



## October 2020 Newsletter

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## Welcome Letter: NAPB President Dave Bubeck



I'm humbled to have the opportunity to lead NAPB this coming year as the 2020-21 President. I have countless reasons to be thankful to be part of a great organization like NAPB and a colleague of plant breeders in this amazing profession. I'll list just a few of the key reasons this is true for me: 1) Plant breeders have provided the world with a nutritious, diverse, stable and sustainable food source, and are largely unrecognized by consumers who daily enjoy the fruits of the plant breeder's labor. 2) Plant breeders are knowledgeable in multiple disciplines of science and leverage aspects of technology that equip them in selection of the 'best' performing genetics across a broad array of critical selection criteria, ever evolving their breeding methodologies as science and technology changes. Plant breeding is just a fun profession to be at the intersection of many scientific disciplines. 3) Plant breeders are individuals with intensity of focus on improving the plant species of choice, requiring a high work ethic and never-ending optimism that their next selection could be the best one ever.

The NAPB is still a relatively young and growing organization with official formation in 2008 from prior work of the Plant Breeding Coordinating Committee (PBCC). As a growing organization, now nearly 500 members and exceeding 450 members for the first time ever in 2020, we want to continue to deliver value to our expanding membership. Through our strategic plan we

will continue to focus on our mission to **"strengthen plant breeding to promote food security, quality of life, and a sustainable future."** We will leverage the vision in our strategic plan to deliver a future in which **1) strong public and private sectors work independently and together to deliver varieties and improved germplasm to society; 2) the value and importance of plant breeding to food security, quality of life, and a sustainable future are known and appreciated by the public; and 3) plant breeding is viewed as dynamic, problem solving, and creative. The NAPB intends to become a recognized and valued advocate for plant breeding research and education, helping to guide and implement a cohesive national plant breeding agenda.** These are key excerpts and boldly stated from our NAPB strategic plan.

As we transitioned the NAPB organization through its first ever 'covid-induced' virtual meeting, we were able to maintain our annual meeting with a strong attendance of 257 registrants. Though the University of Nebraska would have loved to host all of us, they did a spectacular effort to adjust the entire meeting to a virtual format. Thanks to all of you who contributed through program planning, presenting great talks, and the multitude of ways for you to participate in this virtual meeting. The graduate students responded with excellent participation, as well as high quality e-posters and rapid presentations. Congratulation to all for making this a highly successful first virtual meeting!

Looking to the next year, I have a few key focus areas for myself and the NAPB Executive Board, as well as the Committee Leadership: 1) Establish growth in our NAPB membership through retaining graduate students that go into professional careers, reconnecting with past members that have allowed their membership to lapse, and significantly expanding the private sector membership. 2) Provide tangible and multiple examples of new public-private sector partnerships. The momentum and opportunity to execute on such partnerships is critical, as we need one another to secure the long-term success of plant breeding. The USDA is driving their "Ag Innovation Initiative" which will have a high need for increased public-private collaborations to be successful. 3) The moment for advocacy for plant breeding and technologies that apply to plant performance improvements is now. The consumers of the world are engaged and desiring to know where their safe, affordable, nutritious and flavorful food comes from and the NAPB has a prime opportunity to provide the facts.

Thanks to each of you for being loyal members of NAPB and always be prepared to tell others about this great profession!

Best regards to each one of you!

Dave Bubeck

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## Early Career Scientist Award:

### Dr. Diego Jarquin



This award recognizes a scientist in early stages of their plant breeding career who exhibits the ability to establish strong research foundations, to interact with multi-disciplinary teams, and to participate in relevant professional societies. The 2020 recipient of the NAPB Early Career Scientist Award is Diego Jarquin, a Research Assistant Professor in the Department of Agronomy and Horticulture at the University of Nebraska-Lincoln since 2017. As his nomination letter stated: “Diego's excellent work in genomic prediction, along with his cutting-edge prediction software, his multidisciplinary knowledge, talent for teaching and experience make him one of the top scientists in the area of genomic prediction. He has already contributed greatly to the plant breeding research, and I have no doubt he will continue to lead new areas of crosscutting research.” Further, as another colleague noted: “He has worked with plant breeders of different crops in the USA, Mexico, Japan, Australia, and from many other countries. Diego has also developed extensive genomic pipelines sorting out important bioinformatics and computational issues.”

