Michigan. “We were here yesterday, we’re here today, and we’ll be here tomorrow,” Geers said. The benefit of the trust built over the years is that, “if they [farmers] need a truck they know we can get one. Our end user customers also know that if they need grain we will be able to get it for them when they need it.”

MAC also offers grain handling services, direct-ship and custom application crop nutrition and crop protection. John Ezinga, Middleton Branch Manager, said the reliability extends to his area of expertise as well. “Working locally allows the farm operation to build a relationship and develop long term goals together with

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Ezinga also emphasized MAC’s commitment to be there when the customer needs them. For instance, knowing that time is critical during harvest, the MAC grain elevators are committed to getting their farmers dumped and back to the field in 15 minutes or less.

### EXPERIENCE

While it was founded more than 40 years ago as a trading office, MAC has grown and evolved with Michigan agriculture. The merchandising team knows the Michigan and Ontario markets, as well as its customer’s needs. Geers said, “many of their customers are also neighbors and friends.”

Ezinga said, “there are constantly new products entering the market, from biologicals to nutrient enhancements and beyond. It can be difficult to sort through everything and it is very helpful to have a person on your team who

is grounded in the industry basics to help sort the wheat from the chaff. We work hard to stay current with both information and product offerings to meet farmer needs.” This is why MAC has trained Agronomists on staff, to help customers make decisions that will work best on their farm.

Finally, Geers said it is critical to have a plan and follow it. “That is the most important recommendation we can make to our customer,” he said. While we continue to experience volatility in the markets, Geers advised, “Know your cost of production and make sales when the market gives you the opportunity to be profitable”. MAC’s team is willing and able to see you through this volatility, and help make a plan so profitable opportunities are not missed.

MAC’s mission statement centers on honesty, reliability, and growth, and those principles drive MAC employees every day. To find out more about partnering with MAC, contact the Lansing office at 800-878-8900. You can also find more information at [michag.com](http://michag.com).





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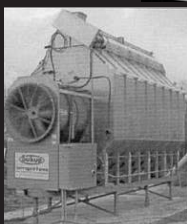
They are digging into the soil at the AgroExpo Learning Center – really digging in. A root pit has been excavated to take a closer look at how the soil structure and root development is affecting soil management. This large, exposed soil profile makes it easy to identify the various horizons, and to evaluate how management decisions made on this farm have changed the soil profile. Various industry experts will be on-hand in the Learning Center to discuss what we are seeing in this root pit, what you should look for on your



farm, and how the inherent properties of the soils on your land could respond to various management practices.

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# SCN: Resisting the resistance

## SCN COALITION

Analysis of soybean variety trials conducted by Iowa State University (ISU) shows conclusively that soybean cyst nematode (SCN) is adapting and reproducing on the PI 88788 resistance source—used in more than 95 percent of resistant soybean varieties—and yields are decreasing. Reversing this trend is primarily a goal of a relaunched SCN Coalition.

Led by Greg Tylka, Ph.D., ISU nematologist, researchers analyzed data from 25,000 four-row plots to track changes in SCN population densities and virulence, and how those changes affect yield. The data comes from more than 25 years of variety trial experiments conducted in Iowa farmers' fields.

"Every year, we took soil samples and measured SCN population densities at the beginning and end of each growing season," Tylka said. "That allowed us to calculate a reproductive factor (RF), which is the final SCN egg population density divided by the initial egg population density. We also measured virulence in the spring samples."

Scientists agree that a resistant variety should not allow more than 10 percent SCN reproduction compared to a susceptible variety. And prior to 2001, nearly all SCN-resistant soybean varieties in the trials held reproduction below 10 percent.

Beginning in 2001, "we started to pick up populations in farmers' fields that had higher and higher reproduction on PI 88788 resistance," Tylka said. "As we went through the 2000s to 2017, we saw the nematode build up the ability to reproduce on resistant soybeans. And the yields in our experiments followed a linear decrease—as much as 14 bushels per acre in fields that had the highest SCN reproduction."

## NATURAL SELECTION IN ACTION

Tylka said that the PI 88788 source of resistance, as well as the other

sources of resistance, worked well initially because the nematodes in the natural population in the field don't

have the genes that allow them to feed on the resistant varieties.

"But it's not absolute—in other

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words, in any given field, there are a few nematode worms that could feed on any of the types of resistance. But what's happened with prolonged use of PI 88788 is that the extreme minority of nematodes has been given

a selective advantage through food and reproduction. So what might have been one in a million nematodes starting out with the ability to feed on PI 88788 resistance, over 20 years of use, becomes one in two or one in three

feeding on PI 88788 varieties," he said.

