AEIC 2022 Fall Meeting Minutes

P.L. Hunst, AEIC Secretary

Hosted by J.R. Simplot Company, Inc. and held in Boise, Idaho on October 19-20

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AEIC Fall 2022 Meeting Minutes

October 19-20, 2022

Boise, Idaho

P.L. Hunst (BASF), Secretary

The AEIC Spring 2022 Meeting was held on October 19-20 with approximately half of the attendees in-person and the other half joined virtually. Donna Houchins, AEIC Vice President, welcomed everyone to the meeting and presided over the round table in-person introductions following the antitrust reminder.

Scott Simplot, Chairman of J.R. Simplot Company, welcomed the group to Boise. J.R. Simplot Company is 92 years old. The main site is located in downtown Boise. J.R. Simplot is a diversified company and recognizes the vital role agriculture plays globally. As we have seen, the food supply was compromised by the Ukraine war. Thus, it is important to explore new technology to keep the food supply chain intact.

Muffy Koch, Senior Regulatory Manager provided an overview of J.R. Simplot. The company is privately owned with 13,000 employees, production in six countries and exports to over 60 countries. JR. Simplot is involved in mining, agrochemicals, crop production, food processing, ranching, animal sciences and plant sciences. Products include potatoes, sweet potatoes, vegetables, fruits, avocados, etc. Simplot Plant Sciences has 85 employees and develops biotech crops. Groups within Plant Sciences include plant biology, molecular characterization, regulatory and food science. Plant Sciences are working on disease resistance and processing in potatoes, storage improvement and increased yield. Plant Sciences was started in 2002 and the first GM potato was released in 2015, 2017 and 2022. Plant Sciences has had a USAID project on late blight resistance in Indonesia and Bangladesh.

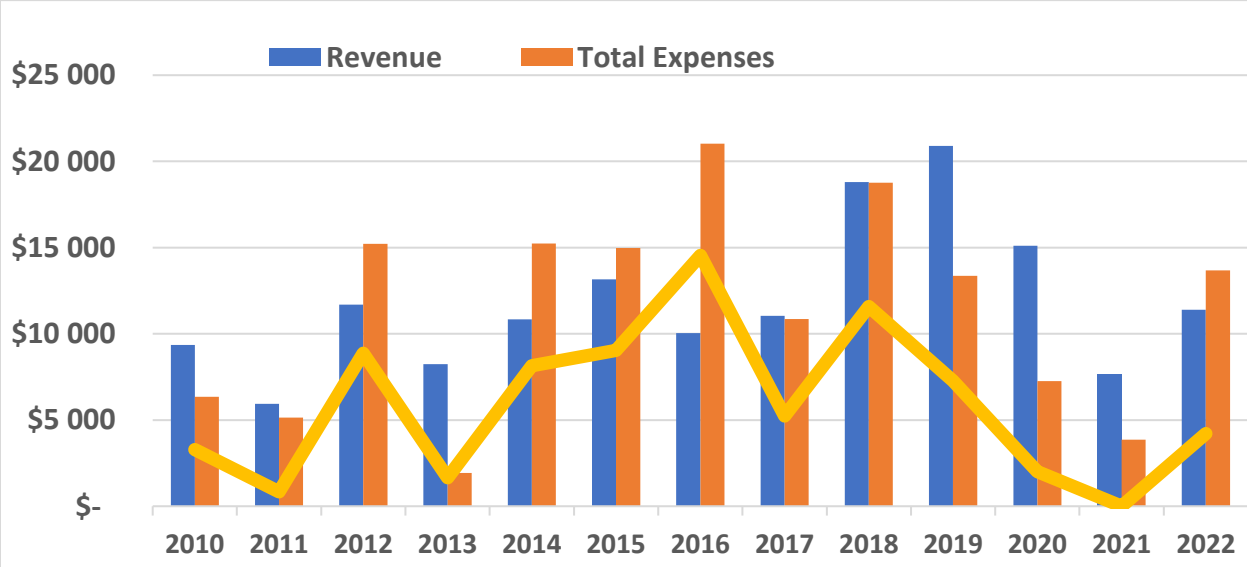
AEIC BUSINESS MEETING

Approval of 2022 Spring Meeting Minutes: A motion was made and seconded to approve the minutes posted on the website. Motion was approved by member vote.

