

2nd Qtr  
2020

# INDIANA LICA NEWS

## INLICA Attends National LICA Convention



### 2020 INLICA Officers

#### President

Bryan Noggle  
3900 N 300 W  
Cayuga, IN 47928  
217-304-0742

#### Vice President

Darrel Birge  
Box 114  
Linden IN 47955  
765-339-7210

#### Treasurer

Chris Smidler  
15071 W 100 S  
Medaryville IN  
47957  
219-863-3395

#### Executive Director

Nanci Gutwein  
PO Box 425  
Francesville, IN  
47946  
219-204-1722  
www.indianalica@  
gmail.com  
Visit us at:  
www.indianalica.org

The National LICA Convention was held in Las Vegas this past March in conjunction with Con Expo. Indiana turned up with a good showing. Pictured L-R Nanci Gutwein, Brenda Noggle, Bryan Noggle, Michelle & Steve Putt (guest attendees) Luke Cain, Michelle Cain, Tony Cain, Bob Clark II, Donna Clark, Jason Gutwein, Ron Schlatter, Darrel Birge. Not Pictures: Chris and Sally Smidler, Sandy Birge, Craig and Cindy Douglass, Brendan Noggle, Paul Liggett, and Chris Callisto.

### Congratulations to Bob Clark II for winning the 2019 Contractor Safety Award and also

accepting the position of  
National LICA President for  
the second time!  
Congratulations  
Bob!



## A Word From Our President...

Wow! 2020 is half over. I hope everyone is staying healthy and busy. We are all blessed to be working in an essential business and in the great state of Indiana during this pandemic. For the most part, I have been business as usual with just a few inconveniences. Unfortunately, Covid-19 has caused the cancellation of our Summer convention and our board meetings have had to take place via internet. I have found the best way to cope with the stress of unprecedented times in our country is to leave for work before the news comes on and get home after the news is over. However, we can't turn a blind eye to what is taking place in our country we need to stand together and be good role models for our younger generation.

Be looking for announcements on our September membership event and board meeting.

Enjoy your summer and stay safe.

Bryan Noggle  
INLICA President

**Committed to Conservation**



**Agri Drain CORPORATION**

Your trusted source for over 40 years providing water management products that provide on-farm benefits to the producer. Full line of products for:

- ✓ Drainage water management
- ✓ Saturated buffers
- ✓ Bioreactors
- ✓ Sub-irrigation



Get started by calling ESE, your USDA-NRCS Certified Technical Service Providers, for a **FREE** site review!

- ✓ Conservation planning and water management system design
- ✓ Drainage and sub-irrigation system design
- ✓ Saturated buffer and bioreactor plans

**ESE**  
Ecosystem Services Exchange  
Valuing Conservation

800.232.4742 | [www.agridrain.com](http://www.agridrain.com) 303.718.2889 | [www.ecoexch.com](http://www.ecoexch.com)



