

Illinois Crop Improvement Association, Inc.

Annual Report to the Membership

Fiscal Year 2017-2018



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ISO/IEC 17025:2005 Accredited Laboratories

Contents

CEO Report: Eventful Success by Doug Miller.....	1
Seed Lab Report: Continued Growth by Steve Beals.....	3
Field Services Report: Success Through the Seasons by Matt Raymond.....	5
IPG Report: 30 Years by Doug Miller.....	7
Winter Farm Report:Success After the Storm by Lizandro Perez.....	9
Financial Summary: April 1, 2017 to March 31, 2018 by Hannah Hudson/Doug Miller.....	11
Illinois Crop Improvement Association Quality Policy.....	13
2017-2018 Board of Directors Illinois Crop Improvement Association.....	15

Eventful Success

Doug Miller
Chief Executive Officer

The Illinois Crop Improvement Association has had another successful year. To call the year uneventful would neglect the hurricane that made landfall on the south east coast of Puerto Rico in September (2017). Thankfully our employees were safe and the farm did not receive much damage to its buildings and equipment. Only a few projects were in the field and seed was salvaged avoiding the total loss that one might expect from driving winds, rain and flooding. Our dedicated staff and crew were back at work the following Monday and began clean-up and preparation efforts. Sunflower growout acres were down significantly as customers were not convinced that the Puerto Rico farm could have a normal season after storms had ravaged the island. We were concerned as well but made the decision to press on. In most respects the 2017-18 season was a success with a few problems that we had not dealt with in recent memory. Insect pressure was very low for much of the season. However, fungi took their toll on corn projects robbing breeders of precious seed just prior to harvest. I can assure you we have learned our lesson.

In Illinois, the number of acres inspected continued its decline while the number of customer and samples handled by the seed lab continued to increase. Brittany Whitsitt became a Registered Seed Technologist, Steve Beals became a Canadian Grader and the seed laboratory was officially recognized by the Canadian Food Inspection Agency. In the quality department, customers were made aware of the potential for mechanical damage to soybean seed as soon as we were confident it was an industry concern. As the host of this year's Illinois-Indiana Seed Condition Workshop, updates were provided to attendees on mechanical damage in soybean

seed as well as Palmer amaranth/pigweed seed testing and the possible effects of dicamba on seed production. Diane Plewa from the University of Illinois Plant Clinic talked about what I consider the best pigweed identification test available. A bulk screening of up to 100 pigweed seeds that is both accurate and affordable. I am thankful for the partnership with the Plant Clinic and weed scientists at the University for their efforts in this area. We can also be proud of Matt Raymond, our Field Services Director, for producing reference quality Palmer amaranth seed that is used by the Plant Clinic and other labs for reference and validation testing.

The Identity Preserved Grain lab is celebrating its 30th year. The lab has the least to do with our original role as a seed certifier in some respects but supports an industry that carries the concept of seed production practices and standards through to the delivery of grain destined for a specific end-user or market. The lab was again a provider of testing services and sample handling for the US Grains Council's Corn Harvest and Export Quality reports managed by Centrec Consulting. The lab is still unique to the industry providing a third-party resource to researchers, plant breeders, seed companies, grain merchandisers and processors. Its influence can be seen in the food grade corn, soybean and wheat markets both around the corner and around the world.

I would like to close by saying the people of Illinois Crop put their hearts into everything they do. Treating the customer's seed, grain and plants as if they were their very own. I remind our employees that I am not the boss. The customer is the boss you need to impress. I believe they have taken this to heart and would like to state for the record that I am also impressed. I appreciate the opportunity to lead this great organization. Thank you.

Continued Growth

Steve Beals, Registered Seed Technologist
Seed Lab Director

Brittany Whitsitt became a Registered Seed Technologist with the Society of Commercial Seed Technologists in June 2017. She had been preparing for the RST exam since the spring of 2015. Brittany has been with Illinois Crop since the summer of 2014 when she began working as a field inspector and then later transitioned into the Seed Laboratory that fall. The Illinois Crop Seed Lab team now consists of 3 Registered Seed Technologists: Brittany; Gary Cook, Chief Analyst; and Steve Beals, Seed Lab Director. The team that we have assembled builds on the knowledge and experience that we possess, allowing the Illinois Crop Seed Lab to be recognized as one of the leading seed testing laboratories in the industry.