Treasurer Report (L. Muschinske): The Treasurer presented the 2022 budget as follows:

AEIC 2022 Budget Summary			
	Planned	Actual	
Beginning Balance as of January 1, 2021	$ 39,966	**$ 40,029**	Account balance as of 1/20/21
2022 Membership Dues Received	$ 7,050	$ 6,750	
Meeting registration fees - Spring Meeting	n/a	n/a	
Meeting registration fees - Fall Meeting	TBD	$ 4,650	
Total Projected Revenue	**$ 7,050**	**$ 11,400**	Actual YTD Revenues
Expenditures			
Scientific Paper	$ 2,000	$ 5,750	CWG Testing (Eurofins to be paid
DE Franchise Tax Report - Report generation fees	$ 25	$ 25	
ANSI/ISO Initiative (AOCS - ISO TAG)	$ 2,900	$ 2,900	
Board Meeting Expenses	$ 300	$ 300	Est
Spring Meeting Expenses (including speaker travel allowance)	$ 1,000	$ 500	
Website hosting, maintenance, security	$ 500	$ 230	
Credit card processing and bank service charges	$ 150	$ 258	
Fall Meeting Expenses (including speaker travel allowance)	$ 6,000	$ 3,720	Est
Graphic design material creation	-	-	
Marketing (Update and redo brochure/website)	-	-	
Subscriptions – conferences	-	-	
Miscellaneous	In Process	In Process	Fed Tax Exemption Status
Total Projected Expenses	**$ 12,875**	**$ 13,683**	Actual expenses
PROJECTED BALANCE	**$ 34,141**	**$ 37,746**	Current Balance

Trends: Meeting Expense



A motion was made/seconded and voted positive to accept the Treasurer update.

Membership Update (L. Muschinske): The following table depicts the current membership composition of AEIC:

AEIC 2022 Member Summary				Updated: 10/17/2022
		Potential Dues	Unpaid	Amount Unpaid
Large Corporate Members (1,000+ employees)	**6**	$ 3,000	0	$0
Medium Corporate Members (50 to <1000 employees)	**11**	$ 2,750	0	$0
Small Company Members (< 50 employees)	**11**	$ 1,375	1	$125
Associate Members	**3**	$ 75	0	$0
Individual Members	**2**	$ 100	1	$50
(subtract Eurofins GS and LGC overpayment in 2021)		$ (375)		
TOTAL	**33**	$ 6,925	2	$175

There were two non-renewals: American Bionostica was acquired by Ethos so they are evaluating memberships and Green Heron did not respond to invoice. Two new members were added: Gates Foundation Agriculture Division (C. Dharmasri) and Kemp Proteins (C. Mitchell).

AEIC Vice President Nominations: Nominations were opened for the office of Vice President of AEIC. This is a 3 year commitment as the first year is served as Vice President, the second year is served as President and the third year is served as Past President. Nominations were taken at the meeting: John Zheng (Indiana Crop Improvement), Sherri Whitt (BASF), Chelsie Metzler (BASF). Nominations are open until November 4. Nominations should be sent to the AEIC Secretary, Penny Hunst. A ballot will be sent out after November 4 and **each member company** will be able to vote electronically.

Spring Meeting 2023: Indiana Crop Improvement Association has tentatively agreed to host the meeting in Lafayette, IN. Dates will be determined by the Board with input from the host company.

Suggested topics: AEIC 30 year anniversary (history/accomplishments); gene editing advances/regulations; plant pathogen testing; biotechnology at USDA (Anastasia Bodner); proficiency testing on other crops and using other technology; bioinformatics data focus; geopolitics and agriculture; cover crops and their use.