**HAVILAND**  
DRAINAGE PRODUCTS

Innovative Solutions for Innovative Contractors



Bell with Locking Tabs

**SmoothLOCK** (Dual Wall with Security)



Smooth Flexible Liner

**SmoothFLEX** (Dual Wall with Flexibility)

[www.haviland-drainage.com](http://www.haviland-drainage.com)  
800-860-6294

100 W. Main St.  
Haviland, OH 45851

## National LICA Names New Director of Government Relations

Nick Yaksich was recently appointed as the new Director of Government Relations for National LICA. Nick is taking over for John Peterson, whom recently retired from this position after being with LICA for many years. Nick retired from the Association of Equipment Manufacturers (AEM) in 2018 where he had been AEM's Senior Vice President managing their Federal and State Legislative and Regulatory Relations. AEM is a trade group of more than 950 construction, agricultural, mining, and forestry equipment manufacturers and related business services. He has more than 35 years of federal government relations experience primarily in the transportation sector. Prior to joining AEM, he was Director of Government Affairs at the National Asphalt Pavement Association and managed the Associated General Contractors national highway construction division. After graduating from Miami of Ohio in 1980, he returned to Washington and worked for Congressman Jim Oberstar of Minnesota and Senate Subcommittee on Family, Health and Human Services before pursuing a career in transportation policy and government relations. He received a Master of Science in Management from the University of Maryland. Yaksich served as Chairman of The Road Information Program and served on Americans for Transportation Mobility, one of the leading infrastructure lobbying coalitions. He was also the 2015 Chairman of The Road Gang, Washington's Transportation Fraternity. Yaksich, born and raised in the DC metropolitan area, currently lives in Maryland with his wife Melanie. They have two daughters; a teacher and a graphic artist, both living in Brooklyn, NY. Nick's background and experience will benefit LICA and all its partners. Nick is also an avid golfer and you might see him at conservation partners golf tournaments.



**LOCATION** Lacon, IL

**RIVERVALLEYPE.COM**

**OFFICE** 309.246.2466

**SALES** 309.231.8499



**FOR IMMEDIATE RELEASE**

**March 5<sup>th</sup> 2020**

**Contact: Karl Locascio**

Marketing Director  
765.866.0253

**BANE-WELKER EQUIPMENT NOW OFFERS ASHLAND 1410E EJECTOR SCRAPER WITH AG CAT4 HITCH**

*Company continues investing in cutting edge inventory, bringing value to customers*

**BANE-WELKER EQUIPMENT, IN (03.05.20)** – Bane-Welker Equipment has been an official Ashland Industries dealer at all 13 Indiana and Ohio locations since 2017. They recently added a new product which is first in its class.

The 1410E Ejector Ashland scraper is the fastest scraper in its class. Its rear load design allows to raise and lower the rear tires to control the depth of cut. Its modular design is precise, saves time during offload, offers 2 or 4 tire options, greaseless fiber bushings and is packed with features not found anywhere else. The scraper features a 10' width and is designed to fit 225 – 500 hp tractors.

“This is Cadillac of farm scrapers,” stated Dallas Foster of Bane-Welker Equipment. “It’s faster. You can do more with it, and its priced right. I am excited to tell our customers about it. It’s the best option for farmers who want to move dirt faster without buying a construction hitch for tractor. It has faster transport speeds than a dolly-wheel style scraper and transfers weight from the scraper to the tractor, helping with traction. Its modular design has reduced manufacturing cost to save farmers on the initial investment. Its greaseless bushing helps reduce service points and increases productivity.”

The scraper features the Ag Cat. 4 hitch system, which is an affordable alternative for coupling a direct mount scraper to your tractor. It allows the operator to use the tractor’s existing hammer strap drawbar to connect with a direct mount scraper 14 cu. yds. or smaller. The massive 4” horizontal swivel pin is designed to handle the rough service of most construction applications. The large 3” custom clamp nut allows the operator to make periodic service adjustments to maintain retention of the front yoke. The pivot joints feature numerous grease points to ensure wear parts can be properly lubricated.

“One of its best features is that its compatible with the larger Steiger or Magnum tractors,” said Foster. “This is a significant because previous models have had a narrower 8 ft width of cut.”

The system is over-engineered with higher strength material and additional support gussets. The heavy steel bulkhead and rigid hose stand keep hydraulic lines safe and secure.

“Ashland scrapers are great products that our customers have been very impressed with,” stated Foster. “It’s been a successful addition to the Bane-Welker lineup, and we continue to offer more cutting-edge equipment every year.”

You can find Ashland Scrapers at all Bane-Welker Equipment locations. To request more information regarding Ashland Scrapers you can visit [www.bane-welker.com/ashland](http://www.bane-welker.com/ashland) or call your local Bane-Welker Equipment sales representative.

Bane-Welker Equipment is an agriculture equipment company representing Case IH and other complimentary brands. Bane-Welker offers new and used equipment, parts, sales, service, precision farming, and customer support. The company operates 10 stores in Indiana including Crawfordsville, La Crosse, Lebanon, Remington, Terre Haute, Pendleton, Plymouth, Winamac, and Wingate, and three stores in Ohio, including Eaton, Wilmington and Georgetown.