Jarquin received a Ph.D. in Statistics from the University of Postgraduate Education in Mexico in 2012 and had postdoctoral training at the University of Alabama-Birmingham and at the University of Nebraska-Lincoln. In his pro-

gram, Dr. Jarquin merges statistical methodology, quantitative genetics, computer algorithm development, data science and collaborative work with plant sciences. He seeks to advance prediction models for forecasting the plant performance while accounting for several sources of information and by taking genotype-by-environment interaction ( $G \times E$ ) into consideration. Dr. Jarquin has already established an excellent publication record on the development of prediction models and applications. As one colleague observed: “His methodological work in genomic selection,  $G \times E$ , and plant breeding design is highly impactful because it enables a wide range of plant breeders in private and public sectors to develop improved varieties that in turn are the key to satisfy the increasing demand of food production.”

Dr. Jarquin routinely seeks opportunities for collaborating with scientists who can benefit from applications and models that account for the effects of weather and biotic stressors and their interactions to better understand plant development. He is leading several projects related to the development of statistical models to perform predictions of crop performance. These models are flexible enough to handle the high dimensional nature of genomic and environmental factors as well as all interactions that might arise between each molecular marker and other type of covariates. His developments have led to the improvement of predictive ability of conventional models by 30-70% (depending on the crop-trait combination).

Dr. Jarquin is actively engaged with scientists on several projects where he provides expertise for understanding the crop performance via high dimensional interactions between genotypes and biotic and abiotic factors. For example, he is involved in the Genomes to Fields (G2F) and the SoyNAM (SoyGEN) projects which includes 30 states in the US and two provinces in Canada, and in both projects a large amount of environmental and soil information is utilized for analysis.

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## Early Career Scientist Award: Dr. Diego Jarquin

He is also collaborating with the public (University of Tokyo, ICRISAT, CIMMYT, IRRI, EMBRAPA, CENICANA) and the private (Advanta Seeds) sectors on the development of new theories and models for understanding the genotype-phenotype relationship. Further, Dr. Jarquin is active in many professional organizations and is currently section leader in Bioinformatics in Crops and Soils Community in the American Society of Agronomy, thereby enhancing communication among scientists in different divisions. In summary, as one colleague concluded: “Diverse detailed information on genomes, environments, and phenotypes is increasingly available, and the use of this information will enable plant breeding and genetics to evolve considerably. The methods and models developed by Dr. Jarquin will be indispensable in this evolution and will greatly accelerate the genetic improvement of plants.”



**Diego Jarquin exploring genotype-phenotype relationships in a soybean field with his trusty laptop.**

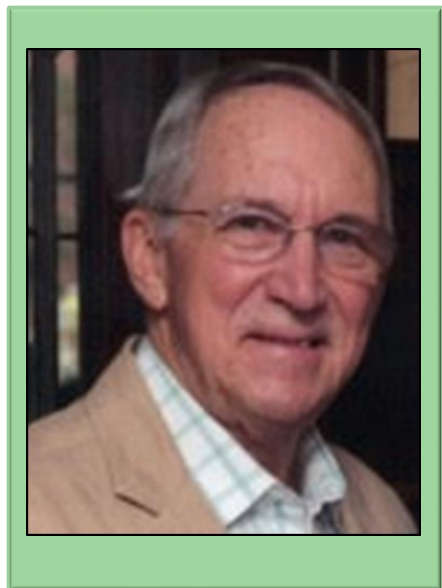
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## Lifetime Achievement Award:

### Dr. Fredrick A. Bliss



The 2020 recipient of the National Association of Plant Breeders (NAPB) Lifetime Achievement Award, given for distinguished long-term service to the plant breeding discipline through research, teaching, outreach, and leadership, is Dr. Fredrick A. Bliss, Professor Emeritus, Department of Plant Sciences, UC-Davis and retired from Seminis Vegetable Seeds. As his nomination letter concisely summarized: “It is one thing for a person to have worked in such a diversity of areas, but it is entirely unexpected for one person to make so many meaningful and lasting contributions across such diverse areas.”