Protein Working Group Updates (C. Ament/Eurofins): The Protein Working Group (PWG) is co-chaired by Chis Ament (Eurofins) and Tao Geng (Bayer) The PWG currently has 5 active work streams (Multiplex Validation, MS for Protein quantification, Allergen Analysis, Extraction Efficiency, Intractable Proteins/Characterization). The **allergen analysis** work stream has 12 members who meet monthly and is working on the pepsin digestion assay. A manuscript draft outline is almost complete and describes further standardization of the method and also includes recommended method parameters and rationale. The ISO standard discussion for the method has been paused. The **multiplex validation** work stream has 7 members who are working to publish guidance for standardized validation parameters and acceptance criteria for single-plex and multiplex protein analysis methods. The first draft is being worked on with a projected completion date of end of 2022. The first half of 2023 will be used to complete the draft. The **MS for protein quantitation** has 11 members and is drafting a paper reviewing/summarizing ELISA and MS (3rd draft round and version 4). The manuscript is in the finalization stage. The group is planning to send the manuscript for company review in November. The **extraction efficiency** group has 8 members and is discussing methodologies for establishing extraction efficiency and plan to publish a paper on these. The group has identified similarities across all four methods for soluble and insoluble extractions and western blot analysis by densitometry. All methods are scientifically sound and can be applied to determine the overall extraction efficiency. The plan is to have a first draft manuscript in Q4 2022 and journal submission in 2023. The **intractable protein** group has 15 members and is working on reviewing protein characterization, production and quantification methods to address technical challenges with intractable proteins. The goal is to standardize methods and harmonize endpoints of characterization. The manuscript is drafted. The PWG is also discussing "ambiguous results for protein methods" and whether this should be a standalone workstream or incorporated into another workstream. The PWG is also asking for volunteers to help update FAQ section on the AEIC website.

Composition Working Group (M. Bedair, Bayer): The group is working on ways to support acceptance of combustion (Dumas) vs the Kjeldahl method in the biotech industry for estimation of crude protein levels. The literature review is done. The group will map out the way forward to provide the necessary support for the combustion method (Dumas). The Dumas method uses non-corrosive chemicals and is capable of high throughput. The CWG is also looking at folate (vitamin B) analysis by LC-MS/MS to replace the microbiological assay. The group is also looking at technical challenges for using the "omics" technologies.

Nucleic Acid Working Group (F. Ghavami, Eurofins BioDiagnostics): The group was established in 2021 and has 21 members. The NAWG is discussing updating the AEIC website with latest technology information such as information on NGS methods, digital PCR, RT PCR, endpoint PCR, isothermal methods. A working group is addressing the updating of the website FAQ section. The group is also thinking on harmonization of nucleic acid analytical tests standards (ISO) and providing education to the public sector and regulators. Educational documents could include gene editing and

PCR/qPCR. The WG has had one call which also included participation of some grain traders to hear their perspective. The group will look at qualitative/quantitative methods; mixed and modified matrices; certified reference materials and multiple GM traits.

Ambiguous Results Working Group: The group has 16 members and had one group call which also included grain traders in order to hear their concerns. The group is discussing qualitative/quantitative methods, mixed and modified matrices, certified reference materials and multiple GM traits. Grain and feed challenges heard were issues with regulatory agencies and the impact on industry.

Website Updates (D. Houchins, Romer Labs): The group has finished the editing of the "About" section and have also gone through the links and websites under "References" and are now working on 'FAQs'. For the slide deck, the webmaster created a template which now needs to be in 16:9 format. Current slides on website are now on a google site for editing and are being checked for copywright of any of the content.

