Illinois Seed News
October - December Fourth Quarter 2018

C.E.O Report

by Doug Miller • dmiller@ilcrop.com

Hemp: Old Crop/New Crop

The passage of the Illinois Industrial Hemp Act, with amendments to the Noxious Weed Act and Cannabis Control Act, will make an old crop new again. Illinois Crop Improvement joined several other stakeholder groups at a listening session hosted by the Department of Ag as part of the rule making process for the administration of the act. The most important thing for everyone to realize is that industrial hemp is defined as "*Cannabis sativa* L. and any part of that plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis that has been cultivated under a license..." The complete Illinois Industrial Hemp Act can be found at www.ilga.gov. The key to legalization is the level of delta-9 tetrahydrocannabinol or THC in industrial hemp. THC is one of over 100 cannabinols in *Cannabis sativa.* THC is the primary psychoactive ingredient in marijuana. With no more than 0.3 THC authorities can regulate hemp as a crop valued for its fiber and other cannabinols known as CBDs.

The Association of Official Seed Certifying Agencies (AOSCA) adopted its Industrial Hemp Certification Standard in 2014. The standard was developed by Canada and minor changes were made by AOSCA in June of 2015. For crops not listed in the handbook Illinois defaults to the AOSCA standard. It is important to point out that the certification standard is intended for seed production. AOSCA also has a variety review board for industrial hemp. The approval or recognition of varieties is the crucial entry point to the seed certification system. Within the system there are previous crop and isolation requirements along with the field and varietal purity standards. All of this is designed to maintain the identity and purity of approved varieties for farmers. Purchasers of Certified planting stock can rest assured that the necessary requirements were met for varieties bred as industrial hemp. All hemp production in Illinois will need to be licensed and inspected under the rules the department is currently drafting.

Will Illinois produce seed for industrial hemp growers? If history is any indication the likely answer is "no." In 1943 our founding father J.C. Hackleman, along with W. E. Domingo, wrote "Hemp : An Illinois War Crop". The article indicates that most seed would be produced in Kentucky: "Illinois contract holders will be furnished an approved and adapted strain produced in Kentucky in 1942 under contract with Commodity Credit. Imported seed is not recommended-it matures earlier and yields less than the Kentucky seed." In the opening paragraph of the publication the authors state that "Several mills for extracting the fiber will be constructed in northern Illinois by the Government. Each mill will process the hemp from about 4,000 acres. Since the straw must be transported to the mill, all hemp should be grown within about 12 miles of a plant." With 16 other states that have a head start on industrial hemp I would be surprised, pleasantly surprised, to see seed production in Illinois. But with that said we stand ready to meet the needs of Illinois' seed producers and will support the department as needed under the Industrial Hemp Act. Special thanks to AOSCA staff and members for bringing Illinois up to speed on Industrial Hemp. AOSCA will celebrate its 100th anniversary in June of 2019 in Chicago Illinois. Just east of where "Hemp : An Illinois War Crop" was pulling for victory during World War 2 by supplying fiber for "marine rope, cordage, and thread."

Calendar of Events

October 30 - November 2
ASTA Farm & Lawn Conference
Kansas City, MO

November 22 & 23
CLOSED - Thanksgiving

December 3-7
ASTA Seed Expo
Chicago, IL
Booth 1133 / Mtg Room 3

December 25
CLOSED - Christmas

In This Issue

Seed Laboratory News

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

Continued Growth

The Seed Lab recently expanded our small seed germination capacity by adding a new Kolpak 8ft by 8ft walk in chamber. We purchased a cooler that is commonly used in the food service industry and converted the compressor unit so that it is able to heat and cool. We added a new temperature/light control and high and low temperature limit controls to the chamber and then finished by adding LED lights and shelves to the chamber which allows us more holding capacity than the standard reach in germination chambers. The new chamber will be used primarily for vegetable and flower germinations. With the addition of this chamber it puts our lab at having three 8ft by 8ft chambers. We have been using this style of chamber since June of 2012 and they have proven to be very consistent and reliable germination units.

Inside the new 8ft by 8ft walk in chamber

New Sample Bags

We recently received a new shipment of plastic sample bags. This new shipment seems to have a much better closure than the last bags that we had. These are available for our customers to submit samples to our lab for testing. If you need a new supply of bags, or would like to try them for the first time, please contact the seed lab and we will ship them out to you. We only charge the customer shipping and handling for the bags. Please carefully pack your samples so that they do not open during transit to the lab for testing. We would like to note that there seems to be some confusion on the germination test section. We have a test for "Treated Germ" and "Treated Cold Test". We have had some customers mark these for a warm germ and cold test when the submitted sample is treated. We intended the "Treated Germ" and "Treated Cold Test" to request that an untreated sample be treated with seed treatment by our lab before testing. We did not intend to cause any confusion with the new bag layout. If you are unsure of which test to select, please contact our lab or just write on the bag the tests that you would like us to complete.