Dr. Bliss received the B.S. degree from the University of Nebraska and Ph.D. degree from University of Wisconsin-Madison, joining the Department of Horticulture faculty at UW-Madison in 1966. In addition to teaching, public service and breeding self-pollinated vegetables, he worked as part of a UW-USAID Team building the new University of Ife in Nigeria. Subsequently he engaged in research and development projects globally, including consulting work in Nigeria, Somalia, Honduras and Brazil. In 1988, he left Wisconsin to join the UC-Davis faculty as Professor and Lester Endowed Chair in the

Pomology Department, where he taught and mentored graduate students along with research on genetic improvement of fruit crops, including kiwifruit, apricot and *Prunus* rootstocks. He served as Department Chair (1991-1994) and Chair of the Plant Biology Graduate Group (1990-1992) and on numerous departmental and state-wide committees, while continuing international work.

Describing Dr. Bliss’s lifelong commitment to international collaborative activities, a Brazilian colleague and former graduate student noted: “I have no doubt that Fred Bliss is one of the most outstanding plant breeders the world has seen. This award recognizes his competence and also sends a message to many like myself who had the chance to get to know him – life can be beautiful for people who are able to put together both soft and hard skills in benefit of humanity.”

At UW-Madison and UC-Davis Bliss was active in classroom instruction and was major professor for 33 Ph.D. and M.S. students and nine postdocs from the U.S. and 11 other countries. Over his career he led breeding programs for cowpea, common bean, tomato, stone fruits and tree fruit rootstocks. He is author or co-author of more than 100 journal articles and twenty book chapters and review articles. Topics include: Breeding dry and snap beans for disease resistance, enhanced seed protein and increased nitrogen fixation; domestication and evolution of common bean; molecular genetic maps for *Prunus* (stone fruits); breeding improved rootstocks for peach and sweet cherry; and education of plant breeding students. He and colleagues released bean germplasm, a cultivar with enhanced nitrogen fixation, four patented peach rootstock cultivars and he recently released two named apricots. As one colleague observed: “I would refer to Dr. Bliss as the plant breeder’s plant breeder in that he always brought new ideas and approaches to old problems and encouraged innovative and broad thinking among his students.”

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## Dr. Fredrick A. Bliss

Dr. Bliss began the third phase of his professional career in 1998, when he joined Seminis Vegetable Seeds as Director of Worldwide Breeding responsible for leading 115 vegetable breeders. He also held Senior Director positions including R&D Strategic Support; R&D Special Projects & Commercial Research Coordinator and a member of the Strategic Planning committee before retiring in early 2010, although he continued consulting work for the Washington Tree Fruit Research Commission, several companies and professional advisory panels. He was a member of the Scientific Advisory Panel for the RosBREED2 program, of the Scientific and Management Advisory Committee for the Integrated Breeding Platform and a consultant with FAO on the Global Initiative for Plant Breeding.

In addition to such activities, Dr. Bliss completed a comprehensive survey on preparation of future plant breeders, which led to a course he co-taught at UC-Davis on Plant Breeding Program Management. The impact of such work is still evident, as one colleague observed: “Fred developed a team for a national study of plant breeding education. This effort was widely successful and, I maintain, was a major contributor to the resurgence of professional plant breeding on a global scale, including the formation of the National Association of Plant Breeders.”