ISO Update (M. Sussman, USDA AMS): ISO TC34/SC16 is the Biomarker Group which has 45 countries interested in its work. R. Shillito is the Chair, M. Sussman is the Committee Manager and D. Williams is the TAG Secretary. There are 8 WGs in TC34/SC16 which include: meat speciation, sub-sampling of seeds/grains, rapid nucleic acid amplification methods, biobanking for agriculture and food production, molecular biomarkers of agricultural fiber-cotton, microarray detection, genetically engineered content detection and quantification, single laboratory validation of qualitative real-time PCR. About 40 documents are done or are in progress. ISO is a big publishing platform for groups that have methods they want to have published. Anyone who is interested in participating in TC 34 should contact Denise Williams at AOCS. Other ISO committes are: ISO/IECJTC 1etc> compression of lg NGS datasets and metadata; ISO/TC 215-genomics informatics; how to handle all NGS medical data; and ISO/TC 276 Biotechnology; biobanking, molecular methods.

AOAC (L. Muschinske, Eurofins): The 2023 Midwest Meeting is asking for participants who would like to chair sessions at the meeting. Those interested should contact Chris Ament (Eurofins) for more information.

The AEIC Business Meeting was adjourned.

INVITED TALKS

Potatoes 101: Introduction to Varieties, Uses and Propagation (J. DeMond, J.R. Simplot): Potatoes are autopolyploids and tetraploids. They are vegetatively propagated by seed pieces with "eyes" thus the progeny is identical to the parents. There are 519 potato varieties in the U.S. Potatoes are used as fries, fresh, chips, dehydrated for mashed potatoes. Potatoes are 80% water and perishable. Storage has to be provided year around. They are easily bruised and disease prone. Simplot's Innate

potatoes are genetically modified to introduce wild potato genes into varieties. Innate GEN1 have RNAi to lower asparagine content, reduce black spot (PPO reduction), and decreased content of reducing sugars. Innate GEN2 have same traits as GEN1 plus gene for late blight resistance. Innate GEN3 incorporates a new construct with similar traits to GEN1 and 2. GEN3 has 2 more genes for late blight resistance and PVY protection. PVY is a virus transmitted via aphids which causes a necrotic ringspot resulting in 10-80% yield loss.

Global Regulatory Strategy for Potatoes (G. Rudgers, J.R. Simplot): Deregulating a vegetatively produced crop is challenging with many politics involved. There are approximately 1 million acres of potatoes grown in the U.S. as compared to 90+million acres for corn. Simplot follows ETS policies by doing trade assessment, where the crop is grown, number of acres, uses, scale of blending and distribution. The main export countries are Japan, Canada, Korea, Mexico and United Kingdom. There is no export to the EU as they have their own potato varieties. The potato frozen market is in Asia and North America, thus regulatory approvals are predominantly sought in these countries. Innate potatoes are produced for the fresh market and have been sold in grocery stores since 2015. They are also used in U.S. food service and one major restaurant chain is using them. Processed potatoes are used in refrigerated products (i.e., potato salad); dehydrated (mashed potatoes) and frozen. Innate potatoes are managed under closed loop stewardship process. There are dedicate packing sheds for fresh uses. There are 13 billion pounds of potatoes produced in Idaho which translates to approximately 26 billion potatoes. Potatoes are fed to livestock in the raw form. Cooked/processed waste may be fed to pigs thus feed approvals are sought in various countries. The Innate varieties are managed under closed loop stewardship. Seed approvals are sought in countries based on the commercial use and sales. The regulatory challenges include the country agencies asking for data that does not pertain to vegetatively propagated crop such as asking for data on the genetic stability across generations. Another challenge is the request for reference material as agencies are used to seeds. Potatoes cannot be shipped easily because they are highly perishable, thus cannot provide intact potatoes as reference material. In composition analyses, there are also requests to measure analytes that are not relevant to potato such as dietary fiber, protease inhibitors and phytase. Also there is an efficiency of having more than one potato event in a single submission but countries want separate submissions for each event.

