



by Doug Miller • dmiller@ilcrop.com

32nd Annual IL-IN Seed Conditioning Workshop

On March 14th the 32nd annual Illinois-Indiana Seed Conditioning Workshop was held in Champaign. Over seventy participants from almost thirty companies learned about seed conditioning, seed drying and seed treatment. Ten vendors also joined us and shared how they serve seed companies with products, equipment and expertise.

We would like to thank again all of our speakers; Alan Gaul from Iowa State University, Marco Azaretti from Key Technology, Vikram Mehrotra from Monsanto, Pat Pike from Satake, Don Uglow from Buhler, Bill Kavage from Optek, Inc., Diane Plewa from the University of Illinois, Don Robison from the Office of Indiana State Chemist, Nick Tinsley and Jeff Lewis from Bayer Crop Science. Our seed lab director Steve Beals was the official emcee for the event and also spoke to the group about trends in soybean germs. I also spoke on the topic of Dicamba damage.

The alternative title to my Dicamba talk was "Much Ado About Nothing." Growouts in the greenhouse and Puerto Rico this winter did not show reduced germination or leaf cupping. Data showing the possible effects of dicamba on seed fields came from two groups. One research team looked at off-target

movement during vegetative stages to R1 (Begin Flower) and the other looking more at the pod development stages such as R4 (Full Pod). Both made experimental applications simulating low level dicamba drift. Bryan Young at Purdue showed that germination rates really were unaffected up until a yield reduction of around 50% was evident based on applications to susceptible soybeans up to R1. Work in Arkansas showed that reduced germination and leaf cupping could be seen with applications as low as 1/64 labeled rates during pod and seed development stages. The lack of damage seen this year may have as much to do with timing as rate. In my opinion seed fields next to double crop dicamba tolerant soybeans might run the risk of off target movement during the critical seed development stages. But off target movement prior to R4 may not show up in the resulting off-spring. Again the answer to the question of damage to the resulting seed crop in the form of lower germination and leaf cupping on seedlings seems to be "no." No, we did not see seed lots with issues as described by others who experimentally made low rate applications to susceptible soybeans. We can consider ourselves lucky to some degree and thankful that the timing of applications takes the majority of seed production out of the danger zone. I want to especially thank Dr. Bryan Young at Purdue for sharing his presentation and information with me so that it could be presented at the Illinois-Indiana Seed Conditioning Workshop.

For those of you who were not able to attend we hope you can join us in Indiana for the 2019 workshop. We have already made reservations at the I Hotel for the 2020 workshop. In

the meantime keep those seed plants running as safely and as effectively as possible. The success of individual farmers and society as a whole depends on the quality seed you produce.

Calendar of Events

April 4-5
AOSCA Northern Regional Mtg
Madison, WI

May 28
CLOSED - Memorial Day

June 2-7
AOSA/SCST Annual Mtg
www.analyzeseeds.com
Raleigh, NC

June 9-13
ASTA Policy & Leadership Conf
www.betterseed.org
Washington, DC

June 24-27
AOSCA Annual Meeting
www.aosca.org
Atlanta, GA

June 27
ISTA Annual Golf Outing
www.ilcrop.com/calendar-of-events
Urbana, IL

June 28
Illinois Crop/ISTA Joint Annual Mtg
www.ilcrop.com/calendar-of-events
Mahomet, IL