Unfortunately, soybean farmers are almost completely reliant on the PI 88788 resistance source. According to Tylka, "In Iowa, 97 percent of the SCN-resistant soybean varieties available contain PI 88788. Most of the remaining 3 percent contain SCN resistance from a breeding line called Peking.

"Historically, varieties with the Peking source of SCN resistance haven't yielded quite as well as varieties with the PI 88788 source of resistance. But that's only true in fields with the nematode well controlled by PI 88788," he said. "We're in a different world these days. The nematode is feeding and reproducing more on PI 88788, which gives those Peking-resistant varieties an advantage in terms of growth and yield."

#### **WHAT FARMERS NEED NOW**

Tylka would like to see more resistant varieties with different sources of resistance available to farmers. But he acknowledges there's no extra potential income for companies to invest to bring other sources of resistance to market.

"We're almost a victim of our own success. Resistance worked great for two decades, and there was no extra cost for seed of resistant varieties. And now it doesn't work very well, but there still is no extra cost for the seed. It's built into the standard price of a bag of seed."

His recommendation: integrated pest management, using as many options that make sense. "That includes growing multiple varieties of PI 88788-resistant soybeans, planting non-host crops like corn or wheat, using seed treatments, and trying to find varieties with the Peking source of resistance."

"We have to turn up the volume on the fact that SCN management is becoming more complicated than planting a resistant variety," he said. "That's why we want farmers to test their fields so they know their numbers."

For additional information, visit  
[www.TheSCNcoalition.com](http://www.TheSCNcoalition.com)

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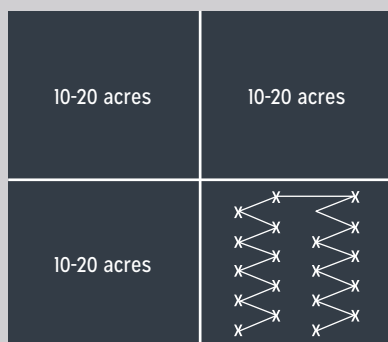
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# SCOUTING AND SOIL TESTING FOR SCN

## THREE APPROACHES TO COLLECTING SOIL SAMPLES

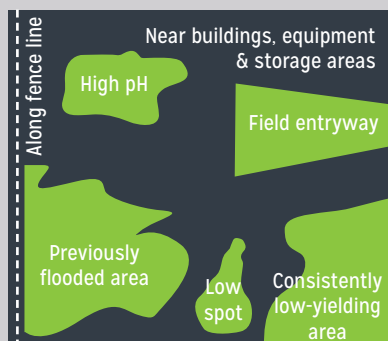
Collect 15-20 (or more) 1-inch-diameter core samples, 8 inches deep, for every 20 acres. Mix the cores well, put the mixed soil into a soil sample bag and send it to an SCN testing lab.



Collect soil cores using a zigzag pattern.



Collect soil cores from logical areas or management zones in the field.



Collect soil cores from high-risk areas in the field where SCN might first be discovered.

## TWO WAYS TO SCOUT FOR SCN

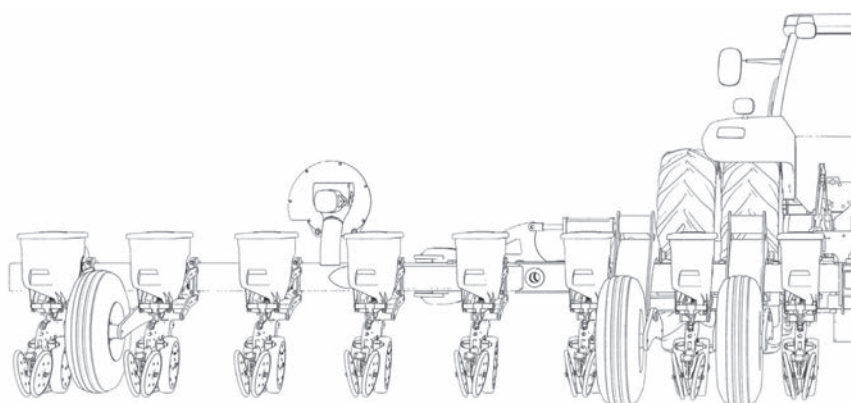
1. Dig roots and look for females. (Dig, don't pull.)
2. Collect soil samples for testing.

