

## Auglaize County OSU Extension Weekly Agriculture Newsletter – March 11, 2020

### Scouting and Latest Information



Hello!! Good afternoon! I pray you are well. Sorry for the delay in the newsletter, but I have had meetings early in the week.

If you are a buyer or seller of hay, let me know and I can keep a list to share with others. Call the OSU Extension office at 419-739-6580 or e-mail me at [stachler.1@osu.edu](mailto:stachler.1@osu.edu).

We are quickly nearing the end of the farm bill sign up. Get into the office or call to make an appointment. If you do not get an appointment prior to March 15<sup>th</sup>, then you will not receive any 2019 payments that may be available!! If you need help deciding what to do, feel free to contact the Extension Office for an appointment or visit the following web address for the decision aid tools: <https://aede.osu.edu/research/osu-farm-management/2018-farm-bill/arcplc-decision-aid-tools>

I'm looking for people to **conduct research** with me this season, especially research on waterhemp!! Please contact me soon so we can get things lined up. If you have any suggestions on research, let me know.

If anyone is interested there is a grower in the county that would like to hire someone to do some strip tillage this spring as he will not have time to plant and make strips at the same time. If you are interested in doing this or know of someone who is interested, please contact me and I will get you in touch with the farmer.

Here is some information provided to Extension Educators last week about paraquat:

As of November 14, 2019, registrants of paraquat containing products (Gramoxone, Firestorm, Helmquat, Parazone and others) were required to have newly labeled products on the market. Paraquat training is now mandated by the USEPA for all certified applicators who intend to load, apply, mix or handle paraquat. Only licensed pesticide applicators can legally apply paraquat products and direct supervision is no longer permitted. Training is required every three years and may be completed online here: <https://campus.extension.org/login/index.php> (approx. 60 min) or by attending an in-person paraquat training. I may provide training you if we can get a decent class size. Your applicators will need to score 100% on the quiz to receive their certificate (template provided through NPSEC).

Please see attachment for more details pertaining to the paraquat training requirements and additional resources. Here is the EPA link, as well: <https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators>

## Joke: What day do potatoes hate the most??

Rain fell for four days this past week! Rainfall on Tuesday, March 3<sup>rd</sup> ranged from 0.13” near Lock 2 and Tri-Township Roads to 0.5” near County Road 66A and St. Rt. 66. Rainfall on Thursday was less than 0.01” across the county. Rainfall on Friday ranged from a trace near Mercer Line and SR 197 to 0.09” near Santa Fe-New Knoxville and Shelby-Fryburg roads. Rainfall on Monday ranged from 0.01” near Bloody Bridge to 0.19” near Lock 2 and Tri-township roads. Rainfall for the week ranged from 0.21” near Valley and Idle Roads to 0.66” near County Road 66A and St. Rt. 66 roads. Rainfall for the week averaged 0.41”, just 0.01” more than last week.

The average high temperature now is 45 degrees F, three more than last week! We are picking up steam. Temperatures were above normal for 6 days of the week and below normal for 1 day of the week. The average high temperature for the week was 51 degrees F, which is 14 degrees more than last week and way above the normal.

Wheat – Wheat is greening up! I really don't think it actually went into dormancy this winter! There is no NEED to apply nitrogen fertilizer at this time, unless the wheat did not tiller last fall. You CAN apply nitrogen now if desired but ONLY if making a second application. Now is the time to evaluate wheat stands since some of them are marginal. I have an article below in the Other articles section about determining wheat stands. I have not rated the wheat for some time. I rate the wheat the same as last week which was 7% excellent, 29% good, 69% fair, and 0% for poor and very poor.

Alfalfa – Nothing to report.

Corn – Nothing to report.

Soybean – Nothing to report.

Weeds – If you need help planning your herbicide programs, feel free to call the office.

Insects - No report.