For more information about Bane-Welker Equipment please visit [www.Bane-Welker.com](http://www.Bane-Welker.com).

IF BUILDING DREAMS IS HOW YOU MAKE YOUR LIVING,  
**DEMAND PERFORMANCE.**



A NEW WORLD DEMANDS NEW HOLLAND.  
 Building the future starts with the right tools. That's why construction contractors, landscapers, municipalities, grounds maintenance departments and farmers turn to hardworking, dependable New Holland equipment to help them master their many daily tasks. Your New Holland dealer has the right product for your job:

- Skid Steer Loaders
- Compact Track Loaders
- Loader Backhoes
- Plus a Selection of buckets and attachments
- Tractor Loaders
- Compact Excavators
- Compact Wheel Loaders

Learn more about the full line of New Holland construction equipment  
[www.newholland.com](http://www.newholland.com)

**NEW HOLLAND**  
 CONSTRUCTION  
 EQUIPPED FOR A NEW WORLD™



**Take Earthmoving Above and Beyond**

For more than 60 years, Ashland Industries has built scrapers to help you achieve more, grow more, and do more. With many options to choose from, you can trust us to deliver performance, toughness, versatility, and value.

For more information contact  
**Dallas Foster at (937) 683.6743**

**BANE-WELKER**  
 SINCE 1967 EQUIPMENT  
 Employee Owned. Customer Focused.

<b>Crawfordsville, IN</b> (765) 866.0253	<b>Eaton, OH</b> (937) 456.6281	<b>Georgetown, OH</b> (937) 378.4880	<b>La Crosse, IN</b> (219) 754.2423
<b>Pendleton, IN</b> (765) 778.1991	<b>Plymouth, IN</b> (574) 936.2523	<b>Wilmington, OH</b> (937) 382.7800	

[www.Bane-Welker.com](http://www.Bane-Welker.com)

**BANE-WELKER**  
 SINCE 1967 EQUIPMENT  
 Employee Owned. Customer Focused.

**Bane-Welker Equipment**  
 5729 IN-38,  
 Pendleton, Indiana 46064  
[www.bane-welker.com](http://www.bane-welker.com)  
 765-778-1991



## The Inter-Drain Plow:

Your choice of three types, in three sizes,  
AND you pick the color!

**Your source for Inter-Drain  
Plows and Trenchers**  
Let us help you find the right machine  
For your application!






**Inter-Drain**





**NORTHLAND** Trenching  
Equipment, LLC

*Corporate Office:*  
12929 410<sup>th</sup> Avenue  
Wasco, Mo. 66093  
Phone: 307-833-4214

*Eastern Division:*  
3378 N. State Road 39  
Brazil, Indiana 47834  
Phone: 812-833-2900


E-Mail: [mte@hickorytech.net](mailto:mte@hickorytech.net)

Check us out on the web: [www.northlandtrenching.com](http://www.northlandtrenching.com)



HARD WORK.  
RELIABILITY.  
PRIDE.

It's what matters.



You've worked hard to construct a reliable business that takes pride in excellent workmanship. **That matters.**

UFG Insurance knows the importance of protecting the reputation you've built.

As the carrier of choice, we're proud to offer members of the Indiana Chapter of LICA a special opportunity to participate in our trusted state LICA insurance program.

- Receive products and services tailored to unique industry needs, including comprehensive risk control.
- Exceptional customer service that doesn't end when a contract is signed.

Find a UFG agent today at [ufginsurance.com](http://ufginsurance.com).





**FRATCO**



**DOING THE**

**RIGHT THING.**



It doesn't come easy for everyone. But at Fratco, it's what has made us a leader in the drainage industry for almost 100 years. From precise manufacturing processes to high-quality products, top-notch customer service and everything in between, we prioritize making things right. Because to us, there's no other option.