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Seed Laboratory News

by Steve Beals, Seed Lab Director • sbeals@ilcrop.com

2017 Crop Year Seed Quality - I'm Just the Messenger

Corn germinations are just above what we were seeing this time last year. The overall corn germination average is 95.5% compared to 95.3% last season. Corn cold test germinations are averaging 90.9% which is 0.5% lower than last season. We cannot say the same for soybean germ testing. We have noticed that soybean germination results have been steadily dropping from what we saw early on in the testing season. We are seeing signs of mechanical damage specifically to the root area. It is difficult to determine exactly when the damage occurred. It may have occurred during harvest, handling the seed, or a combination thereof. The soybean germination average is 88.6% across all regions tested. This is a 1.1% decrease in the germination average from last year and 2.8% decrease from the 2015 crop year. The average Phomopsis (pod and stem blight) infection has decreased across all regions this season and is 1.04% compared to 3.18% last season. Soybean cold test germination averages are lower this season at 82.4% compared to 89.3% last year at this time. The soybean sand germ has been averaging very close to the standard germination at 88.9%. The average soybean seed count across all regions is 2,833 seeds per pound. Seed applied fungicides may be beneficial to some seed lots with higher amounts of Phomopsis infection. The Illinois Crop seed lab can hand apply fungicide seed treatment to your seed germination sample to see if treating your seed lot may be beneficial. However, seed applied fungicides will not help increase the germination of

seed lots that have mechanical damage. Please contact the seed lab if you have any questions about this service.

2017 Crop Year Germination Trend as of 3/12/18

Corn	Nov 2017	Dec 2017	Feb 2018	Mar 2018
Germ	95.80%	95.70%	95.60%	95.50%
Cold Test	92.10%	91.90%	90.90%	90.90%

Soybean	Nov 2017	Dec 2017	Feb 2018	Mar 2018
Germ	91.70%	90.40%	88.90%	88.60%
Pod/Stem	0.81%	1.09%	1.08%	1.04%
Cold Test	89.30%	88.30%	83.70%	82.40%
Sand	N/R	N/R	90.00%	88.90%
Seeds/#	2,904	2,957	2,849	2,833

2017 Soybean Results by Region as of 3/12/18

Region	Soybean Germ %	Pod/Stem Blight %	Seeds Per #
Central	90.0	0.98	2,688
East	86.5	1.06	2,771
E-SE	86.3	1.45	2,923
North East	88.4	3.01	2,929
North West	90.1	0.74	N/A
South East	89.0	0.76	2,810
South West	91.1	0.66	3,025
West	88.5	0.72	2,763
W-SW	91.3	0.61	2,840
Out of State	90.1	1.01	2,796



Soybean Abnormals: Root Damage

New Seed Counter

The Seed Laboratory recently acquired a Data Technologies, Data Count S-60 PLUS seed counter to replace two of our older units.



This seed counter is much faster and is able to count a wider range of crops than the older units were capable of. It also has the capability to add a barcode scanner and is able to interface with a scale. Downloads of the count information is also an option with the counter. This will be a great addition to our equipment inventory.

Our Laboratory

The Illinois Crop Seed Laboratory follows the Association of Official Seed Analysts (AOSA) Rules for Testing Seeds, Canadian Methods and Procedures for Testing Seed, and we are ISO/IEC 17025:2005 accredited. We have three Registered Seed Technologists and other very knowledgeable staff capable of testing most any crop. Questions regarding seed testing can be emailed to me at sbeals@ilcrop.com, or call 217.359.4053.



Quality Assurance (QA) Program

Illinois Crop provides a wide array of services to the seed industry which include many different types of field inspections. One type of field inspection, Quality Assurance (QA), has similar requirements to Certified Seed and is performed under the Association of Official Seed Certifying Agencies (AOSCA) standards. The QA requirements were originally modeled off of the Certified Seed standards to provide an unbiased quality control system for private label seeds that were not in Certification.

There are many benefits to participating in the QA program. It delivers an unbiased seed production record that may be used to meet seed law requirements. Producers that license their seed stocks to other companies can use QA for assessing royalties and research fees. The program provides an image of sound quality control for seed products not within the certification program. Finally, products that meet all the QA requirements can be labeled with the QA logo indicating to the buyer that the seed has met the established genetic purity standards.

As mentioned before, the QA process is very similar to the certification process. It starts with a field application for an inspection. Along with the inspection application a Quality Assurance Statement of Origin form must also be submitted. Often initially forgotten with the field application, the Statement of Origin is essential in that it provides the agronomic description, any allowances, and the breeder information. The agronomic description from the statement of origin is used to evaluate the plants

in the field and the seed in the lab for purity.