**There WERE changes to the Engenia label! There were NO changes to the XtendiMAX, FeXapan, and Tavium labels.** The Engenia label still has the most approved products compared to XtendiMAX and FeXapan. No new herbicides were added to the XtendiMAX label this past week, which totals 234 herbicides. No new adjuvants were added the XtendiMAX label, now totaling 397. No new nozzles were added to the XtendiMAX label, which totals 36. No new Drift Reducing Adjuvant (DRA's) were added to the XtendiMAX label this week, making a total of 90 DRA's. No new nutritional products were added from the XtendiMAX label which totals 238. No new products were added to the Insecticides, Fungicides, Plant Growth Regulator and Other group on the XtendiMAX label which totals 104. Eleven new adjuvants were added to the Engenia label, which now totals 560. Seven new herbicides were added to the Engenia label, which brings the total herbicide count to 167. No new products were added to the Other category (growth regulators and fungicides) on the Engenia label, which totals 31. No new insecticides were added to the label which currently has 34 products. Seven new Drift Reducing Adjuvants (DRA's) were added to the Engenia label, which totals 126. No new nozzles were added to the Engenia label, which totals 31. One new nutritional products were added to the Engenia label which totals 223 products. No new products was added to the pH Modifier group of the Engenia label which totals 17 products. The FeXapan label has many of same the products and nozzles as the XtendiMAX label, but NOT all are the same, so check the FeXapan label carefully. There are 120 herbicides, 49 DRA's, 312 adjuvants, 151 nutritionals, 44 insecticides, fungicides, and others, and 26 nozzles that have been approved for the FeXapan label. There are 47 herbicides, 77 DRA's, 258 adjuvants, 30 nutritionals, 16, insecticides, 7 fungicides, 8 other products, and 41 nozzles approved for use with Tavium.

## Upcoming Meetings

1. **eFields Regional Meeting.** eFields is an Ohio State University program dedicated to advancing production agriculture through the use of field-scale research. This meeting was scheduled to take place on March 16, 2020. HOWEVER due to decisions made by The Ohio State University the meeting has been CANCELLED due to the coronavirus!!
2. **New Pesticide Applicator Exam Preparation Course.** This meeting will be held March 23, 2020 from 8:30 AM to 12:30 PM in the downstairs room of Auglaize County Administration Building. Please pre-register before March 20, 2020 by calling the office at 419-739-6580 or e-mailing [Stachler.1@osu.edu](mailto:Stachler.1@osu.edu). There is no cost to the program.
3. **Pesticide Applicator Exam.** The ODA will be in the county on March 30, 2020 from 10:00 AM to 2:00 PM to offer pesticide and fertilizer applicator exams. The location is the downstairs room of the Auglaize County Administration Building. To register for the exam visit <http://pested.osu.edu/PrivateApplicator/testing>.
4. **Last Chance Pesticide and Fertilizer Applicator Recertification.** This meeting will be held March 31, 2020 for those individuals that still have not received their recertification courses. The meeting time is from 8:30 AM to 1:30 PM in the downstairs room of the Auglaize County Administration Building. Register for the class before March 30<sup>th</sup> by calling the office at 419-739-6580 or e-mailing [Stachler.1@osu.edu](mailto:Stachler.1@osu.edu). There is a \$10.00 fee for fertilizer only, \$30.00 fee for pesticide credits only and \$40.00 for both. Categories 1, 2,3 ,4 ,5 6, and 15 will be offered that day.

**Answer to joke: Fry-day!**

## 2019 Wheat Production Numbers and More Released

On February 21, 2020, the United States Department of Agriculture National Agricultural Statistics Service released 2019 corn and soybean production information.

Farmers planted 45,158,000 acres but harvested only 37,162,000 acres of wheat in 2019 in the United States. Average wheat yield for the United States was 51.7 bushels per acre. Total wheat production in the United States was 1,920,139,000 bushels.