SOURCE: THE SCN COALITION

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# Making sense of tillage alphabet soup

## FARM NEWS MEDIA

Mention the term “Vertical-Till” and most farmers will immediately conclude you’re talking about high-speed discs designed to work the top three to four inches of soil.

But in reality, the meaning could go much deeper—literally, according to University of Wisconsin–Madison, Department of Biological Systems Engineer Ronald T. Schuler. He said vertical tillage can also refer to deep-tillage tools with shank spacing to minimize soil disturbance, including sub-soilers, deep-rippers combo units, and chisel plows with straight or twisted shovels.

“Many combination tillage machines have disks or coulters in front of deep tillage shanks followed by tillage tools to modify residue cover and influence surface roughness condition are readily available on the U.S. farm equipment market,” Schuler said.

## VERTICAL TILLAGE – SCRATCHING THE SURFACE

While the term “vertical tillage” has perhaps been over-used and misapplied, in some cases by both farmers and equipment manufacturers, the need to handle larger volumes of bio-mass from

corn stalks and/or the desire to integrate minimum tillage to speed up soil dry down and warmer soil temperatures has driven a proliferation of vertical tillage disc models and options.

In many instances, conventional tandem disc manufacturers have simply modified existing lines and rushed to market to make sure they don’t miss out on vertical tillage trends.

Vertical tillage discs typically rely on speeds of 8 to 10 mph, and require significant horsepower (10 to 20 horsepower per foot of implement width) in the quest for one-pass tillage operations.

Manufactures such as Kuhn Krause, Great Plains, Landoll, Sunflower, Salford, McFarlane and Case-IH all have models labeled as vertical tillage machines designed to manage residue in the fall and promising quicker dry-down and warmer soil temperatures in the spring.

“These shallow tillage machines create little or no tillage beyond 3 inches and can be used to reduce the roughness of the soil surface,” Schuler said. “With more surface residue and the potential for a rougher soil surface, proper planting will require more attention to ensure high and uniform emergence rates. If surface

roughness is excessive, a soil leveling attachment is needed or a separate leveling operation may be needed.”

## COMPACT TILLAGE DISCS – THE BLADES TELL THE STORY

To the uninformed eye, a number of new compact tillage disc products brought to the marketplace in recent years, might appear to be vertical tillage. But closer inspection of the blades and gang angles will tell you otherwise.

True vertical-till enthusiasts are adamant that the blades must have a shallow concave and provide vertical penetration to size residue, while minimizing soil disturbance.

Equipment manufacturers such as Degelman Industries and Horsch have introduced a new tillage concept and a new buzzword to the tillage equipment market—compact tillage disc. Both manufactures utilize 20-inch blades, but with much deeper concaves designed to throw more dirt in the attempt to slice and bury residue.

And while “vertical tillage” has been billed as a way to pay for sins of the past from conventional horizontal tillage practices and compaction, Kinze Manufacturing, long-known for its planters and grain carts, introduced a







new machine and perhaps a new level of confusion to defining what is vertical and what is horizontal tillage in 2018.

Susanne Veatch, president and chief marketing officer, said Kinze's new Mach Till high-speed disc is best described as "hybrid horizontal tillage" rather than vertical tillage with the addition of four high-speed disc tillage models.

"Hybrid horizontal tillage combines some of the benefits of conventional discs, vertical tillage and soil finishing

products into one tool, integrating speed, good soil finish and uniform residue management in clay, sand, loam, wet and dry soils," said Veatch.

The new product line is based on a Canadian design, produced by Degelman, that's been licensed to Kinze to build at its manufacturing facility in Williamsburg, Iowa. In addition to high speed (8-12 mph) and high capacity, the Mach Till lineup is touted to offer simple setup and ease of use, maintenance-free parts and the ability to perform in various soil types, from fall primary tillage and residue management to spring secondary tillage and seedbed preparation.

Schuler urged producers to do their homework and to base their final purchase decisions on their operation's unique needs. A good place to start? Do some digging—literally—and take a



look at your current crop's root structure to identify if compaction issues exist.

Vertical tillage can provide a solution to these problems, but there is a large variety of equipment options.

"Setting goals for the tillage system and learning about the performance of the tillage implements on the market will increase the potential of a successful tillage," Schuler said. "Getting to know the soil conditions and studying the rooting patterns of previous crops will prove to be very useful."