**IF IT HAS TO BE RIGHT, IT HAS TO BE FRATCO.**

**FRATCO.COM**

# BRON

POWER TO PERFORM

[www.rwfbron.com](http://www.rwfbron.com)

- Five Core Cooling System exceeds cooling for Tier 4 engine standards
- Quieter Reconfigured Cab Interior for Operator comfort
- Standard DL 850 Drainage Plow increased strength & durability
- LED Light Package for increased visibility for those long days in the field
- Improved swing mechanism for the Onboard Reel for smoother reel speeds & consistent torque
- Optional hydraulic rear step raises out of the way when plowing and lowers when required.
- Standard oscillating track frames.

## BRON 585

SELF-PROPELLED DRAINAGE PLOW

AUTO STEER READY | LOW GROUND PRESSURE  
CAT OR CUMMINS ENGINE



## LICA Member TelematicsPlus Benefit



INTEGRATED FLEETEVALUATOR  
VALUATIONS ON ALL EQUIPMENT



MULTIPLE TELEMATICS  
PROVIDERS IN A SINGLE PORTAL



GEO-FENCING TO MONITOR  
ASSETS



DIAGNOSTIC REPORTS STRAIGHT  
FROM TELEMATICS PROVIDER(S)



CUSTOM JOBSITE PARAMETERS  
AND ALERTS

## TelematicsPlus Consolidates Fleet Insights

TelematicsPlus is designed to help you view and manage mixed fleet telematics data—at no cost—from one portal, anywhere in the world, through our Sandhills Cloud. Setup is quick and easy and real-time asset valuations are built in.

 **TelematicsPlus**

Contact a Machinery Trader representative for complete details. 1-800-247-4898 [www.MachineryTrader.com](http://www.MachineryTrader.com)

Indiana LICA is currently seeking willing individuals to serve on the Board of Directors as well as various committees. Some open positions include a Southeast Director, as well as members for the following committees;

Membership, Ladies, By-Laws, Nominating and also Scholarship. These positions don't require much time, and help the Board to operate smoothly. We would welcome all new participants! If you have any questions please feel free to contact Nanci or any other Board Member.



# Port Industries

Quality Products and Service since 1968



Contact us with all of your drainage equipment needs

[www.PortIndustries.com](http://www.PortIndustries.com) (573) 769-3338



## Roll with the best.

**SPRINGFIELD PLASTICS, INC.** is the only U.S. manufacturer certified to use 100% virgin resin in corrugated plastic drainage pipe. When you're investing in land drainage, depend on the consistency and quality that Springfield Plastics has provided for over 40 years.



Consistent, durable, made to last for generations. Our **100% Virgin Resin Pipe** provides drainage solutions that outperform and outlast inferior products containing fillers.

Consistency in EVERY inch. 800-252-3361 | [spiipe.com](http://spiipe.com)



## Landmark lands bill Easily passes Senate

6/17/20 1:02 PM By [Philip Brasher](#)

The Senate on Wednesday overwhelmingly passed a bipartisan, landmark bill to permanently fund the Land and Water Conservation Fund, which taps oil and gas revenue to pay for acquiring new federal lands.

The Great American Outdoors Act, which passed 73-25, needs a final vote in the House before going to President Donald Trump for his signature.

The measure would guarantee the fund \$900 million each year and also provide \$1.9 billion a year over the next five years for maintaining public lands. Critics of providing long-term funding for the LWCF argue that maintenance needs should take precedent over acquiring new lands. Groups representing cattle and sheep producers opposed the bill but found no Democratic support, and 28 of the Senate's 53 Republicans voted for the legislation. The bill's cosponsors included Republicans Cory Gardner of Colorado and Steve Daines of Montana, both of whom face tough reelection races this year.

The producer groups argued the bill would guarantee at least \$360 million a year for purchasing new federal land at a time when the government can't maintain the land it has. "If passed, the GAO Act sentences hundreds of millions of acres of American land and water to a poorly-managed future," the groups said in a letter to Senate leaders.

Kaitlynn Glover, executive director of natural resources for the National Cattlemen's Beef Association, said Wednesday that mandating funding for the LWCF would sentence "existing and future lands and waters to the same fate facing current federal assets — billions of dollars in deferred maintenances. Today is indeed a landmark day — with this legislation, Congress has abdicated their responsibility and privilege to engage in these important conservation decision."