Among others, Fred received the ASSINSEL Award for "outstanding work in the field of plant genetics and plant breeding" in 1986 and Honor Horticulturist 2010 at the International Horticulture Congress. In addition to the NAPB, he is a member and Fellow of the Crop Science Society of America, American Association Advancement of Science and American Society for Horticultural Science, where he was President, 1998-99. Regarding the NAPB Lifetime Achievement Award, another colleague observed: “This award recognizes Fred’s leadership and advocacy for public plant breeding. His deep experience in academia and industry, along with his perceptiveness, intelligence, and passion for public planting breeding were critical in the work he did in organizing conferences and developing surveys and white papers on the dire straits of public breeding education. He then actively advocated for solutions, including formation of the NAPB.”

Finally, another colleague offered this assessment of Dr. Bliss’ character: “There is a magic about Fred, somewhat like the magic of plant breeding. Friendly, intriguing, exciting, inspiring, peaceful, satisfying, all describe interactions with Fred. How is that like plant breeding? Time spent with Fred is much like leaving a seedling field after making some very nice selections, knowing the world, and one’s self, is better off than before you saw him or arrived at the seedling field.”



**Fred Bliss and Ken Kmiecik evaluating snap bean trials at the Hancock, WI Experiment Station.**

## Public Sector Plant Breeding Impact Award:

### Dr. Kendall R. Lamkey



The Public Sector Plant Breeding Impact Award recognizes an individual whose accomplishments as a scientist in the public sector have had extraordinary impact in the field of plant breeding in areas such as research, technological innovation, germplasm development, cultivar release, education and leadership. The 2020 recipient is Dr. Kendall R. Lamkey, Chair, Department of Agronomy, Iowa State University. Dr. Lamkey earned his B.S. and M.S. degrees from the University of Illinois and his Ph.D. from Iowa State University in plant breeding and genetics. Dr. Lamkey provides leadership and direction to the department in the areas of education, research and extension. As one of his support letters noted: "Under Dr. Lamkey, the department has maintained its reputation for excellence and has added new initiatives in teaching and research that are helping it evolve in the future as a center of learning, knowledge and service." Another added: "As a professor, mentor, scientist, and administrator he has had an immeasurable impact on many lives and careers related to plant breeding and other agricultural spaces over his tenure."

Dr. Lamkey advocates for and sets priorities for the academic and research portfolio of the department through shared governance with the faculty. In cooperation with Associate Dean for Extension and Outreach in the

College of Agriculture and Life Sciences, he sets priorities for extension and outreach in crops, soils and climatology. Dr. Lamkey represents the department as he interacts with the public in Iowa and at the national and international level. He is responsible for understanding and articulating the broad education, research, and extension capabilities of faculty in the department. Dr. Lamkey is responsible for overseeing the departmental budget, evaluating faculty, setting salaries, hiring faculty, and providing faculty, staff and students with the support they need to be successful. He provides leadership in the expenditure of earnings from endowments, which total around \$2.5 million per year.

Dr. Lamkey's research program focuses mainly on corn breeding with an emphasis on the quantitative genetics of selection response, inbreeding depression and heterosis. His impact in this area is profound. According to one of his support letters: "Without Kendall's work, there would be gaping holes in the plant breeding literature, especially in our general understanding of recurrent selection, results from selection, breeding program design and inbreeding and heterosis." Dr. Lamkey has served on the advisory board for Makerere University Regional Center of Excellence in Crop Improvement (MaRCCI), Kampala, Uganda since 2018 and been involved in the Gates-funded project Plant Breeding Education for Africa (PBEA). One of Dr. Lamkey's current interests is cropping systems models such as APSIM and how to account for genetic changes in cultivars over time in these models.

Dr. Lamkey has been major advisor for 18 Ph.D. students and 10 M.S. students and has served on the program of study committee for more than 80 M.S. and Ph.D. students, one of whom states: "He has directly trained or served on the committee for countless students who now serve in many capacities of our plant breeding industry and academia." Dr. Lamkey has authored or co-authored 81 refereed journal articles and numerous papers in conference proceedings, book chapters, published abstracts and technical research reports.