Varietal Purity vs Mechanical Purity

I am often asked by customers, "Which purity do I need to have done on my seed sample, the varietal purity or the mechanical purity?" I thought I would take the opportunity to describe the differences between the tests. The varietal purity is a test that we look for the physical seed characteristics. The varietal purity is primarily used on seed that is in the certification process. However, we do conduct the varietal purity on several non-certified soybean seed lots and oat samples to see if there are any off-type varieties that may cause issues with some seed lots. This test does not determine the presence or lack of trait characteristics. This test is normally conducted on seed samples of soybeans, looking at hila colors; sunflowers, looking at seed characteristics, size, and texture; corn, looking for off-type kernel colors or characteristics; and oats, looking for fluorescent and non-fluorescent seeds under an ultraviolet light. All of the items that we look for are usually based off of the description of the variety. If no description is available, we base the exam on the characteristics of the majority of the seed. For a typical soybean, sunflower, and oat samples, the varietal exam is conducted on 100 grams of the 500 gram test sample. The corn varietal purity is based on 500 grams or 1,000 grams if for Canada or OECD. If the amount of off-type hila or other varieties are found in certified samples exceeds the certification standards, the analyst will examine all 500 grams for off-type varieties. For Breeder class soybeans, we examine 500 grams for off-type varieties. The off-types found in a varietal purity are listed as other varieties. The number found and the number of seeds per pound is reported. Other crop seeds and weed seeds found in the sample are noted on the report of analysis. Inert material is not reported

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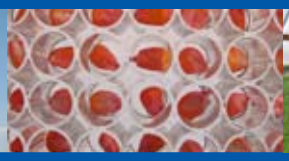

Field Services News

by Matt Raymond, Field Services Director • mraymond@ilcrop.com

Field Inspection Reminder & Tips

The field inspection season is quickly drawing to a close as seed fields across Illinois are being combined for harvest. Now it is time to consider what next steps need to be taken with the seed to keep things moving. The type of inspection that was done on the field, phytosanitary or certification, will determine what those next steps will be.

Phytosanitary Inspection

Once you have your Phytosanitary Field Inspection Report from Illinois Crop you will need to submit a copy of it to the appropriate regulatory agency when you apply for your Phytosanitary Certificate. This Certificate is required for the international movement of seed. The Illinois Department of Agriculture (IDOA) office in DeKalb is the preferred agency for requesting phytosanitary certificates in Illinois as they are familiar with Illinois Crop's field reports and understand how to interpret the data. Their contact information can be found on our website under the "Forms & Price Lists" link on our home page.

Agencies that issue phytosanitary certificates other than the IDOA may not be acquainted with our National Seed Health Accreditation for Phytosanitary Field Inspections and how to interpret our reports. To help expedite certificate processing with an agency other than the IDOA a brief letter explaining Illinois Crop's field inspection procedures is available on our website under the "Field Inspections" link on our home page. The "Phytosanitary Statement" letter should be included with the field report when requesting a certificate from any issuing agency other than the IDOA.

Certified Inspections

Once fields have met and passed their Certified Field Inspections it is time to start submitting seed samples for analysis. Germination and purity testing is required to continue along the Certified Seed path. Certified Seed classes include Breeder, Foundation, Registered and Certified. When submitting your Certified Seed samples please include the corresponding Illinois Crop field number with the sample for reference.

Seed corn growers with eligible Certified Seed fields should have already received a letter from Illinois Crop about submitting seed for winter growouts. The samples should be packaged and submitted to the office as soon as possible, but no later than October 26.

Please contact the office if you have any questions about submitting samples, testing requirements, or growout packaging as we would be glad to help.

Observations From The U of I Plant Clinic

Diane Plewa, the diagnostician at the University of Illinois Plant Clinic, was kind enough to share a sampling of pictures showing diseases coming through her lab this year and comments about each disease.

TAR SPOT on corn

Corn tar spot was first detected in the United States in 2015 in Illinois and Indiana. Since then, it has been confirmed in at least 4 other states. While present in Illinois in 2016 and 2017, the disease appears to be much more prevalent this year compared to the previous years. Currently, not much is known about this pathogen or the impact it may have on corn in the United States; research is ongoing to try to fill these knowledge gaps.