But Daines, speaking on the Senate floor ahead of the vote, said the bill would "protect the program and provide some certainty for our land managers, for conservationists, for sports men and women." He said the bill would address a \$12 billion maintenance backlog in the national parks, including \$700 million in the Glacier and Yellowstone parks alone.

Sen. Maria Cantwell, D-Wash., said the LWCF had funded the acquisition of 5 million acres across the nation since its inception in the 1960s.

Passing the Great American Outdoors Act sends the message that the Senate "really believes that open space is a great driver of our economy, but more importantly an essential part of American life, and we're going to continue to invest in it," she said.

For more news, go to [www.Agri-Pulse.com](http://www.Agri-Pulse.com).



SOUTHEAST PURDUE AGRICULTURAL CENTER (SEPAC)

## Soil drainage impacts on cover crop growth and soil improvement:

*Insights from long-term SEPAC study*

Eileen Kladvik  
 Agronomy Department  
 Purdue University  
 West Lafayette, Indiana

Long-term drainage experiment insights on crop yield, cover crop growth, soil improvement, water flow, and chemical transport in southeastern Indiana: Part 2 of 3-part series.

### Drainage pays!

This is Part 2 (of 3) of a study detailing key findings of a 35-year project conducted at the Southeast Purdue Agricultural Center (SEPAC) in Butlerville, Indiana, six miles east of North Vernon in Jennings County.

**Part 1 (AY-397-W)** focuses on cash crop establishment and yield as affected by drain spacing.

**Part 2 (AY-398-W)** discusses the effects of drainage on cover crop growth and the effectiveness of other conservation practices on improving crop growth and soil properties. Key conclusions:

- Drainage improves cover crop growth.
- Drainage enables other conservation practices to work better, to improve soils and crop yields.

**Part 3 (AY-399-W)** discusses drain spacing effects on the amount of water and nitrate-nitrogen leaving the field in drainflow and the effects of cover crops on those losses.

Although these results are specific to this study on the Clermont silt loam soil at SEPAC, most of the findings are more generally applicable across other poorly drained soils, although the specific values will vary with soil and climate.

Parts 1, 2, 3 and the executive summary (AY-396-W) can be downloaded for free at Purdue Extension Education Store. <https://www.edustore.purdue.edu/>

AY-398-W Soil Drainage Impacts on Cover Crop Growth and Soil Improvement

**Background and field design**

Naturally poorly drained soils present many challenges for crop production. Subsurface “tile” drainage is a common water management practice for such soils throughout Indiana and much of the Midwest. We have conducted long-term studies on tile drainage at the Southeast Purdue Agricultural Center (SEPAC) on a Clermont silt loam (now sometimes called Cobbsfork), typical of the soils in southeastern Indiana and similar to soils stretching from southwestern Ohio to eastern Kansas. The long-term drainage research studies were begun in 1983.

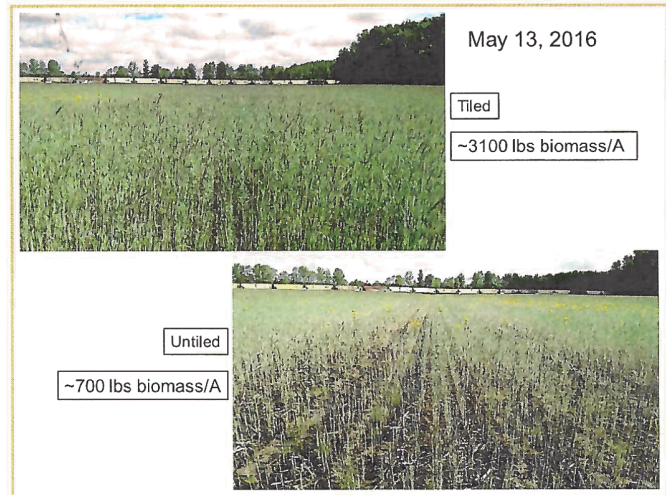
The original goals of the SEPAC drainage studies were to evaluate 1) subsurface drain spacings on drain flow and corn growth and yield, and 2) combinations of agronomic management practices and drainage on soil physical properties and corn growth and yield. This publication is the second in a 3-part series on results of the long-term study, and it focuses on the interactions of drainage with other conservation practices for soil improvement and crop yields. Key results from both the drain spacing study and the agronomic treatment study are presented.