Once all the paperwork is filed and approved then the process moves to a field purity inspection. If the field meets purity standards upon this inspection then post-harvest seed samples should be sent into the lab for varietal purity, germination and physical purity testing. Be sure to include field numbers on these QA samples or they will not be classified as eligible for QA or QA tags. After the field and seed have both met standards, which are based on the genetic requirements for Certified Seed, then it can be tagged with the QA logo.

This is a basic summary of the QA program. For more details please reference your [Illinois Crop Improvement Association Handbook of Seed Certification](#) or contact the office at fieldapps@ilcrop.com and we would be glad to answer any of your questions. Our field applications and forms can be found on our website www.ilcrop.com under the Forms and Price Lists link.

Reminders for Field Application Time

As application time approaches we would like to remind producers of the requirements for submitting Certified Seed field inspection applications.

1. Applications for Illinois should be filed on or before the following dates:
 - Winter Grains: May 1
 - Spring Grains: June 1
 - Corn: June 1
 - Soybeans (Foundation): July 1
 - Soybean Herbicide Insp.: June 15
 - Soybeans: August 1
 - All Other Crops: May 12.

2. Source of seed (AOSCA or OECD tags) for Certified Class inspections must be submitted with applications.
3. For new inbred corn varieties, a corn inbred eligibility form and corn inbred characteristic form must be submitted
4. New certified varieties of soybeans and sunflowers must be approved by the National Variety Review Board before a variety can move beyond Breeder Class
5. Include varietal descriptions for new soybeans and small grains.
6. Include a detailed map that accurately reflects the locations of the field.

If there are any questions regarding applications please contact Paula Palmgren at 217.359.4053 or use fieldapps@ilcrop.com via email.

Field Inspection Types

Certified Seed

- Breeder: Directly controlled by the plant breeder or originating company. The source of seed for production of certified classes
- Foundation: Produced from Breeder or Foundation seed stock, and must meet Foundation standards.
- Registered: Produced from Foundation seed stock and must meet Registered standards.
- Certified: Produced from Foundation or Registered seed stock and must meet Certified standards.

Quality Assurance

- Quality Assurance Parent (QA Parent): QA seed produced to meet Foundation standards

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Specialty Preservation

As we continue to celebrate the 30th Anniversary of the Identity Preserved Grain Laboratory we will look at the history of specialty corns. Waxy-maize or waxy corn, so named for the kernel's appearance, was introduced to the U.S. from China in 1908. Although China was the original source, waxy (wx) mutations have since been found in American dent strains (National Corn Handbook NCH-10). Most corn grown in the US is 73 percent amylopectin and 27 percent amylose. Waxy corn starch is composed entirely of amylopectin. An easy way to check this is with a 2 percent solution of potassium iodide. Ordinary cornstarch stains blue. Waxy cornstarch stains reddish brown. In the back of the field inspector supply cabinet here at Illinois Crop you may still find the rasp and spray bottle for checking ears in the field for waxy purity. Interestingly the pollen can also be stained and was used as an aid in breeding. Waxy corn is produced as the feed stock or raw material of waxy and modified waxy cornstarch used by the food industry as stabilizers and thickeners for puddings, pie fillings, sauces, gravies, retorted foods, salad dressings, and more. Waxy products have also been a part of the adhesives and paper industry as well as feed for dairy cattle and livestock. Wet millers and exporters contract with farmers to produce waxy corn. Isolation is an important factor during production along with harvesting, transporting and storing the grain. Since waxy is a recessive characteristic it must be

produced as an identity preserved product. Cross pollination from other types of corn will override the starch properties that make this important specialty corn waxy.