Intractable Proteins (R-protein) in Potatoes (M. Pence, J.R. Simplot): The Bushey, et al. (2014) paper defines Tier 1 data as hazard identification and includes history of safe use, allergen/toxin bioinformatics which do not require protein isolation. Tier 2 data is for hazard characterization which requires animal feeding such as acute tox and repeated dose tox. Alternatives are needed to these tests for intractable proteins since high doses of the test proteins are needed. Heterologous expression systems are not available and intractable proteins have in planta low expression levels and are generally unstable and insoluble under purification conditions. Intractable proteins

include membrane bound proteins, signaling receptors, transcription factors, glycosylated proteins and plant resistance proteins (R-proteins). Tier 1 (hazard identification) is focused on when working with intractable proteins as it is next to impossible to perform Tier 2 studies. R-proteins are found in all plant species and function in effector triggered immunity. R-proteins recognize pathogen secreted effectors. R-proteins are toll interleukin-1 (intracellular signaling domain) or coiled-coil domains and bind nucleotides. They also have rich leucine rich repeat domains and initiate a signaling cascade (hypersensitive response). The late blight organism is Phytophthora infestans which is an oomycete that infects potato foliage and tubers. Late blight causes rapid necrosis of infected plants so large of amounts of fungicides are used to prevent the disease. The *RPI-vnt1* gene, which protects against late blight, was identified from *Solanum venturi* (wild potato species native to Argentina). *RPI-vnt1* encodes the VNT1 protein. Heterologous expression and purification of active VNT1 in quantities sufficient for regulatory biosafety studies is problematic. Purification results in aggregated protein in inclusion bodies. There has been little success in getting VNT1 protein out of the inclusion bodies. For VNT1 protein have to rely on Tier 1 assessment, i.e. source of gene (from a wild potato species), bioinformatics of protein, mode of action. Bioinformatics show that VNT1 has similarity to other R-proteins (77-90%) and has no allergen or toxin similarity using the COMPARE and UniProt databases. VNT1 causes hypersensitive response in plants that have R-proteins. VNT1 is not detectable in Innate potatoes (LOQ = <500ppb). Low exposure is shown based on calculations but since VNT1 cannot be purified no acute tox work can be done. Commercial varieties such as Acclimate, Hibernate, Elevate and Alouette (from EU) all contain *RPI-vnt1*.

Detection Methods for Innate Potatoes (C. Lamb McFarland, J.R. Simplot): Wild potatoes are tetraploids (chromosome number 4X the monoploid number) and cultivated potatoes are autotetraploids (four copies of the single genome due to doubling of ancestral chromosome complement). Potatoes follow a diallelic model meaning there are multiple alleles at a gene locus. This leads to dosage effects and allelic interactions. Simplot uses wild and cultivated potato genes in gene cassettes which are used to transfer the genes to cultivated varieties. Innate GEN1 have RNAi to lower asparagine content, reduce black spot (PPO reduction), and decreased content of reducing sugars. Innate GEN2 have same traits as GEN1 (transferred via retransformation with a different plasmid) plus a gene for late blight resistance. Innate GEN3 incorporates a new construct with similar traits to GEN1 and 2. GEN3 has 2 more genes for late blight resistance and PVY (potato virus Y) protection. All the traits are dominant with 1 copy of DNA for expression. Since all lines have same construct, want to be able to screen conventional plants for presence of Innate traits. For event detection, the unique junction between the genomic DNA and the insert or the unique junctions within the insert are targeted. Use of fresh tubers for PCR causes inhibition of the reactions. Thus, the samples need to be diluted or inhibitor can be neutralized by qPCR mix. Processed potato samples have damaged DNA. The endogenous gene control is APRT, found on 4 copies in the genome. Simplot has agreements with other

labs to do testing (OMIC and Eurofins). Purity testing is done throughout the season looking for the Innate events. Reference material is also used for testing.