The drain spacing experiment consisted of three drain spacings plus an “undrained control”, replicated twice in the field. Drains were installed at spacings of 5, 10, and 20 m (16, 33, and 66 ft), with the undrained control being at a spacing of 40 m (133 ft). Due to the very slow permeability of the Clermont soil, the 40 m spacing was considered to be a good proxy for “undrained” conditions. More details on the installation are in Part 1 of this 3-part series.

The agronomic treatment experiment had two blocks, one with tile drainage at 50-ft. spacing and one with no tile drains. Surface drainage was fair but not perfect, with some ponding occurring, especially in the untilted area. The goal was to improve soil physical properties along with crop growth, and to test the synergies between drainage and agronomic conservation practice. There were five main agronomic treatments, split between no-till and chisel tillage, replicated four times in each subfield. The treatments were continuous corn (CC), corn with cover of either wheat or cereal rye (WR), corn with cover of annual ryegrass (RG), corn with dry animal manure (MN), and a 3-yr rotation of corn-wheat-orchardgrass/red clover meadow (RO).

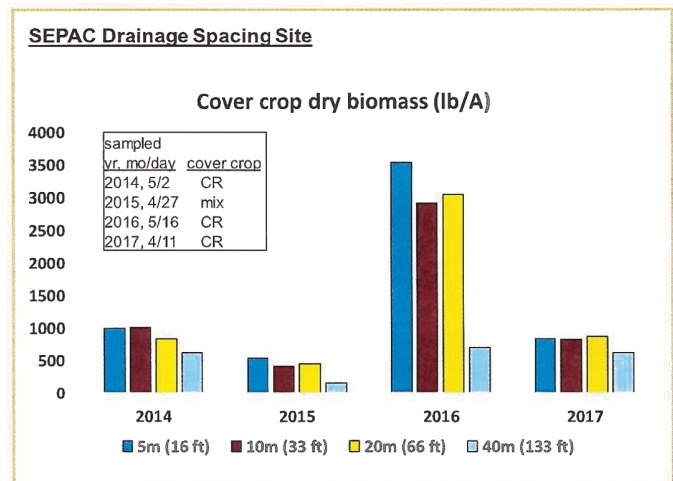
**Drainage improves cover crop growth**

Most commonly used cover crops require adequate drainage to grow well. Figure 1 shows the cereal rye growth on May 13, 2016, just prior to termination before planting of soybeans. The tiled plots had around 3100 lbs



**Figure 1. Cereal rye growth on May 13, 2016, just prior to termination before planting of soybeans. The tiled plots had around 3100 lbs of dry biomass per acre, compared to only 700 lbs/A for the undrained control.**

of dry biomass per acre, compared to only 700 lbs/A for the undrained control. Four years of data are shown in Figure 2. Biomass amounts varied from year to year due to the weather, the goal for the succeeding cash crop, and the type of cover crop, but the drained plots always produced more biomass than the undrained control. Obviously if we are growing a cover crop for nitrogen scavenging and soil health improvement, then we want the cover crop to grow well and produce enough biomass to have a positive impact. For over-wintering cover crops, such as cereal rye, much of their growth



**Figure 2. This chart shows four years of data. Biomass amounts varied from year to year, but the drained plots always produced more biomass than the undrained control.**

## Brush Shredder

Skid Steer Loaders  
2 sizes available



Tractor Mounts  
2 sizes available • 100-160 hp



Self Propelled  
250 or 350 hp options



**Snow Blowers**  
Model ST7 for skid loaders  
Mountings available for Brown Bear tractor carriers



## Auger Backfillers



Model R21 for High flow skid and compact track loaders with 3000-5500 psi and 30-50 GPM