FROGEYE LEAF SPOT on soybean

Frogeye leaf spot survives in infected seeds and in crop residue. Warm, humid weather favors this disease. Lesions often appear on leaves, but stems, pods, and seeds may also be infected. Management consists of growing resistant varieties, tillage, crop rotation, and applying foliar fungicides. Populations of this

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Looking Back

Picking up where Jim Shearl's book "Honoring an Era 1973-1997" left off, we look back at additional milestones for the IPG lab. Up until 2002 the lab was using off-site equipment to perform protein analysis. The protein analysis method used was developed by Johan Kjeldahl (the "j" is silent) in 1883. This method is still state of the art in some sectors. It includes numerous steps such as digesting the sample in boiling acid, steam distillation of ammonia and a titration step to determine the amount of nitrogen present. It can be slow, tedious and dangerous work. This along with the complications of using shared equipment made for less than timely results. As timely results are nearly always desired by the customer and boiling acid in shared glassware was less than desirable, the IPG staff found an in-house solution.

The solution was the Dumas combustion method. The Dumas method also has some history as it was first described by Jean-Baptiste Dumas in 1826. With today's automation and analyte detection methods samples as small as 0.25g are combusted at high temperatures in an oxygen atmosphere. Nitrogen is separated by chromatography. A thermal conductivity detector measures the nitrogen from the sample. Based on the nitrogen from the sample the amount of protein can be calculated. It should be noted that both the Kjeldahl and Dumas methods will pick up non-protein nitrogen sources. While grain inspection services in the US, Canada and Australia recognized the Dumas method, others remain committed to the Kjeldahl method. The IPG lab justified the investment based on the recognition by the grain inspection services and others while also removing mercury and cadmium from a long list of negatives for the Kjeldahl method. Official laboratories dedicated to the analysis of animal feed still rely on the Kjeldahl method and are thus still recognized worldwide. Both methods are subject to corrections and will not necessarily agree, making it important to know what method was used when dealing with other than whole grain samples.

While not a likely scenario for the IPG lab it is worth mentioning melamine as an adulterant. Melamine has numerous industrial uses, including the production of plastics, dishware, commercial filters, laminates, adhesives, molding compounds, coatings and flame retardants. Since it is high in nitrogen it has been used to adulterate pet food and human food. The addition of melamine to a food-stuff adds a significant amount of in-organic non-protein nitrogen. Methods that use nitrogen to determine protein cannot differentiate the source of the nitrogen. Melamine will falsely inflate the amount of protein reported by these methods. With that said most of the samples analyzed by the IPG lab start as whole grains and oilseeds and are thus unadulterated. This reinforces the premise that we are a grain lab. A lab dedicated to serving identity preserved and commodity endeavors. We can certainly help those who need comprehensive analytical methods for food, feed and fuel analysis. But the IPG lab focuses on measuring major components of grains and oilseeds along with processing characteristics. We offer services that mimic larger processes such as alkaline cooking (masa harina), dry milling, ethanol fermentation, soy-milk and tofu production. These techniques are typically applied to specific varieties/hybrids and specialty grain consignments. Our customer base ranges from plant breeders to grain handlers and millers.

We would also be remiss if we did not talk about how NIR or Near-Infrared analysis predicts protein content. The Dumas and Kjeldahl methods, explained earlier, are considered primary methods for determining protein. NIR predicts the protein content of whole grains. Why do we use the term prediction? Specific wavelengths of light are transmitted through an unknown sample. How these wavelengths are affected is compared to the transmission characteristics of numerous known samples. The content of the known samples have been determined by a primary method. This makes NIR an indirect or secondary method that makes a prediction. A good calibration will predict values that are very close to the primary method but will still vary to some degree. NIR calibrations are under continuous development and more samples across the expected range of results builds a stronger calibration. Our NIR analyzers are calibrated yearly with the Iowa State reference samples provided by Dr. Hurburgh's lab. NIR is an approved method and the FOSS analyzers have NTEP approval for use in commerce. NIR analyzers can be found in elevators and labs around the world. With an analysis time of just a couple of minutes NIR has become the main

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Puerto Rico News

by Lizandro Perez, PR Station Manager • lperez@ilcrop.com

Ready for Winter

One year after Hurricane Maria, the images that come to mind show the trail of destruction that it left. But if you look at our farm today there are just some vestiges that tell you that a catastrophic Hurricane went over the island a year ago.

The irrigation pump is finally getting power from the grid. So far power has been steady but about 20% of the repairs that were done around the island need to be redone because they were not done correctly. About 25,000 homes are still using blue tarps on their roofs. Repair jobs on roads, bridges and houses are still in progress but traffic flow is mostly normal. We are close to the end of the hurricane peak season and they are forecasting a less active end of the season.