Stewardship and Compliance of Innate Potatoes (R. Weatherston, J.R. Simplot): Regulated compliance means all laws are complied with; operate within regulatory authority requirements and consider international regulations. Innate potatoes are cultivated using a closed loop system. This helps to protect the reputation and company resources and stakeholders and also the potato industry. Closed loop requires licenses and contracts, SOPs and a recording system to capture all activities. Training is required and provided. Audits of conformance are performed against stewardship requirements. All activities and unintended activities have to be recorded and all records maintained. Stewarded IP is done to protect the company's IP. Seed stock is produced from the use of hydroponics. Mini tubers are first produced with are FS1 and FS2 (FS = Field Seed). Commercial growers buy FS3 and FS4 which are taken to growers, cut into pieces (each piece has "potato eye") and then planted. When potatoes are mature, the plants are treated with a dessicant to facilitate a uniform harvest. The potatoes are stored following harvest and then go to consumer uses.

How to Give an Engaging Presentation (A. Himegarner, Eurofins): Public speaking is the #1 fear of most people. Before doing a presentation, one must prepare and practice. To prepare, one must understand content and what do you want the audience to remember. Also, understand who is the audience, i.e., backgrounds, interests in topic. And always be aware of how much time you have. Write out the presentation, summarize on note cards and practice. It is always good to videotape the practice and time it. It is always good to share some information about yourself with the audience and try to add a little humor. Storytelling helps to connect the audience with you. Do's: use bullet points; use photos,images, videos; face and engage the audience and walk around if possible. And have fun. Don't: use sentences or paragraphs on slides; use small fonts; read your slides; turn your back to the audience; be too serious; use animations. For virtual presentations, start with an interactive game or survey. Always remember to pause and ask for questions and ask open-ended questions. In a virtual presentation, DON'T talk, talk, talk and not pause to listen or run out of time and have no time for questions.

Sustainability in Agriculture (B. Wilson, J.R. Simplot): Sustainability is people, planet and prosperity. Forty percent of the world's food comes from irrigated land which means water stewardship is important and starts with nutrient production. Simplot's Idaho plant uses 46% less water than previously due to efficiency in processing. There are only 2.5% of potatoes left behind in the field. There are 1.3 billion tons of food wasted globally every year. This translates to 45 trillion gallons of water also wasted. Simplot has an avocado business in Mexico where all organic waste is recycled. Farms and ranches need to work with partners to understand how to work better. More information about food sustainability can be found at www.simplotfoods.com. The farm to table movement looks at the carbon footprint, efficiency, where food is made

and sustainable suppliers. One-third of farmers are still managing without a computer for their business. Collaboration between industry associations, value chain partners and environmental organizations is the key. The Lake Winnipeg Basin water stewardship project evaluated the value of water to the community and then create water stewardship plans and measure the benefits to optimize the plans. The Natural Resource Conservation Service teaches about soil health. There is work with the Nature Conservancy to look at cover crops and the impact on the environment. The Farm Journal issued a report on the state of sustainability. The report recommends understanding what the issue is and then utilize a systems approach. Markets also need to change.

Potato Breeding: Challenges and Opportunities (C. Schmitz Carley, Aardevo): AARDEVO is a joint venture between KWS and J.R. Simplot. Most potato breeding is done in the public sector at land grant universities. The desirable characteristics are male/female fertility for crossing; formation of few seedballs on plants; emergence uniformity for foliage; quick canopy closure; nitrogen use efficiency; disease and pest resistance (Colorado potato beetle resistance, early and late blight resistance, PVY resistance; senescence timing. For tubers, the desirable characteristics are yield; appearance; processing quality; free from defects (chaining, regrowth, greening, cracking, hollow heart, bruising); resistance to storage shrink; cold-induced sweetening; rots resistance. Potato breeding can be summed up as "120 years of good enough". Russet Burbank is the most grown of all seed potatoes. In 1930, russet Burbank made up 4% of all potato acres. Flowers on potato plants can be cross-fertilized and then the tuber eyes are used. The tubers are multiplied clonally which allows for a more complete phenotype. However, more disease is also accumulated. Breeding is a numbers game. It takes 8 years to get one line that is acceptable. Each one is taken to tissue culture to clean up prior to distribution for growing everywhere. The potato genome was published in 2011. The tetraploidy of potato made it difficult to do. Work is progressing on trying to move to diploid for breeding. Many tools have been developed to deal with this in last 5 to 10 years. Breeding challenges include quality trait requirements for processing; field season is followed by the second season (storage); multiplication time for testing and commercialization; diseases vectored by propagation. Breeders cannot improve existing varieties as they cannot add new traits. Using a diploid offers more opportunities such as true potato seed, hybrid cultivars, botanical seed multiplication, line development and bring performance up to 4X level.