Model PTOAB36-10 for tractors with hydrostatic or creeper type transmission and 100-160 hp

Self-Propelled tractor carriers with 130-350 hp available and 10'-14" wide backfiller head options



**Brown Bear Corporation**

Corning, Iowa 50841 • 641-322-4220

[www.brownbearcorp.com](http://www.brownbearcorp.com) • [sales@brownbearcorp.com](mailto:sales@brownbearcorp.com)



# Inter-Drain

*"Excellence by Experience"*

## Bower's Great Lakes Inter-Drain, Inc.

*Your Dealer for Inter-Drain Plows, Trenchers and Parts*

1912 W McPherson Hwy, Clyde, OH 43410 • 419-547-2379

[sales@bowersglid.com](mailto:sales@bowersglid.com) • [www.greatlakesinterdrain.com](http://www.greatlakesinterdrain.com)

# COMING IN SEPTEMBER!

Be on the lookout for more information regarding our Family Fun Day and Board Meeting in September.

Information will be posted on the INLICA website as well as sent out via email and regular mail as soon as the event is set.

## FIND EXISTING TILES YOURSELF!



**ACCURATE / LASER**  
Machine Control &  
Construction Positioning  
**SYSTEMS**

You can find your existing tiles yourself and save tons of time and cash with the Gen-Eye pipe location system and the Jameson Duct Hunter copper push rod. Call Accurate Laser Systems for details and set up your own demonstration. It's easy!

2855 TOBEY DRIVE  
INDIANAPOLIS, INDIANA 46219  
1-317-873-5611

**Gen-Eye GL**  
Pipe Inspection Location System



[www accuratelasersystems.com](http://www accuratelasersystems.com)



**O'CONNELL**  
DRAINAGE EQUIPMENT



Dual Link Plow



The Affordable Way To Tile Your Fields!  
For More Info Contact: Accurate Laser Systems  
317-873-5611

**DEDICATED TO SERVING OUR CUSTOMERS**

**COOK'S //AGPS LLC**

YOUR CONTINUED SOURCE FOR:

**//AGPS**  **GeoLogic**  
Computer Systems

INDUSTRY LEADING FINE GRADE RTK GPS  
MACHINE CONTROL SYSTEMS



Design and machine control for tile drainage, land leveling and surface water management needs.



### GPS-GNSS RECEIVERS & ANTENNAS

Working with NovAtel technologies, we have the ability to control equipment requiring 2 GPS positions with 1 rover, saving you the cost of buying a second rover system.

**ASK US HOW YOU CAN SAVE TIME SURVEYING LESS WITH OUR LIDAR DATA PREP SERVICES**

Contact Nate or Mike: Phone: 989-640-2347 or 989-587-3528  
Email: [nate@cookswms.com](mailto:nate@cookswms.com) or [mike@cookswms.com](mailto:mike@cookswms.com)

## AY-398-W Soil Drainage Impacts on Cover Crop Growth and Soil Improvement

occurs during the wettest part of the fallow season (late winter-early spring), so tile drainage can have a significant impact on the growth and therefore potential effectiveness of the cover crops on improving soil health.

### Drainage enables other conservation practices to work better, to improve soils and crop yields

As illustrated with the cover crop discussion above, adequate drainage is needed for other conservation practices to work to their full potential. Average corn yields over the 9-yr agronomic treatment experiment are shown in Figure 3. For the continuous corn control, the tilled block averaged 12% higher yield than the untilled block; for the conservation treatments of wheat/rye cover, ryegrass cover, and manure, the yields were about 20% higher in the tilled than in the untilled block. Average continuous corn yields were 16 to 25 bu/A higher in the tilled than in the untilled block, depending on the agronomic treatment. Plots with cover crops, manure, and rotation had equal or greater corn yields than the control in the tilled subfields, but equal or lower yields than the control in the untilled subfield. These results illustrate the importance of tile drainage in enabling other conservation practices to be effective in improving crop yields.