Crops planted during the summer were corn growouts, soybeans crossing blocks, soybean generation advance and sunflower growouts. Results were good for all projects. We also had a corn project for internal research that was planted by late summer.

The farm is ready for the upcoming winter season. Fields are clean, fences are repaired, sections of the farm roads were widened to make it easier to turn the spraying equipment, farm buildings are repaired, air conditioners cleaned or replaced and some areas painted.

For this coming winter season we are going to implement a change on some of the corn growout plantings. Row length is going to be 3 feet longer with a shorter alleyway. The goal is to get less double plants per row when using the cone planter.

So far our reservations show an increase on corn growout entries and sunflower growout entries. Corn nurseries and isolations estimates are close to the same amount of rows in the previous season. The first two corn isolations were planted in late September. Sorghum nursery rows are going to be significantly lower but we should be planting sorghum growouts entries that are a project that we have not seen during the last 4 years. Soybean, drybean and peanut estimates are still pending but I am expecting the same acreage. Another crop that we should be planting this season that we did not plant last season is barley. We have had a couple requests for Cotton as well so we may plant rows of it.

The tractor with a broken engine has been repaired and is back in service. All tractors, spraying equipment and tillage equipment are working properly. Worn parts on planters were replaced and tested to make sure everything was working properly. The irrigation system was checked and repairs were made. The backup generator for the irrigation pump is in good condition. Lastly, cages for sunflower blocks are set up and ready.

Regarding pest control, the PRABIA and IRAC project to create an area wide insecticide resistance management strategy has been implemented by some of the companies. This strategy was for the control of fall armyworm and corn earworm on corn and cabbage looper and soybean looper on soybeans. All companies agreed to get involved, but due to the hurricane complications some companies were not able to. Results are going to be discussed in October with PRABIA members and at that time they are going to try to incorporate all members in the strategy for the 2018-19 season. At the farm we are partially following this strategy but our plan is to get fully involved.

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tool for determining the composition of whole grains. The IPG lab is well versed in predictions, calibrations and the differences between transmission and reflectance technology. This knowledge is essential to providing reliable results to our customers.

IBRL Open House

Several of our staff recently attended an open-house for the $3 million renovation of the FSHN Pilot Processing Plant at the University of Illinois. Some of the key improvements included: food grade and instructional suites, an industrial test kitchen/teaching lab, and upgraded processing equipment. Because the pilot plant facility serves as a small food processing plant on campus, students are also learning to follow good manufacturing processes, including proper procedures for food handling, equipment cleaning, and personal sanitation. Products such as tomato-based sauces are processed in the plant and consumed in university residence halls. The IPG lab provides compositional testing for several researchers and academics at the University and utilizes some of the equipment available at the new facility.





Illinois Seed Trade Assn

by Greg Smith, President • greg.smith@hubnerindustries.com

Introduction

As your new Illinois Seed Trade Association (ISTA) board president, I would like to take this opportunity to introduce myself to those who may not know me. I have worked in hybrid seed corn and seed bean production my entire career. I spent the first 23 years of my career working in central Illinois at Trisler Seed Farms in Fairmount and Hoffman Seeds in Newman. I later moved back home to West Lebanon, Indiana where I have spent the last 20 years working for Hubner Industries LLC as their General Manager. We produce seed corn and seed beans in both Indiana and Illinois.

Actions in Springfield

As many of you are aware, the ISTA represents and supports the interests of seed companies in Illinois. Richard Denhart, our Executive Director, and Lobbyist, Mike McCreery, monitor both state and federal legislation that may negatively affect your ability to be competitive in the market place.

One of the interests we have been following has been signed into law.

In August, Illinois Governor Bruce Rauner signed the Illinois Hemp Act which legalized the production of hemp for non-drug purposes. Its allowable use would be in items such as paper, fabric, biodegradable plastics, construction materials and health food. In the past, only research institutions and state programs could produce it legally after its ban in 1937. Now, farmers have the opportunity to produce hemp but they must first obtain a license from the Illinois Department of Agriculture for it to be legal. While its effect on the seed industry is unclear, it is possible that the versatility of hemp may impact Agriculture greatly.

The Illinois legislative scene in Springfield has now turned its attention to the November elections. The ISTA will be keeping their eyes and ears open to what this will have in store for us and are interested to see how the election turns out!