Many advances have been made to the factors that affect the waxy starch characteristics as well as the agronomic characteristics of the crop. One of the most recent advances was announced by DuPont Pioneer in 2016. Through CRISPR gene editing technology a new and improved waxy corn variety has been developed. By creating a deletion in the waxy gene an amylopectin level of 97 percent has been achieved. But identity preservation is still an important factor in commercial production of waxy corn. According to DuPont Pioneer representatives:

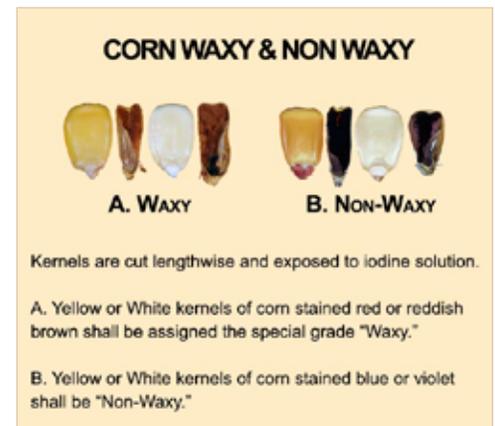
"The starch isolated from waxy corn kernels has some unique applications in food and industry. It's a modest market but an ideal one for introducing a new variety. The genetics are very straightforward, and the supply chain isn't affected in any way. We can present our customers with an improved product—one that they're familiar and comfortable with. That's a nice starting point for an innovative technology; it lets us see how customers, regulators, and the public treat this kind of innovation."

Based on these comments it appears that the first CRISPR based technology in corn will be previewed by the world in a closed system. A nice touch as the new technology moves towards changing the entire world of plant breeding. But in the end, regardless of the technology waxy

corn will remain an identity preserved product, its number one enemy is still cross pollination with waxy corn.

Illinois Crop's waxy purity test measures the contamination of non-waxy corn in a waxy corn sample as follows:

Starch can be thought of as a chain where each link is a glucose sugar molecule. Corn starch is comprised of two types of starch – amylose and amylopectin. Amylopectin starch "chains" branch every 12-60 "links". Amylose starch chains have no branching and reach 100-1000 links in length. Because of these structural differences, starches with various levels of amylose and amylopectin have different functional characteristics in food and industrial uses. Most corn grown in the U.S. has approximately 27% amylose and 73% amylopectin. Waxy corn is almost all amylopectin. In the waxy purity test, two replicates of 100 kernels each are evaluated. When the exposed endosperm is sprayed with an iodine solution, waxy kernels stain reddish-brown. Any kernels containing amylose stain blue. A visual rating is made and reported as percent waxy kernels. Possible Values 0-100% Typical Results 95-100%.





Right on Schedule

It has been more than six months since a catastrophic hurricane hit Puerto Rico. But while Puerto Rico is still dealing with the problems related to it, the farm is operating as normal. All employees have electricity and water services at their homes. I never get tired of thanking our farm personnel for their hard work and the support received from our Champaign, Illinois personnel. Thanks to them we were able to have another successful winter season.

Power was restored in late February but the irrigation pump house still doesn't have power yet. We continue to run the irrigation with a generator and we are still uncertain when that section will have power again.

Weather conditions are normal for this time of year. Crops planted during our winter season were corn, dry beans, peanuts, sorghum, soybeans and sunflowers.

Early planted corn nurseries and early planted corn isolations were excellent. Results on later planted corn nurseries and corn increases were mixed from average to poor.

Dry bean and soybean projects that have been harvested so far are showing good yields and quality. Soybean crossing blocks also achieved their crossing targets at harvest.

Peanuts have not been harvested yet but the project looks above average in terms of plant growth and field conditions.

Sorghum harvest is taking place as I write this article but it looks like yields are going to be above average also.

Sunflower acreage was down considerably due to some clients thinking we would not be ready for the season and

chose to send their projects to other countries. But those planted projects that stayed had excellent results. In fact, our trial using cages for sunflower production exceeded expectations.

A new tobacco trial is in progress. If we get good results from this trial we should be planting a tobacco project in a few months.

So far all of our clients that have visited the farm to check on their projects or to work on them are very happy and congratulate our team for the good farm conditions.