In August 2017, several of our lab employees and I attended the Illinois Seed Trade Liaison Committee fall workshop that was hosted by Indiana Crop Improvement Association. It was a great workshop with several informative presentations. Brittany Whitsitt talked about Amaranthus seed testing options for the presence of Palmer Amaranth. I filled in for Mike Stahr as the corn germination presenter. The workshop was very successful and enjoyed by all who attended.

The Seed Laboratory purchased 2 seed counters this year. One to perform seed counts and one for counting seed for planting. The first was a Data Count S-60 Plus from Data Technologies that will primarily be used for seed counts. This counter has the capability to count many different species unlike our older counters that had a limited number of species that could be counted. This counter is also much faster than our older units allowing us to go from 3 counters to 1 with the same volume. The second counter purchased was a Data Count S-JR also from Data Technologies. This counter is designed for smaller sized seed and is extremely fast at counting out

the specified number of seeds needed, in our case 4 reps of 100 seeds. It is more efficient than counting by hand and will expand the number of species that we can count with a mechanical counter.

As a result of increased workflow, we have added 2 additional purity stations in the lab. These new stations will be outfitted with a purity board and a new lighted magnifier. This addition now allows us to have 8 purity stations for working purities and separations. We are in the process of looking to add additional germination chambers to handle the increased sample work load as well.

We are very pleased to announce that Eunsoo Choe, Ph.D. became a full time employee of the Illinois Crop Seed Laboratory on March 26, 2018. Eunsoo was born and raised in Suwon, South Korea. She earned a B.S. in Architecture in 2002 in South Korea and then earned a M.S. and Ph.D. degree in Crop Science at the University of Illinois in 2010. Eunsoo's dissertation was on marker assisted selection and breeding for desirable thinner pericarp thickness and ear traits in fresh market waxy corn germplasm. Eunsoo is in the beginning stages of becoming a Registered Seed Technologist. She will be able to take the exam in the year 2020. The Seed Lab currently has 10 full time employees. We have 3 Registered Seed Technologists, 4 Seed Analysts, 2 Seed Technicians, 1 Data Entry Clerk, and several part time employees.

The germination quality on corn this past season was on par with the averages that we have seen in the past few years. This year we did see a difference in soybean germinations. The germination results tended to fall off as the winter months progressed into spring. I believe that the germinations decreased because of the environmental conditions that the soybeans were exposed to during the growing season. This in turn caused the integrity of the seed coats to be compromised allowing the seed to be susceptible to mechanical damage. The damage could have occurred during harvest, storage, handling and conditioning or a combination thereof.

Success Through the Seasons

Matt Raymond, Registered Genetic Technologist
Field Services Director

Illinois Crop's Field Services Department encompasses two different and distinct seed services; trait testing and field inspections. These two services have opposing work periods that complement each other and follow a rhythm with the growing season.

As fields are planted in the spring, the department shifts from testing seed in the lab and greenhouse to inspecting fields throughout the state. Field inspections during the growing season include collecting field purity data for Certification, Quality Assurance, Breeder programs, taking tissue samples for pathogen analysis through our National Seed Health System accreditation for phytosanitary inspections, and walking hay and straw fields for weed free mulch and straw certification administered by the North American Invasive Species Mgmt. Assn.

Once harvest begins in the autumn it signals the transition from the fields back into the lab and greenhouse. Trait testing and GMO detection become the focus again as seed samples from the fields start to arrive. During the testing season it is common to have other seed labs send us samples for analysis for their difficult or unusual herbicide trait tests since Illinois Crop provides testing options not routinely offered at other labs. After testing seeds throughout the winter months, spring comes around again and the whole process starts over for another year.

In addition to inspections and trait testing, Field Services also conducts special projects and custom work for customers when opportunities arise. The greenhouse that is predominately utilized for herbicide trait testing had a couple of projects this past year; a tissue sampling project and a soybean crossing block.