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## Public Sector Plant Breeding Impact Award: Dr. Kendall R. Lamkey

He is a fellow of the American Society of Agronomy and the Crop Science Society of America and has served as an associate editor, technical editor and editor for *Crop Science*. Summing up Dr. Lamkey's impact on plant breeding, another former student concludes: "As I look back upon my graduate school days with Kendall, three things stand out in my mind: his encouragement of me as a scientist, his emphasis on foundational knowledge and his proclivity for vision."



**Kendall Lamkey evaluating corn trials  
with graduate student Brandon Wardyn.**

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## Private Sector Plant Breeding Impact Award:

### Dr. Thomas C. Osborn



The Private Sector Plant Breeding Award, first established in 2020, recognizes an individual whose accomplishments as a scientist in the private sector have had extraordinary impact in the field of plant breeding in areas such as germplasm development, cultivar release, technological innovation, and leadership. The 2020 recipient is Dr. Thomas C. Osborn.

Dr. Osborn is currently the Head of Global Analytics and Pipeline Design for Vegetable R&D at Bayer Crop Science in St. Louis, where he leads a team of scientists and engineers that brings new insights and capabilities to the vegetable breeding pipeline using predictive analytics, accelerated breeding methods and advanced genomic and plant phenotyping technologies. As one of his supporting letters attested: “Dr. Osborn’s work has impacted Bayer’s global portfolio of seed products across diverse crops. The advances in breeding methodologies and introduction of novel traits have had a significant impact and delivered new vegetable varieties that provided much-needed solutions for growers and innovative products for consumers.”

Prior to his work in the private sector, Dr. Osborn was a faculty member for nearly 20 years at the University of Wisconsin-Madison, where one colleague noted: “Tom played a major role in the development of molecular breeding in the public sector, in particular for canola breeding. He also provided key insights into genome instability in polyploids, genetics of flowering time in Brassicas and was one of the first to do RFLP mapping in plants.” Dr. Osborn’s combination of experiences in the academic and private sector, according to one colleague, has been “...integral to his success in that he has been able to find and develop key innovations and demonstrate the economic impact of such innovations across breeding pipelines and technology functions.”

Tom received a B.S. in Horticulture and a Ph.D. in Plant Breeding and Plant Genetics from the University of Wisconsin-Madison and was a postdoctoral researcher at the ARCO PCRI in Dublin, CA. From 1985-2004 Dr. Osborn was at the University of Wisconsin-Madison, where he held the Bascom Chair in Agronomy, chaired the Plant Breeding and Plant Genetics Graduate Program and taught and conducted research in molecular plant breeding and polyploidy. As stated by a colleague: “Tom’s research and publication record at point of hire was already outstanding, and gained momentum as he quickly passed through the ranks to full professor in 1993. During that time, and by the time he was hired away by Seminis, he trained more grad students and postdocs, published more papers, and obtained more grants than anyone in the department. His research on using DNA technology for crop improvement was not just at the cutting edge, it was the cutting edge of new technology. To top this off, he also taught undergrad and grad courses.” Another colleague pointed out: “The 40 graduate students and postdocs he helped trained continue to advance the science of plant breeding through key positions in academia and industry, including five former students currently in Bayer Crop Science to accelerate the development of new, high value vegetable traits.”

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## Private Sector Plant Breeding Impact Award: Dr. Thomas C. Osborn

Tom moved to the private sector as Director of Breeding Technology at Seminis Vegetable Seeds/Monsanto from 2004 to 2010 in Woodland, CA, where he led initiatives in molecular breeding, cell biology, pathology and analytics to accelerate the development of new, high value vegetable traits. Subsequently he served as Director of Molecular Breeding Technology/Precision Genomics at Monsanto/Bayer from 2010 to 2018, leading a global team that developed and applied genotyping and genomic technologies for all crops in the R&D pipeline. This team developed and implemented a novel genotyping-by-sequencing technology for genomic selection that enabled a four-fold expansion of the corn breeding pipeline and established the St. Louis Production Genotyping lab as the company's largest corn yield testing location. He is the recipient of Monsanto's Edgar M. Queeny Award and the Monsanto Science & Technology Career Award and Fellow, Crop Science Society of America.