Insect pressure for the first part of the winter season was lower than average (Nov, Dec and Jan) but by the later part of the season we were higher than average (Feb and Mar). Usually when a hurricane goes over the island insect populations are affected. Some get higher than average while others get lower than average.

The pest control project that PRABIA and IRAC were working on has slowed a little due to hurricane Maria. This project involved creating an area wide insecticide resistance management strategy for fall armyworm and corn earworm on corn, along with cabbage looper and soybean looper on soybeans.

Some of the company members of PRABIA are still actively involved but others decided to get involved later due to the complications that hurricane Maria brought to their operations. We are following the project strategy on the farm while also evaluating other strategies for pest control on corn ears.

In regards to farm equipment, we bought a used PTO generator to provide electricity to the Plaza area while it was being repaired after the hurricane. The PTO generator can also be used in the field when we need power for threshing equipment. A tractor we were using for power generation had engine failure but repairs are currently in progress. All other equipment on the farm is working properly. First on our preventive maintenance list are the planters that are going to be thoroughly checked and any worn out parts replaced. Then all our threshing equipment are on schedule for maintenance. Meanwhile I'll be getting the materials needed to fix the interiors of the main building affected by the hurricane.

Lastly I want to point out that our farm is ready for your projects and Puerto Rico is ready for your visit!



Farm Supervisor, Emmanuel Lassale checking sunflower growth in one of our new trial cages



Illinois Seed Trade Assn

by Pat Foley, President • patrick.foley@syngenta.com

Save The Dates

It's March 23rd and the weekend forecast for many parts of the Midwest is snow and cold. It looks like it is shaping up to be another interesting if not challenging Spring. Those of us in the Ag Industry are unfortunately getting used to these conditions, and the crop always seems to get planted in spite of these challenges.

The political atmosphere for Midwest Agriculture has also gotten a bit more interesting since the last newsletter. Recent proposed tariffs has caused concern of China to retaliate on US commodities such as soybeans, sorghum, and pork products if implemented. Hopefully cooler heads will prevail so as not to add to downward pressure on an already depressed Ag economy. Locally, as always, the IL Seed Trade Association team continues to monitor activity in Springfield that could affect the seed industry, and your business in Illinois. We will keep you abreast if any bills of interest that should come about.

There are two dates we would like to ask you to put on your calendars. Join us on Wednesday, June 27th for the annual Illinois Seed Trade Association Golf Outing. This event will be held at the Stone Creek Golf Club, 2600 S Stone Creek Blvd, Urbana, IL 61802. This is an excellent opportunity to visit with agriculture professionals, business leaders, customers, and colleagues in a relaxed atmosphere. The idea after all, is to have an enjoyable golf game! You need not be an excellent golfer to participate as this is a best ball outing. Proceeds from the outing support ISTA and

the W.L. Burlison Memorial Award, which is awarded to an outstanding University of Illinois Crop Sciences graduate student who demonstrates scholarship, leadership and evidence of professional promise. Registration begins at 10:00 a.m. followed by a putting contest, lunch and then tee-off at Noon. Awards and prize drawings will take place afterwards. Greens fee, cart, lunch and beverages are all included in the registration fee. For more information, contact Heather Stone at hstone@ilcrop.com or call 217.359.4053.

The Second is the Illinois Seed Trade Annual Meeting which is set for Thursday, June 28, 2018 at the Farm Credit Building, Mahomet Illinois. Note this is a new location for this meeting from the past and we look forward to your attendance.

Please watch for further registration information for both of these events in the coming months.

Governor Bruce Rauner, has again proclaimed April 2018, as Seed Month in Illinois. This Proclamation is given in appreciation of the seed industry's contribution in supplying food and fiber to the world. Please contact us if you would like a copy of this Proclamation to display in your place of business.