In Ohio, 500,000 acres were planted in 2019 but only 385,000 acres were harvested! This was the greatest loss of wheat acres since 1992 when we lost the same amount and 1984 when 140,000 acres were lost. The amount of planted acres was only 1.1% of United States crop. The 385,000 acres of harvested wheat is the smallest acreage harvested at least since 1959 and likely in the history of wheat production in Ohio. The next fewest acres harvested was 450,000 in 2018. We used to have over 1,000,000 acres harvested in Ohio. The average wheat yield in Ohio in 2019 was 56 bushels per acre which was 19 bushels per acre fewer than 2018. This is the lowest wheat yield since 1996 which was 39 bushels per acre. Greene County had the highest yield in the state at 79.6 bushels per acre. The Total wheat production in Ohio in 2019 was 21,560,000 bushels.

Auglaize County farmers planted 10,400 acres of wheat in 2019, but only harvested 8,000 acres. This was a 23% loss of acreage, the greatest percentage loss since records were kept in 1972 for planted and harvested acres. The greatest loss of acres was 3,200 acres in 1992 and 1994, but the percentage was less than 12%. The 8,000 acres of harvested wheat is the fewest acres in Auglaize County since records have been kept back in 1918. Farmers used to harvest greater than 20,000 acres of wheat in the county. The average wheat yield for Auglaize County in 2019 was 48.9 bushels per acre, a 35 bushel per acre drop from 2018. The 2019 wheat yield is the lowest yield in the county since 1996 when the average was 38.9 bushels per acre. The 2019 wheat yield was 47<sup>th</sup> in the state! Total wheat production in Auglaize County in 2019 was 391,000 bushels.

There were 9,353,400 dairy cattle in the United States as of January 1, 2019. The largest number of dairy cattle ever in the United States was 27,770,00 in 1945. As of January 1, 2019, Ohio had 253,000 dairy cattle, 2.7% of the US total. California had the most number of dairy cattle at 1,730,000. Ohio ranked 11<sup>th</sup> in the number of dairy cattle among states. Auglaize County had 4,800 dairy cattle as of January 1, 2019 on 29 farms. The number of dairy cattle in Auglaize County comprised only 1.9% of Ohio's numbers and ranked 14<sup>th</sup> among Ohio counties. Wayne County had the most dairy cattle at 32,000!

There were 94,804,700 cattle and calves in the United States as of January 1, 2019. The largest number of cattle and calves in the United States was 132,027,200 in 1975. As of January 1, 2019, Ohio had 1,310,000

cattle and calves, 1.4% of US total. Texas had the most number of cattle and calves at 13,000,000! Ohio ranked 23<sup>rd</sup> in the number of cattle and calves among states. Auglaize County had 24,500 cattle and calves on January 1, 2019. The number of cattle and calves in Auglaize County comprised only 1.9% of Ohio production and ranked 15<sup>th</sup> among Ohio counties. Wayne County had the most cattle and calves at 95,000.

The cash rent for non-irrigated farmland in Auglaize County was \$206 per acre in 2019. The cash rental rates held their value since 2017 which was \$207 per acre. Darke County had the highest cash rental rate in 2019 at \$208 per acre, making Auglaize County the second highest cash rental rate in Ohio. The lowest cash rental rate in Ohio is \$26.50 per acre in Noble County. The average cash rental rates in Ohio is \$155 per acre. The national average cash rental rate is \$127 per acre. Iowa has the highest cash rent at \$230 per acre. Ohio ranks 6<sup>th</sup> in the United States for the highest cash rent.

## **C.O.R.N. Newsletter**

<https://agcrops.osu.edu/newsletter/corn-newsletter>

No news this week, still on every other week cycle.