Harvest Has Begun

As I write this article, harvest had started and paused with the rainfall from the remains of Hurricane Gordon. We were just getting started again when the east coast began to brace for Hurricane Florence. It appeared it could be a storm for the record books. Even though it was downgraded from a Category 4 to a Catogory 1 hurricane, Florence brought power outages and major flooding with rainfall hitting 30 plus inches in some areas accross the Carolinas. Our hearts go out to the people affected by Hurricane Florence as they begin the recovery process.

Early yields would indicate that this crop could also be one for the record books but unfortunately that's not exactly what we need for long term commodity prices. This will pose another hit to the Agriculture economy. Trade negotiations that are taking place in Washington are also influencing commodity prices. Early season quality looks good at this point, but we have not seen any test results yet.

Please remember to be safe this harvest season. Slow down, pay attention, and don't take any unnecessary risks. At the end of the day your family wants you home safe and sound!

ISTA
ILLINOIS SEED TRADE ASSOCIATION

ISTA Referee Program

Illinois Crop will again be in charge of the Illinos Seed Trade Referee program for the 2018/2019 testing season. The referee was set up and designed to be a self-help tool for analysts to compare how they are doing compared to other analysts in other labs.

This year we will be testing 4 crops; corn, soybeans, sweet corn, and rye seed. Tests conducted will be standard germination, cold test, and accelerated aging on the 3 larger crops and standard germination for the rye.

The tests will be conducted each month, November through February. Illinois Crop will collect the data and then distribute it out to the participants. Last year we had 18 labs with over 60 participants.

Illinois Seed News Continued....

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with the varietal purity. The purity that we call mechanical purity is what most seedsmen in the industry refer to as purity. The mechanical purity exam consists of four main components; Pure Seed, Weed Seed, Other Crop Seed, Inert, and if applicable, five parts containing Coating Material. The components are reported as percentages totaling to 100%. There are two portions that are part of this exam, the purity portion and the noxious weed portion. These amounts vary by the crop kind being tested. The Association of Official Seed Analyst (AOSA) Rules for Testing Seed lists the minimum working weight for the purity portion and the noxious weed portion. The purity portion should consist of approximately 2,500 seeds and the total noxious weed exam portion (including the purity portion) should consist of approximately 25,000 seeds. Pure seed is the component that contains the main crop or crops in a mixture. Weed seeds are weeds that are found that can be either common weeds or noxious weeds. Other crop seed are the other crop seed found in the sample. Inert is anything that cannot be classified as pure seed, weed seed, or other crop seed. After the purity has been separated into the component parts we go through the remainder of the working sample portion looking for noxious weed seed. Any noxious weeds that are found in the noxious weed exam portion are only reported as the number found and number per pound of seed. The noxious weed seeds are not weighed with the seeds in the purity portion. For example, I will describe the purity procedure for alfalfa mechanical purity. According to the AOSA Rules, alfalfa has a minimum purity amount of 5 grams and a minimum noxious weed exam of 50 grams. We divide the sample according to AOSA Rules, dividing the sample through a divider 3 times and mixing back together each time to make sure that the sample is thoroughly mixed. The sample is then divided down to the minimum total weight, which in this example is 50g. Once we have just over 50g, the subsample is then divided down to just over 5g. This will give us a 5g sample for the purity portion and just under 45g for the noxious weed exam. We look at the purity portion and categorize the seed into the 4 portions. Once that has been completed we look through the noxious weed portion for noxious weed seeds. If noxious weeds were found in the purity portion and in the noxious exam portion, only the ones found in the purity portion are calculated into the weed seed percentage. The ones found in the noxious exam portion are only added to the number found and the number per pound. The noxious weeds found in the noxious exam portion are reported as number found. The components are weighed and the percentages are figured and reported. The name of the weed seed and other crop seed is recorded with the number found and calculated to number per pound and reported on the report of analysis. Hopefully this will help clarify the differences between the varietal purity and the mechanical purity. If you have any questions, please do not hesitate to contact me.

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pathogen resistant to quinone outside inhibitor (QoI, also known as strobilurins fungicides) have been found in Illinois. If QoI fungicides do not provide good control, fungicides with alternate modes of action should be considered.

GRAY LEAF SPOT (top)
NORTHERN CORN LEAF BLIGHT (bottom)
on corn

Gray leaf spot and Northern corn leaf blight are common fungal diseases on corn. These pathogens overwinter on plant debris in the field and disease development is favored by warm, humid weather. Susceptible hybrids will show increased infection. Management consists of using moderately resistant hybrids, reducing surface residue through tillage, crop rotation, and applying fungicides at tasseling or early silking if the disease pressure is already high. Because both of these pathogens produce wind-blown spores, rotation alone will not provide necessary protection; using several pest-management techniques produces the best results.

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