In addition to his scientific insights and accomplishments, Dr. Osborn's career is distinguished by his personality and approach. One colleague put it this way: "The success of the project was in no small part due to Tom's leadership in the scientific as well as collaborative realms. He was very adept at bringing out the best in everyone and getting them to work together." Another agreed: "As a leader, Tom inspires, empowers and develops his team for passionate execution. Tom is motivated by achieving collective understanding and a sense of mission."



**Tom Osborn, planting test plots with graduate student Kimberlee Kidwell.**

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## Friends of Plant Breeding Award:

### Dr. Donn Cummings



The National Association for Plant Breeders (NAPB) Friends of Plant Breeding Award honors individuals whose career may or may not have been involved in plant breeding, but who, through their professional activities and passion have contributed significantly to the advancement of the plant breeding discipline. The 2020 recipient is Dr. Donn Cummings.

During a 30-year career with Pfizer Genetics, DeKalb and Monsanto, Dr. Donn Cummings was a highly successful corn breeder, Station Manager and Area Research Director. Donn became Monsanto's Global Breeder Sourcing Lead in 2007, where he provided overall leadership and global strategic planning to build and maintain a Ph.D. and M.S. level plant breeder talent pipeline for Monsanto until his retirement in 2015. In addition to his prowess as a commercial plant breeder and industry executive, Donn has regularly participated in agriculture-related panels and advisory committees.

Dr. Cummings has been exceptionally active in a wide range of professional organizations, including the Crop Science Society of America, the National Council of Commercial Plant Breeders (Past President), the American Seed Trade Association (ASTA) and the Plant Breeding Coordinating Committee.

In 2003 Donn was named a Monsanto Scientific Fellow, that organization's highest honor. Donn is founding member of the NAPB, has served as NAPB Membership Committee Chair, initiated and serves as a mentor in NAPB's Borlaug Scholars Program, spearheaded development of the current NAPB Strategic Plan and seeded its largest financial donation to date. As Peggy Ozias-Akins, current NAPB President and University of Georgia Professor notes: "Donn's dedication to nurturing the next generation of plant breeders is truly admirable. His example of 'giving back' is influencing the culture of a generation."

Donn received his B.S. in Biology Education from Purdue University in 1971, an M.S. in Plant Breeding and Genetics from Purdue in 1973 and a Ph.D. in Plant Breeding and Genetics from the University of Minnesota in 1977, after which he began his plant breeding career as Research Station Manager for Pfizer Genetics in Mason City, IL. Within Dekalb-Pfizer Donn served as Eastern Area Director from 1981-84, before becoming Station Manager and then Eastern Area Research Director for DEKALB Genetics in Windfall, IN from 1985-99. Donn worked within Monsanto as Eastern Area Product Lead from 2000-03 before relocating to Lebanon, IN as Line Development Corn Breeder in 2004. Donn continued with Monsanto as a Commercial Corn Breeder until 2007, when he became Monsanto's Global Breeder Sourcing Lead.

One of Donn's early contributions to plant breeding was the first report of successful technology for routinely regenerating whole plants from tissue culture in oats. Subsequently, as a corn breeder and research manager he obtained 22 inbred and hybrid patents, with significant commercial impact. Building on his skills and experiences as a successful corn breeder, Donn moved into research administration and outreach, as Global Breeder Sourcing Lead with Monsanto, where he was actively engaged in strategic planning, scientist recruitment and networking across public and private sector educational organizations and industry associations.

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## Friends of Plant Breeding Award: Dr. Donn Cummings

Throughout his career as a commercial plant breeder, research administrator and active citizen in the plant breeding community, Donn has been a tireless and articulate advocate for the plant breeding profession. He not only initiated the NAPB Borlaug Scholar's Program, but continues to serve as a reliable, insightful, and devoted mentor for dozens of students and aspiring plant breeders globally. As stated by Todd Campbell, Past President of NAPB and Research Geneticist with USDA-ARS: "Donn is one of the most passionate plant breeders in our profession. Donn's dedication to NAPB and the next generation of plant breeders is teaching students and young professionals (and even seasoned plant breeders) keys to success in plant breeding and life and something that is not part of the curriculum in a plant breeding course – passion, service, and enthusiasm for your profession." Within the NAPB, Donn has been a driving force from its inception and is currently a Liaison between NAPB and ASTA, continuing to share his passion and enthusiasm for the plant breeding profession. Dave Bubeck, current NAPB Vice-President and Research Director at Corteva stated, "I have known and interacted with Donn as a competitor for many years. He has been an incredible advocate for plant breeding and relentless about his efforts to find the best career path for students."