## **Other Articles**

### **Estimating Wheat Yield With Stem Counts and Fractional Green Canopy Cover**

**Allen W. Goodwin, Laura E. Lindsey, Steven K. Harrison, and Pierce A. Paul**

Between planting in the fall and Feekes 4 growth stage (beginning of erect growth) in the spring, winter wheat is vulnerable to environmental stress such as freezing temperatures with limited snow cover,

saturated soils, and freeze-thaw cycles that cause soil heaving (Dickin and Wright, 2008; Fowler and Gusta, 1979). All of which may lead to substantial stand reduction, and consequently, low grain yield. In Ohio, due to poor stands in the spring, an average of 5% of the winter wheat acres are destroyed annually and planted to an alternative crop such as corn or soybean, and as much as 12% of the wheat acres were destroyed in 2014.

However, a stand that looks thin in the spring does not always correspond to lower grain yield. Rather than relying on a visual stand assessment, farmers are encouraged to estimate the yield potential of their winter wheat crop by counting plants or tillers (Weisz et al., 2001), before deciding whether a field should be destroyed and planted to corn or soybean. Despite these recommendations, many farmers do not count wheat plants or tillers in the spring because the measurement is tedious and time consuming. An alternative method to evaluate wheat stand is fractional green canopy cover (FGCC). Fractional green canopy cover can be used to measure the canopy surface area using the mobile device application Canopeo. The app can be downloaded for free here: <http://www.canopeoapp.com>.

**Wheat Stem Count Methods:** Wheat stems (main stem plus tillers) should be counted at Feekes 5 growth stage (leaf sheaths strongly erect) from one linear foot of row from several areas within a field (Figure 1).

**Fractional Green Canopy Cover Methods:** Fractional green canopy cover should be measured at Feekes 5 growth stage using the mobile device application, Canopeo (<http://www.canopeoapp.com>). The camera should be held to capture three rows of wheat in the image (Figure 2).



Figure 1. Measurement tool used to consistently count the number of stems in one foot of row.

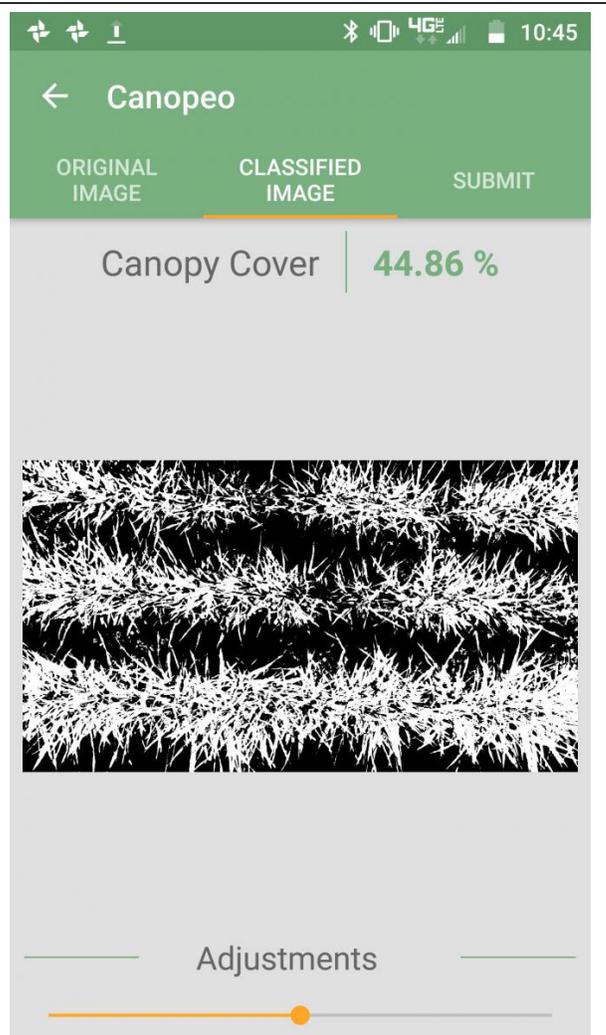


Figure 2. Winter malting barley image analyzed for fractional green canopy cover with the Canopeo mobile device application.