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## Setting tillage goals

### FARM NEWS MEDIA

University of Wisconsin–Madison Department of Biological Systems Engineer Ronald T. Schuler advises growers considering the purchase and operation of tillage equipment, need to start with identifying their tillage and residue management goals first. He advises answering these questions to identifying tillage goals:

- ✓ What quantity and distribution of surface residue do you want to have after the operation?
- ✓ What quantity of residue is present before the operation?
- ✓ What is the condition of the crop residue—partially standing corn stalks or flattened-chopped residue?
- ✓ What are the soil characteristics—shallow or deep soil, compacted areas and depth?
- ✓ What volume of soil do you want to loosen—horizontal in a uniform layer or vertical in non-uniform layer across the width of a machine?
- ✓ What tillage depth should you consider?
- ✓ What soil surface roughness or smoothness is desired?
- ✓ What is the root pattern of the preceding crop? Are there signs of soil compaction due to tillage or wheel traffic?

»CONTINUED ON PAGE 39

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Non-Uniform  
Soil Profile

**VS.**

Uniform  
Soil Profile

### »CONTINUED FROM PAGE 38

Once the tillage goals are identified from the answers to these questions, tillage equipment can be identified and adjusted to meet these goals. Schuler recommends some general guidelines to consider:

- ✓ If compacted conditions exist, the tillage depth should be 2 inches below the compacted layer.
- ✓ Dealing with compaction will usually require vertical tillage.
- ✓ If a smooth soil surface is desired, horizontal tillage can be used or vertical tillage with very little soil inversion or a leveling attachment may be useful.
- ✓ If large quantities of crop residue need to be buried, some soil inversion will be needed.
- ✓ If crop residue needs to be sized smaller, some cutting coulters or disks may be needed.
- ✓ If strips of soil must be cleared of crop residue for better soil warm-up, some form of strip or zone tillage may be needed.

These are just a few scenarios that can be considered to meet the tillage goals. Becoming familiar with the equipment on the market and its operating characteristics will minimize potential errors and problems resulting from incorrect soil conditions.



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## Tillage tools: Which are best for you?

### FARM NEWS MEDIA

Amid the displays of equipment you'll be able to inspect at AgroExpo, there will be several tillage tools, both horizontal and vertical. Below is an analysis of the differences between the two.

### HORIZONTAL TILLAGE

Horizontal tillage has been described as a broadcast tillage which creates horizontal layers of soil having varying layers of soil densities, according to University of Wisconsin-Madison Department of Biological Systems Engineer Ronald T. Schuler.

"Historically, the moldboard plow has been known to produce the dense, compacted plow layer which negatively influenced root patterns," Schuler explained. "Even chisel plows running sweeps with a width greater than the shank spacing will create a horizontal layer."

According to Schuler, other tillage machines creating horizontal layers include field cultivators and soil finishers, designed to create a smooth seed bed. Although they may not create a very dense layer,

»CONTINUED ON PAGE 41



*Conventional "horizontal" tillage implements, while very effective at sizing and mixing residue into the soil surface, may create horizontal compaction or density change layers in the soil. These density changes inhibit root growth, impacting crop standability and yields.*



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***For services, contact 800-616-7863 or [www.agmediation.org](http://www.agmediation.org).***



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### »CONTINUED FROM PAGE 40

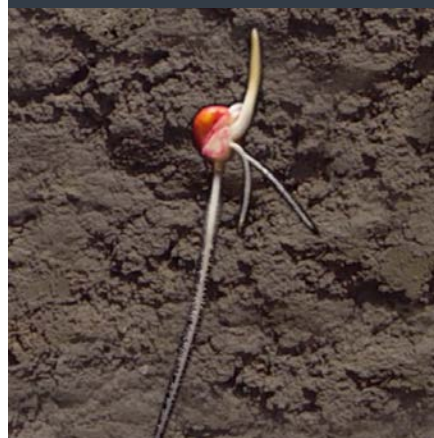
the change in soil density influences the root pattern. As the root initially develops in and adjusts to the upper-less dense layer, the roots may grow in a horizontal pattern when it reaches the slightly denser layer.

"The density changes in layers leads to changes in the rate of water movement into the soil profile," Schuler adds. "When a rainfall event occurs, the water can move more rapidly through the less dense surface layer than through the denser layer below."

### VERTICAL TILLAGE

Based on the performance characteristics of the equipment on the market, vertical tillage has several definitions, starting first with shallow (3" to 4") vertical tillage discs or deep-vertical till designed to run 2" below highly compacted layers.