The tissue sampling project was performed at the request of one of the major trait providers. The customer wanted to keep specific plant materials isolated and required an off-site growing location in a greenhouse for corn tissue production. The samples were grown in the Illinois Crop greenhouse over the winter months during the normal testing season. As the samples matured and reached specific

growth stages, leaf punches of individual plants were harvested and expedited back to the trait provider for analysis. The customer was pleased with the initial run of corn samples and repeated the project with cotton at a later date.

The soybean crossing block was carried out in the greenhouse during the summer months which made for a warm working environment. These specific soybean parent lines were brought into the greenhouse instead of a traditional field setting to help control factors such as insect vectored pathogens and environmental growing conditions. Past attempts at crossing these lines in the field had been challenging and the greenhouse provided a beneficial growing environment. It was a new experience as soybean crossing had not been attempted in the greenhouse in my 11 years with the company. In early fall the materials were harvested and sent back to the customer for analysis. The customer tested the crossing materials and was very pleased with the number and quality of successful crosses produced.

The Illinois Crop field inspectors are the lifeblood of the department's inspection programs. Many of the veteran inspectors have been with the company for years and provide invaluable knowledge and experience. I would like to recognize the following returning inspectors for their excellent service to the company.

Jack Stork- Jack is currently our longest serving field inspector. He started in 1972 and has 46 years of walking fields under his belt and is still going strong. Jack is based out of Jersey County and performs small grain/soybean inspections and conducts IRM assessments.

Allen Hirtzel - Al isn't far behind Jack, he came on board in 1978 and has 40 years of service. Al is based out of Effingham County and is also one of our premier small grain/soybean inspectors.

John Timmons - John is located in Macon County and has been inspecting for 30 years. He was hired in 1988 and performs purity and phytosanitary inspections for corn and soybeans within his region.

Inspectors, such as these, enable Illinois Crop to provide the high quality services our customers expect from us. With over 87,000 acres and 1,600 fields inspected in Illinois in 2017 it takes a coordinated attack among the 40 plus field inspectors to get it accomplished. I am looking forward to another year of working with our excellent field staff and can't wait to see what the upcoming growing season will bring.

30 Years

Doug Miller, CEO with
Sandy Harrison, Identity Preserved Grain Lab Supervisor

It will be hard for some of our members to believe but in 2018 the Identity Preserved Grain Lab will celebrate its 30th birthday. During the late eighties Jim Shearl, former Illinois Crop Improvement Manager, observed the evolving interest in the concept of identity preservation. The food and feed industries along with the seed industry saw the potential of using corn, soybean and other crops to develop new products by maintaining the identity of specific hybrids and varieties. At the same time commodity groups such as the National Corn Growers Association and the American Soybean Association were looking for new markets for their respective products.

In the late 1950's Louis West and Sam Huey found the demand for clear hila soybeans in Japan and using certified seed of clear hila varieties delivered an identity preserved crop to its customers. The idea of identity preservation grew and began to influence the research and breeding efforts in the seed industry. Today the Identity Preserved Grain Lab evaluates soybean lines for processing characteristics and yield such as soy milk, tofu as well as protein and oil content.

The University of Illinois was fully engaged in utilization work as demonstrated through its biotechnology and agricultural engineering efforts at the National Biotech Center, National Soybean Research Laboratories and the Departments of Ag Engineering and Ag Economics. The key figures at the University that helped with the genesis of the Identity Preserved Laboratory included Dr. Donald Holt, Director of the Ag Experiment Station and Dr. John Campbell, Dean of the College of Agriculture at the University of Illinois. The incubator facility on the south farm for technology transfer, where the Identity Preserved Grain Lab got its start, was one of Holt's and Campbell's projects.

Dr.'s Marvin Paulsen, Steve Eckhoff and Lowell Hill helped elucidate the role of such a grain lab through their work on grain utilization and the goals of the corn and soybean commodity groups. With board approval Jim Shearl and Dr. Holt submitted a grant application to the Illinois Department of Commerce and Community Affairs. The money request was for the latest in grain analysis. Near Infrared reflectance or NIR gave Illinois Crop Improvement its start in supporting the Identity Preserved Grain industry.