After counting the number of wheat stems or measuring FGCC, Table 1 can be used to estimate wheat grain yield. For example, if an average of 51 stems is counted from one foot length of row, the predicted grain yield would be 100 bu/acre. Similarly, if the average FGCC measurement was 35%, the predicted grain yield would be 100 bu/acre.

Grain Yield (bu/acre)	Stem Count (number/foot of row)	FGCC (%)
85	27	17
90	34	23
95	42	29
100	51	35
105	63	41
110	80	47
115	100	53
120	---	59
125	---	65
130	---	71

Table 1. Estimated grain yield based on number of stems and fractional green canopy cover (FGCC).

## References

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- Fowler, D.B., and L.V. Gusta. 1979. Selection for winter hardiness in wheat I. Identification of genotypic variability. *Crop Sci.* 19:769-772.
- Weisz, R., C.R. Crozier, and R.W. Heiniger. 2001. Optimizing nitrogen application timing in no-till soft red winter wheat. *Agron. J.* 93:435-442.

## Acknowledgements

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## Case watch: the Lake Erie Bill of Rights battle ends

By: Peggy Kirk Hall, , Associate Professor, Agricultural & Resource Law , Associate Professor, Agricultural & Resource Law Friday, March 06th, 2020

*Written by Peggy Kirk Hall and Ellen Essman*

In the not-too-surprising news category, a federal court has invalidated the Lake Erie Bill of Rights (LEBOR) that Toledo residents passed last year to recognize and protect legal rights for Lake Erie. What is surprising, however, is how the court reached its decision to strike down LEBOR, even in the wake of a law passed by the Ohio legislature in July of 2019 that denies legal standing to nature and prevents a person from bringing a court action on behalf of nature or any ecosystem.

The verdict came exactly one year after Drewes Farm Partnership filed its federal lawsuit to prevent enforcement of LEBOR a day after Toledoans passed the measure. Drewes Farm asserted that LEBOR violated the farm's rights under the First Amendment, Equal Protection Clause, and Due Process Clauses of the Fifth and Fourteenth Amendments. Drewes Farm also argued that LEBOR exceeded the City of Toledo's authority because it usurped the power of the state and the federal government by interfering with international relations, invalidating state and federal permits, invalidating state law, altering the rights of corporations, and creating new causes of action in state courts. In April 2019, the state of Ohio joined the lawsuit as a fellow plaintiff. Proponents of LEBOR unsuccessfully attempted to join in the litigation.

*Did the plaintiffs have the right to bring the case?*

The opinion begins with the court's "standing" analysis. Toledo argued that Drewes Farm and Ohio did not have legal standing to bring the lawsuit against the City. Legal standing requires that a plaintiff (1) suffers an injury in fact, (2) that is fairly traceable to the challenged conduct of the defendant, and (3) that is likely to be redressed by a favorable judicial decision. Failing to meet the legal standing requirement would force dismissal of the lawsuit. Without a finding in favor of legal standing, the court wouldn't be able to determine LEBOR's validity.

The central issue in whether the parties had legal standing was the injury in fact requirement, according to the court. To challenge LEBOR, the plaintiffs must demonstrate "concrete and particularized" injury that is "actual or imminent, not conjectural or hypothetical." The court determined that the state of Ohio met this requirement because it suffered an injury, "at least on paper," from LEBOR's invalidation of Ohio laws, regulations, licenses and permits and because the state "could" be sued under LEBOR. The judge also found that Drewes Farm demonstrated injury in fact since any Toledo resident "could" sue the farm for violating LEBOR.

In its brief attention to the second component of standing, that the injury is fairly traceable to the defendant, the court determined that the potential injuries were traceable to Toledo because its city charter was amended by voters to include the LEBOR language. Even though the City itself did not legislatively enact LEBOR, had actually attempted to keep the issue off the ballot due to concerns that it was unconstitutional, and had not indicated any intent to enforce LEBOR, the court concluded that “the City is a proper defendant in the suit.” The court also found that invalidating LEBOR would redress the plaintiffs’ injuries, the final requirement for legal standing.