In conclusion, as current Borlaug Committee Chair Dr. Don Jones, says: "Donn Cummings is passionate about providing a path for our young plant breeding stars to further build upon the foundation first established by Dr. Borlaug regarding a sustainable food supply for an ever-growing population. Donn personally provided the largest donation to the program, has invested more time than anyone else even though he is retired, and provides insights and guidance that are highly valued by committee members and scholars alike. He is truly a friend of current and future plant breeders and highly deserving of this award."

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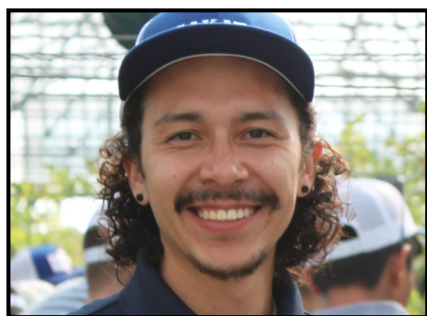
## Graduate Student Poster Competition Winners



### 1st Place: Zara York (Washington State University)

#### Phenotypic and genetic characterization of dwarfing-related traits in bi-parental pear rootstock populations

Zara York is a Ph.D. student in Dr. Kate Evans's pome fruit breeding program at Washington State University (WSU) Tree Fruit Research and Extension Center in Wenatchee, WA. She serves in university leadership roles and is actively involved in the NAPB Graduate Student Working Group, serving as Chair during 2020-21 and helped initiate a graduate research competition as Vice-Chair.



### 2nd Place: Juan Gonzalez (University of Florida)

#### Rapid phenotyping of sweetcorn ears with computer vision to aid modern breeding

I consider myself a Florida-Colombia hybrid, having been raised in both places. I believe that plant breeding is elemental because it is quite literally what brought about society and culture itself. As such, I can't think if a more delicious and intimate lens through which to explore the world. I am committed to the advancement of minorities in agriculture--breeders do not need any convincing as to why diversity is important to success!



### 3rd Place: Natalie Kaiser (Michigan State)

#### Mapping *Solanum chacoense* Colorado Potato Beetle (*Leptinotarsa decemlineata*) resistance in a self-compatible F<sub>2</sub> diploid population

Borlaug Scholar Natalie Kaiser is a Ph.D candidate in the Potato Breeding and Genetics Program at Michigan State University. She is employing molecular and genomic tools to understand the genetic architecture of host plant insect resistance and to develop Colorado potato beetle resistant diploid potato breeding lines. She also studies the genetic components of self-compatibility in diploid potato to facilitate diploid potato breeding efforts. She aspires to help convert potato into a diploid inbred/F1 crop propagated by true seed as a breeder in the private sector.

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The purpose of the diversity award is to attract and retain scientists from diverse backgrounds into the field of plant breeding. Diversity is essential for success in the plant breeding community and is a fundamental cornerstone of the NAPB. The diversity award program provides support to undergraduate and graduate students from under-represented groups to learn about plant breeding, connect with plant breeders, and develop career contacts through attending and participating in the NAPB annual meeting.

The 2020 awardees represented both graduate and undergraduate students majoring in various fields including animal science, crop science, agronomy and plant science.