Advances in Molecular Breeding (F. Ghavami, Eurofins BDI): Markers have evolved from isozymes, storage proteins (PAGE), RFLPs (restriction fragment length polymorphism), RAPDs (random amplified polymorphic DNA), AFLP (amplified fragment length polymorphism), SSRs (simple sequence repeats), SNPs (single nucleotide polymorphism). SNPs are based on amplification on a regular PCR machine and detection with an imaging system. Genotyping is done by Taqman with a probe specific to SNPs which is sometimes difficult to design. KASPar markers are used in comparative allele specific PCR assays which is cost effective chemistry SNP genotyping. Array-based genotyping

is the golden gate genotyping assay which can genotype 96 or 384 samples for 384 to 3072 SNP loci simultaneously. Illumina has produced different chips and arrays for greater identification. Next generation sequencing was commercialized around 2007. Illumina revolutionized by providing affordable and quick results. Restriction enzyme by sequencing provides detection of hundred thousand to millions of variants. Hybridization-based targeted sequencing results in the genome being first physically fragmented. The fragments are captured and attached to beads or arrays by probes and then sequenced. About 1000 to 100,000 markers can be detected. For amplicon-based targeted sequencing, hundreds of regions in the genome are amplified using multiple PCRs. The PCR fragments are sequenced resulting in 50 to 5000 variants being detected. Sequencing cost is going down so skim sequencing is now more affordable. Shallow sequence coverage of less then 1X have been used. Skim sequencing is an alternative for array-based sequencing. Marker assisted selection uses a marker associated to a trait which is then easily detected. Molecular markers help breeders select their phenotype. Genotyping by sequencing is now the main tool for ultra-high throughput.

Proposal for AEIC Sponsored Project by Composition Working Group: Dumas vs. Kjeldahl (M. Bedair, Bayer): In composition, crude protein levels need to be estimated. Kjeldahl is the international reference method for analyzing crude protein. The sample is digested to ammonium sulfate using sulfuric acid and a catalyst and then organic nitrogen and inorganic nitrogen are measured. Dumas is a combustion method for analyzing crude protein. The sample is subjected to combustion and then reduced and separated. Nitrogen is then detected by a thermal conductivity detector. Dumas recovers all nitrogen and gained official recognition in the 1990's. The Composition Working Group (CWG) has summarized all available literature comparing methods and found there is no data on forage samples from corn or soybean. There are numerous papers on comparison of methods and how to convert from one to the other. The CWG is proposing to analyze corn and soybean forage samples. The samples are reference materials and will be analyzed simultaneously at EPL and Eurofins. Moisture and total nitrogen by Kjeldahl and total nitrogen by Dumas will be measured. Conversion factors are difficult to generalize and are dependent on the crop, cultivar, growing conditions. The EU Commission has confirmed the Kjeldahl method as the community method for official controls. Canadian Grain wants to replace Kjeldahl with Dumas for oilseed surveys. To avoid conflicts and misunderstandings in a trade situation, it is important to clearly state the method used for crude protein. Dumas can be used if differences for the type of samples analyzed are negligible.