#### *LEBOR violates due process*

The court next directly examined only one of the many constitutional claims against LEBOR, the Fourteenth Amendment’s right to due process, and specifically focused on one element of due process: clarity of the law. The court stated that if a law is vague and unclear, it can “trap the innocent by not providing fair warning and invite arbitrary enforcement by prosecutors, judges, and juries.” Pointing to language in LEBOR such as the right of Lake Erie and its watershed to “exist, flourish, and naturally evolve,” and Toledoans’ right to a “clean and healthy environment,” the court questioned what type of conduct would violate the broad language and how a judge or jury would determine the line between “clean and unclean and healthy and unhealthy.” Spreading even a small amount of fertilizer could possibly violate LEBOR, the court said, as well as countless other activities such as catching fish, pulling weeds, planting corn, or driving a gas-powered vehicle. Not surprisingly, the court concluded that the language is void for vagueness. While LEBOR’s language sounds powerful, the court explained, it has no practical meaning, contains merely “aspirational statements” rather than rules of law, and violates constitutional due process.

#### *What about other constitutional claims?*

The court surprisingly didn’t tackle the many other constitutional issues raised by Drewes Farm and the State. But in its “severability” analysis, the court did briefly touch on the constitutionality of LEBOR’s preemption of state and federal laws. LEBOR contains a severability clause stating that a determination of one part of LEBOR as invalid does not invalidate the remaining parts of LEBOR. According to the court, this severability clause is valid only if the constitutional and unconstitutional parts of LEBOR are capable of separation and can stand by themselves. The court concluded that once the vague rights are stripped away, the remaining parts of LEBOR are meaningless.

The court then took the opportunity to note that LEBOR’s attempt to preempt Ohio law in the name of environmental protection would fail on its own merits. Lake Erie’s health falls well beyond Toledo’s authority and rights to govern its internal affairs, and enacting laws that conflict with Ohio law is a “textbook example of what municipal government cannot do,” said the court.

#### *Protecting Lake Erie is a worthy goal*

In a slightly sympathetic nod to LEBOR supporters “frustrated by the status quo,” the court notes that using a democratic process to protect Lake Erie is a well-intentioned goal but LEBOR simply fails to achieve the goal. Careful drafting by Toledoans could result in valid legislation that would reduce water pollution, the

court explains, while highlighting an ordinance in Madison, Wisconsin that restricted the use of phosphorus-containing fertilizers in the city and withstood a legal challenge.

*It comes as no surprise*

Echoing what many had already concluded, the court criticized LEBOR's authors for ignoring legal principals and constitutional limitations and stated that LEBOR's invalidation should come as no surprise. "This is not a close call," the court says. "LEBOR is unconstitutionally vague and exceeds the power of municipal government in Ohio. It is therefore invalid in its entirety."

*Now what?*

LEBOR has met the end of its road, but it never really stood a chance of actual enforcement due to its clearly unconstitutional language. LEBOR's proponents often claimed that the purposes of LEBOR were to gain more attention to Lake Erie's poor water quality and to push the concept of recognizing legal rights for nature and ecosystems a bit further down the road. Were they successful? Will Toledoans give up, or will they regroup and carefully draft new legislation to protect their water?

Farmers in Ohio now have absolute certainty that they will not be sued for violating Lake Erie's "rights," but such a lawsuit never really stood a chance of actual success due to LEBOR's clearly unconstitutional language. And let's not forget the new language in Ohio Revised Code §2305.01 stating that "nature or any ecosystem does not have standing to participate in or bring an action in any court of common pleas; no person, on behalf of or representing nature or an ecosystem, shall bring an action in any court of common pleas; and no person shall bring an action in any court of common pleas against a person who is acting on behalf of or representing nature or an ecosystem."