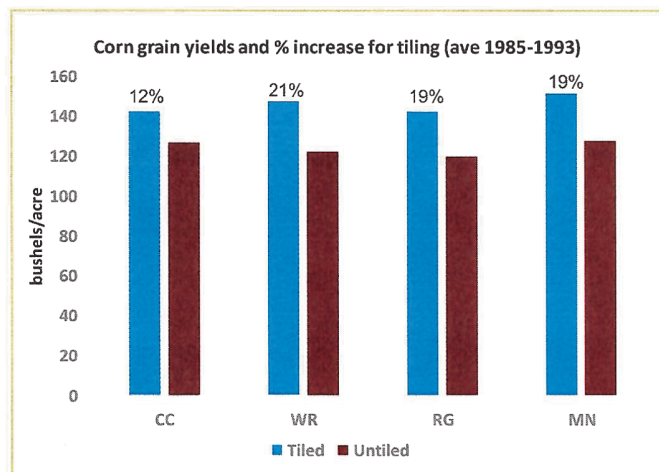


Figure 3. Average corn yields over the 9-year agronomic treatment experiment. Average continuous yields were 16 to 25 bu/A higher in the tilled than in the untilled block, depending on the agronomic treatment.

Other soil measurements were made at various times during the study. Earthworm populations were generally higher in no-till vs. chisel plots, tilled vs. untilled plots, and plots with covers, rotation, or manure vs. the control. Soil physical properties of aggregate stability and infiltration tended to be improved by cover crops and rotation, compared to the control, especially in the tilled block.

The overall conclusion from this part of the drainage studies is that a good drainage system is a necessary first step to improving crop yields and soil health on naturally poorly drained soils. Agronomic conservation practices alone are not likely to make up for an inadequate drainage system. The shallow water table of naturally poorly drained soils is the first limitation to growth of cover crops or cash crops, and it must be managed in order to provide adequate aeration for crop roots and soil biology and their subsequent improvement of soil health. Cover crops and no-till will generally be more effective at improving soil health and increasing crop yields if they are used on soils with a good drainage system.

### Drainage is a long-term investment

Installation of tile drainage is a long-term investment in a field. Drainage flow paths seem to develop over time, at least for the first several years after installation. Crop yield effects vary from year to year, based on the weather, so drainage will not have any effect on yields in some years. Other conservation practices also take time to improve soil health, and the effects of drainage on these improvements will likely become more evident with time. But the long-term improvement in cash crop yields, cover crop growth, and effectiveness of other conservation practices make the installation of tile drains on naturally poorly drained soils a good investment in the long-term productivity of a field.

### Acknowledgements

The author wishes to thank the many people who have worked on this project over the years, including the SEPAC farm crew, graduate students and post-docs, faculty colleagues, and NRCS colleagues. This project was supported in part by the Purdue Agricultural Research Programs, and USDA National Institute of Food and Agriculture, Hatch project 87887.



INLICA  
 PO Box 425  
 Francesville, IN  
 47946

Standard  
 U.S. Postage  
**PAID**  
 Print & Mail  
 4U

## Precision Intakes Full Line of Surface Water Intakes

- 8" & 10" riser with patented 8" & 10" combination Tees.  
 Also 6" square & round risers with patented reducing Tee.
- Constructed of heavy-weight, high-density polyethylene.
- Parts highly adjustable & interchangeable with others on the market.
- Orifice plate placed at tee level or at ground level.
- Exclusive locking device on each part.
- User Friendly-Priced effectively.
- Adaptor available to repair old metal or broken intakes.



*Why inventory 2, when 1 serves both!*



"Dealer Inquires Welcome"

## ~~PRECISION INTAKES~~

Tim Rozendaal — Coretha Rozendaal (800) 932-7611  
 2064 Republic Ave West, Monroe IA 50170 (641) 259-2651  
 www.precisionintakes.com Fax (641) 259-3218

## Schlatter's Inc.

Intelligent Water Management™

Drainage Flows  
 GPS Machine Control  
 Design Software  
 Custom Fabrication



16179 W 500 S  
 Francesville, IN 47946  
 (219) 567-9158  
 www.SchlattersInc.com