In theory, traditional deep vertical tillage implements such as a subsoiler or "combo deep-rippers" are designed primarily to address soil compaction issues beyond six inches. They create a soil environment to allow good vertical root development beyond the six inch depth. Since most vertical tillage machines do not till the complete soil surface, most vertical systems will require herbicide weed control.



*The main goal of vertical tillage is to create uniform density throughout the soil profile and to create a good seedbed for ideal seed placement.*

For additional information, visit  
[www.verticaltillage.com](http://www.verticaltillage.com)



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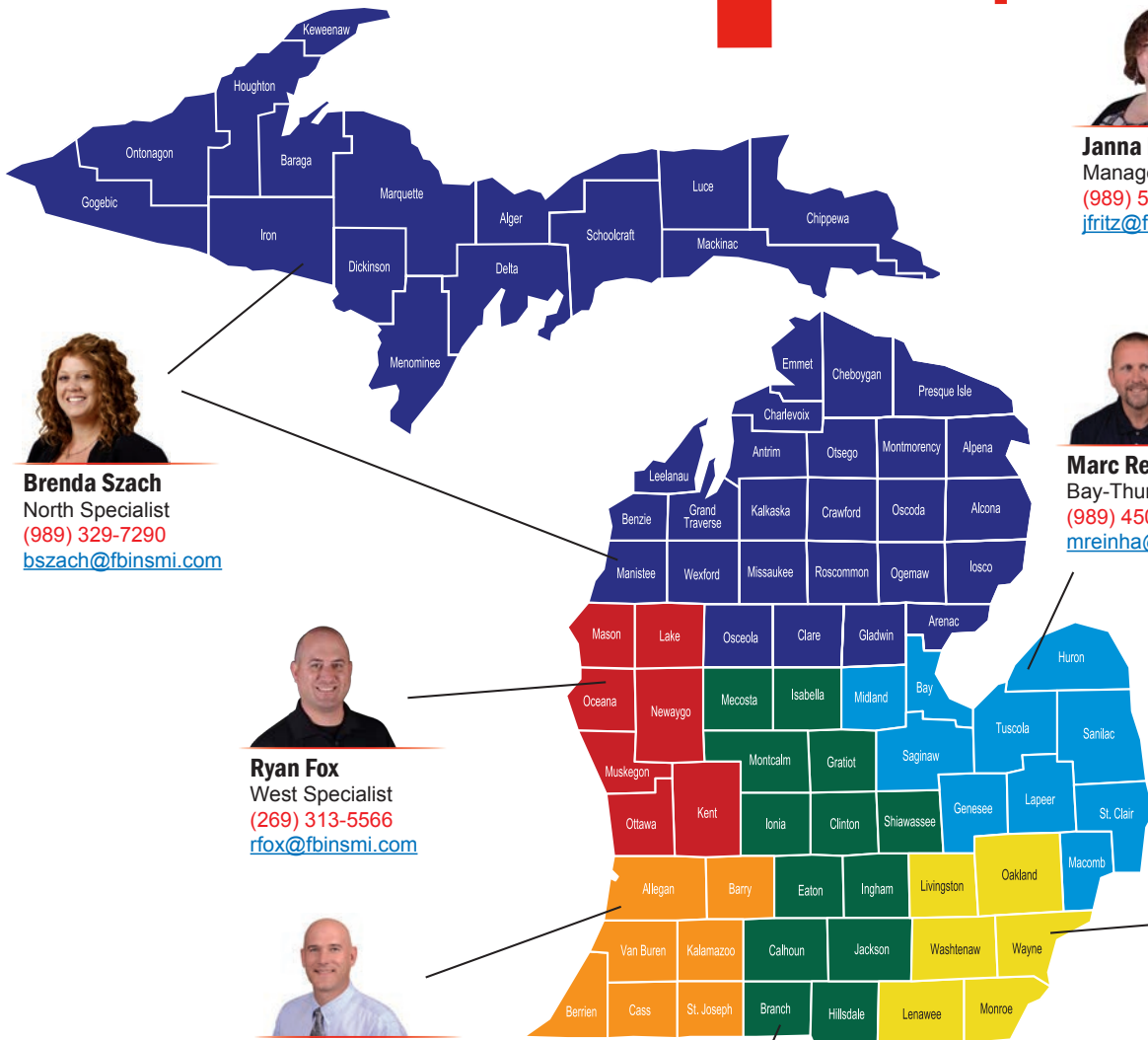
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