And what about Lake Erie's water quality? New voluntary programs are rolling out from Governor DeWine's H2Ohio plan. But many claim that more forceful measures are necessary. Other litigation over the lake's water quality lingers, and Ohio has listed the Western Lake Erie Basin as "impaired" and must develop a plan to address Total Maximum Daily Loads of pollutants in the lake. It's no surprise that even though it's the end of the road for LEBOR, conflicts over solving Lake Erie's water quality problems will continue.

Read the U.S. District Court's opinion on LEBOR [here](#). For our in-depth look at LEBOR, click [here](#). We review other current Lake Erie legal activities [here](#).

## Corn productivity in real time: Satellites, field cameras, and farmers team up

Date: March 5, 2020

Source: University of Illinois College of Agricultural, Consumer and Environmental Sciences

Source: <https://www.sciencedaily.com/releases/2020/03/200305135037.htm>

University of Illinois scientists, with help from members of the Illinois Corn Growers Association, have developed a new, scalable method for estimating crop productivity in real time. The research, published in *Remote Sensing of Environment*, combines field measurements, a unique in-field camera network, and high-resolution, high-frequency satellite data, providing highly accurate productivity estimates for crops across Illinois and beyond.

"Our ultimate goal is to provide useful information to farmers, especially at the field level or sub-field level. Previously, most available satellite data had coarse spatial and/or temporal resolution, but here we take advantage of new satellite products to estimate leaf area index (LAI), a proxy for crop productivity and grain yield. And we know the satellite estimates are accurate because our ground measurements agree," says Hyungsuk Kimm, a doctoral student in the Department of Natural Resources and Environmental Sciences (NRES) at U of I and lead author on the study.

Kimm and his colleagues used surface reflectance data, which measures light bouncing off the Earth, from two kinds of satellites to estimate LAI in agricultural fields. Both satellite datasets represent major improvements over older satellite technologies; they can "see" the Earth at a fine scale (3-meter or 30-meter resolution) and both return to the same spot above the planet on a daily basis. Since the satellites don't capture LAI directly, the research team developed two mathematical algorithms to convert surface reflectance into LAI.

While developing the algorithms to estimate LAI, Kimm worked with Illinois farmers to set up cameras in 36 corn fields across the state, providing continuous ground-level monitoring. The images from the cameras provided detailed ground information to refine the satellite-derived estimates of LAI.

The true test of the satellite estimates came from LAI data Kimm measured directly in the corn fields. Twice weekly during the 2017 growing season, he visited the fields with a specialized instrument and measured corn leaf area by hand.

In the end, the satellite LAI estimates from the two algorithms strongly agreed with Kimm's "ground-truth" data from the fields. This result means the algorithms delivered highly accurate, reliable LAI information from space, and can be used to estimate LAI in fields anywhere in the world in real time.

"We are the first to develop scalable, high-temporal, high-resolution LAI data for farmers to use. These methods have been fully validated using an unprecedented camera network for farmland," says Kaiyu Guan, assistant professor in the Department of NRES and Blue Waters professor at the National Center for Supercomputing Applications. He is also principal investigator on the study.

Having real-time LAI data could be instrumental for responsive management. For example, the satellite method could detect underperforming fields or segments of fields that could be corrected with targeted management practices such as nutrient management, pesticide application, or other strategies. Guan plans to make real-time data available to farmers in the near future.

"The new LAI technology developed by Dr. Guan's research team is an exciting advancement with potential to help farmers identify and respond to in-field problems faster and more effectively than ever before," says Laura Gentry, director of water quality research for the Illinois Corn Growers Association.

"More accurate measurements of LAI can help us to be more efficient, timely, and make decisions that will ultimately make us more profitable. The last few years have been especially difficult for farmers. We need technologies that help us allocate our limited time, money, and labor most wisely. Illinois Corn Growers Association is glad to partner with Dr. Guan's team, and our farmer members were happy to assist the researchers with access to their crops in validating the team's work. We're proud of the advancement this new technology represents and are excited to see how the Guan research team will use it to bring value directly to Illinois farmers," Gentry adds.

**Prepared by Jeff Stachler**  
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