Seed Month Proclamation

WHEREAS, the abundance of Illinois' crop relies on fertile soils, diligent farmers, and high quality seeds; and,

WHEREAS, agriculture and the seed industry significantly contribute to our state's economy with value-added products marketed throughout the world; and,

WHEREAS, the Bureau of Agricultural Products Inspection within the Illinois Department of Agriculture tests the purity and germination of seeds, validates accuracy of product labels, and cooperates with the Illinois Crop Improvement Association which is the state's official seed certifying agency, and an independent nonprofit organization; and,

WHEREAS, in cooperation with educational and regulatory agencies, the Illinois Seed (Trade) Association has sustained an informed membership, the latest reserach developments, the production of high-quality seed, and has developed an effective seed program advocating for their members' interests; and,

THEREFORE, I do hereby proclaim April, 2018, as SEED MONTH in Illinois in appreciation of the seed industry's contribution in supplying food and fiber to the world through the production of illinois crops.

The IL Seed Trade Board wishes you a safe and flawless planting season. If you would like to contact the Illinois Seed Trade for any reason please contact me, Richard Denhart, rdenhart_ista@ilcrop.com, or Heather Stone, hstone@ilcrop.com. See you in June on the golf course!





Illinois Seed News Continued...

Field Inspection Types - continued from page 3

- Quality Assurance (QA): QA seed produced to meet Certified standards.

Other Inspections

- Phytosanitary: Disease inspection used to meet phytosanitary certificate field inspection requirements.
- Herbicide Tolerant: Evaluation of herbicide tolerance on soybeans.
- Bloom: Evaluation of flower color in soybeans (included in Foundation inspections)
- Service Inspection: Quality control inspection based on Certified standards, but for information only.

32nd Annual Illinois-Indiana Seed Conditioning Workshop Thank You

Our sincere thanks to the over 60 companies that attended our workshop as well as our exhibitors Tom Kellen, Agra Industries; Rick Brewer, Bratney Companies; Don Uglow, Buhler Sortex, Inc.; Phil Teeple, Clipper Seed Technologies; Ken Halter, El Dorado Packaging; Levi Farrell, Fumigation Service & Supply; Dave Means, Oliver Manufacturing; Bruce Cockram, Omara Ag Services; Bill Kavage & Dr Marvin Monroe, Optek, Inc.; and Jonathan Popp, Popp Engineering who together helped make it a success!



ASTA Talking Points: USDA Policy Statement on Gene Editing

What does the guidance mean?

- We're pleased that USDA's guidance recognizes plant breeders' long track record of safety and quality.
- Specifically, the guidance clarifies and reaffirms the agency's existing policy that if products of gene editing are similar to or undistinguishable from products obtained through more traditional plant breeding they should be treated in the same way from a policy perspective.
- We look forward to continuing conversations with the Administration to ensure sound policy that fosters continued innovation and promotes the movement of seed and other agricultural products around world.

What is gene editing?

- Today, with an increased understanding of genetics, the capability to sequence plant genomes and the ability to link a specific gene to a specific characteristic, plant scientists are able to improve plants more precisely and efficiently than ever before.
- Evolving methods like gene editing allow us to work within a plant's own gene pool—without the introduction of foreign DNA—to achieve the same end-result that could be achieved through more traditional plant breeding methods, but in a more targeted way.

- This added precision allows scientists to forgo multiple cycles of plant selection from a population of thousands of individual plants and move to testing elite lines sooner.

Is it safe?

- Yes! In consideration of the long history of safety associated with traditional plant breeding, gene edited plant products that are similar to or undistinguishable from products obtained through traditional plant breeding methods pose no greater plant risk than their counterparts developed through those traditional breeding techniques, or those arising in nature.

Why is this policy important?

- The recently released guidance provides much-needed clarification to breeding programs, and will help ensure that US agriculture remains at the forefront of innovation and maintains its leadership role globally.
- Public and private sector plant-scientists around the world are investing in a great deal of research using newer methods like gene editing across a wide variety of crops—with exciting potential for farmers, consumers and the environment.
- In order for these benefits to be fully realized, and widely adopted across breeding programs of all sizes and sectors, developers need clear, science-based, policy direction.



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