Ruth Sinn was the first lab manager while the lab was housed in one room at the incubator building on the U of I South Farm. Dr. Steve Mbuvi began with the lab in 1991 after working with Dr.'s Paulsen, Eckhoff and Hill. Under Steve's leadership the number of offerings from the lab expanded and the data base supporting the protein and oil analyzers became quite extensive. This plethora of data helped the lab move from analyzing ground samples to analyzing whole grain samples. The lab also developed more tests that both processors and breeders were interested in. Another breakthrough was the development of small batch tofu testing reducing the amount of soy needed for testing from 135 kilograms (5 bushels) to a few hundred grams. With the development of new tests and a new direction more and more non-seedsmen came to know the Illinois Crop Improvement Association and the concept of Identity Preservation for the development of improved products, feeds and foods. So please join us in wishing the Identity Preserved Grain Lab a Happy Birthday in 2018.

Success After the Storm

Lizandro Perez
Puerto Rico Station Manager

This fiscal year 2017-18 was not a typical year for Puerto Rico after being affected by a category 4 hurricane. Under normal circumstances in September we are doing ground preparation, but last September we were getting ready for the storm and then removing debris from the fields after it was over. Communication with customers, to coordinate their projects, was very poor during this time due to the damage caused to the communication infrastructure. Most of the communication was done from our Champaign, Illinois office. To complicate it more, all fences around the farm including our neighbors fences were down and horses were getting into the fields. Materials for a solar powered electric fence were sent from Champaign and it was installed around the farm. In addition to the farm situation, every employee was dealing with their own house and family situations. The Farm Plaza area was without power until February 2018. Approximately 5 months without electric service. Before that we were using a PTO generator. Our tractor engine broke due to the intensive use of the generator. The farm irrigation pump does not have power from the grid and we are still using the generator for irrigation. We were able to plant our first project by late October 2017 but then we went through a rainy period delaying most of our plantings. But in spite of all the complications we were able to plant all of our fields except one during a reasonable time frame. Only one project was not planted because we lost the planting window for it and seed had to be sent back to the client.

Conditions of early planted crops were good to excellent. Insect and disease pressure were very low but we did have ear mold problems on corn nurseries. For late planted corn

nurseries insect pressure was high but all measures were taken to control insects and prevent ear mold with acceptable results. Corn nurseries and increases results were average to poor but corn growouts were excellent. Soybean results were good to excellent with the exception of one small project that had seed quality issues. Sunflower acreage was significantly lower than the previous year but results of projects planted were excellent. Sorghum project results were also good to excellent. Last year there were issues with peanut moisture but this year measures were taken and good quality seed was shipped to our clients. Harvest of second cycle soybeans is finished and farm ground has been worked to have it ready for next season. The Southern area of Puerto Rico is under unusually dry weather according to United States drought monitor. With almost everything back to normal and a lot of lessons learned, our staff is in good spirits and getting ready for the next winter season.

With the exception of the tractor that needed an engine rebuild all other equipment is working properly. Farm building repairs and checking all equipment are on the schedule for this summer.

Lastly, I want to give you an update on the Puerto Rico government's financial situation. For the upcoming school year around 200 public schools will be closed. Incentives for every sector are being revised and it looks like agriculture is going to be heavily affected. Merging of government agencies are also on the scope. Labor laws are also being modified. This is a long term and slow process that we will have to go through in order to have a better Puerto Rico in the next decade.

Illinois Crop Quality Policy

The Illinois Crop Improvement Association, Inc.
is dedicated to providing superior
laboratory testing service to customers by:

- ◆ implementing good professional practices,
- ◆ requiring that all laboratory personnel familiarize themselves with the quality documentation and implement the policies and procedures in their work, and
- ◆ continually improving our quality system.



Illinois Crop Improvement Association, Inc.

Puerto Rico Winter Farm Quality Policy

The Illinois Crop Improvement Association, Inc.
in Juana Diaz, Puerto Rico is committed to:

- ◆ adhering to all regulatory and stewardship requirements.
- ◆ maintaining a high-level of quality and strong customer service within an environment that has safety as a first priority, is focused on the customers, and fosters continual improvement



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