Diversity and Inclusion (A. Himegarner, Eurofins): Certain conversations about race, gender identification, marriage equality, etc., make people uncomfortable. It is ok to ask people and not make assumptions. Diversity is action and inclusion is the outcome. Workforce diversity is a workforce made up of employees of different races, gender identification, age, sex orientation, career backgrounds and skills. It incorporates all of the elements that make individuals unique from one another. An organization employs

a diverse team of people that is reflective of the society in which it exists and operates. Inclusion is an environment where all are treated fairly and respectfully, have equal access to opportunities and resources and can contribute fully to an organization's success. Equality is when everyone gets the opportunity to succeed. Equity is when everyone is provided with what they need to succeed. Non-inclusion can result in employee poor morale, a toxic work environment, lack of career development, and a high turnover rate. Non-inclusion can impact a company by resulting in poor branding, legal issues, loss of customers, and poor business results. An inclusive environment can provide a sense of belonging, career opportunities, respect, trust, appreciation of individual attributes, equitable reward and recognition and access to opportunities.

2022 AEIC Fall Meeting Registrants:

NAME	ORGANIZATION
Adimulam, Sathya	Simplot
Ament,Chistopher	Eurofins Food Chemistry Testing
Asare, Prince	Bayer
Bedair, Mohamed (Speaker)	Bayer
Benatti, Matheus	Indiana Crop Improvement Assn
Brix, Kalyn	SoDak Labs
Calcaterra, Jennifer	Bayer
Cheever, Matt	BASF
Chen, Bin	Bayer
Cummings, Simone	Syngenta
DeMond, Jaylee	Simplot (Speaker)
Fast, Brandon	Corteva
Gadola, Mary	Neogen
Geng, Tao	Bayer
Ghavami, Farhad	Eurofins BDI
Glillikin, Nancy	BASF
Guo, Junhong	Bayer
Hamilton, Holly	20/20 Seed Labs
Harjoe, Marissa	Bayer
Haudenshield, James	Merieux NutriSciences
Himegarner,Angela	Eurofins (Speaker)
Ho, Joshua	Bayer
Houchins, Donna	Romer Labs
Houston, Norma	Corteva
Hunst, Penny	BASF
Irish, Lindsey	SGS
Johonson, Brenda	Eurofins BDI
Kahn, Peter	OMIC USA
Kenward, Kim	20/20 Seed Labs
Koch, Muffy	Simplot Plant Sciences (Speaker)
Kouba, Kristen	Corteva
Lamb McFarland, Cheri	Simplot (Speaker)

Lawal, Remi	Bayer
Liu, Fushan	Syngenta
Liu, Lucy	Bayer
Madera, Kristabel	Simplot
McKinnon, Lucas	Bayer
Metzler, Chelsie	BASF
Mitchell, Carter	Kemp Proteins
Muschinske, Luke	Eurofins Microbiology Laboratories, Inc
O'Grady, John	Corteva
Pence, Matthew	Simplot (Speaker)
Rudgers, Gary	Simplot Plant Sciences (Speaker)
Scaife, Ann	Eurofins Food Chemistry Testing
Shippar, Jeffrey	Eurofins
Smith, Dan	FoodChainID
Smith, Pearce	Eurofins GeneScan
Sondeno, Rachael	OMIC USA
Spiegelhalter, Frank	Eurofins GeneScan
Supekar, Nitin	Bayer
Sussman, Michael	USDA AMS
Umthun, Angela	Stine Seed
Verhalen, Brandy	Corteva
Vigeolas, Helene	BASF
Wang, Rong	Bayer
Wang, Yanfei	Bayer
Weatherston, Randy	Simplot (Speaker)
Weigel,Scott	AgriPlex Genomics
Whitt, Sherry	BASF
Williams, Denise	AOCS
Worden, Sarah	Corteva
Yau, Kerrm	Corteva
Zhang, John	Corteva
Zheng, John	Indiana Crop Improvement Assn
Makani.Mildred	Syngenta
Watkins, Crystal	EPL BAS