2020 Diversity awardees included:

**Yufei Qian** (University of California Davis) mentored by George Graef (University of Nebraska)

**Tia Dunbar** (Texas A&M University) mentored by Klaus Koehler (Corteva)

**Adina Grossman** (University of Florida) mentored by Sarah Turner-Hissong (Bayer)

**Mirai Inaoka** (University of Illinois) mentored by Qi Mu (Iowa State University)

**Karansher Sandhu** (Washington State University) mentored by Valerio Hoyos-Villegas (McGill University)

**Diane Perez** (Kansas State University) mentored by Juan Gonzalez (University of Florida)

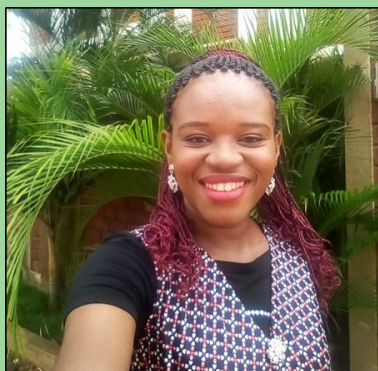
Selection of student awardees was coordinated by Dr. George Graef, Dr. Mark Sorrells, Jodie Callwood and Brittney Jones. A very special thank you to Jodi Callwood (2019-2020 GSWG Diversity Award Coordinator) for all your hard work and dedication in championing this award. Additionally, the GSWG would like to express sincere appreciation on behalf of the NAPB for all volunteer mentors, committee organizers and all the students that applied for this award.

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## NAPB Graduate Students Leading During a Global Pandemic

*By Chandler Levinson, Graduate Student Working Group, Past Chairman*



**Mary Emeraghi has joined the NAPB GSWG as an APBA liaison and outreach officer**

There is an American saying, “When life gives you lemons, make lemonade,” which encourages us to make the best of a difficult situation. However, the lemons are usually not a pandemic virus. When it became obvious that the 2020 NAPB Annual meetings would be virtual and not in Lincoln, NE, the Graduate Student Working Group (GSWG) saw opportunity rather than adversity. The group hatched a plan to invite African graduate students to participate, which would have been unthinkable had the pandemic not occurred. The NAPB and one-year old African Plant Breeders Association (APBA), teamed up to bring American and African students together to not just make lemonade, but to learn how to breed a better lemon tree together. The virtual format opened the door for global participation. This effort spearheaded by the GSWG and supported by NAPB executive committee and other leaders within NAPB, raised funds to sponsor outstanding APBA graduate students to attend the 2020 NAPB conference at no cost to the selected students. The APBA participants also received gratis student memberships in NAPB.

Twelve students from four universities in four countries were invited to attend. Included were: Esther Achola, Emmanuel Amponsah Adjei, and Selma Nghituwamhata Ndapewa from Makerere University in Uganda, Olaolorun Boluwatife, Aristide Carlos Houdegbe, and Dèdéou Apocalypse Tchokponhoue from the University of KwaZulu-Natal in South Africa, Mary Emeraghi, Mariam Coulibaly, and Christel Azon from the University of Abomey Calavi in Benin, and Mathieu Ayanan, Benjamin Danso, and Esther Adekemi Stanley from the University of Ghana in Ghana. Of these twelve students, nine presented their research in either the live poster competition or submitted a recorded video in the graduate student poster competition enabling NAPB members to learn about their plant breeding efforts in several African regions. In addition to sharing their research, these students participated in the general sessions in which invited speakers described their breeding efforts. And, they joined in numerous social events, such as trivia and social spotlighting of the APBA students. In this APBA-centered social, the students shared their cultures through photos of their families, hobbies, and delicious dishes.

NAPB wishes to develop our budding partnership with APBA further. To start, Mary Emeraghi has joined the NAPB graduate student working group as an APBA liaison and outreach officer for the coming year. The graduate student working groups hopes to host social events throughout the year with APBA students to strengthen this connection. Thank you to the APBA students who attended the NAPB conference and heightened the experience through their positivity, perseverance, and generosity of time and spirit. Thanks also to all NAPB members who enabled this terrific idea to become reality in a really short timeframe. We hope future annual meetings for both NAPB and APBA will include a virtual portion that will enable continuing to build on the progress made this year!

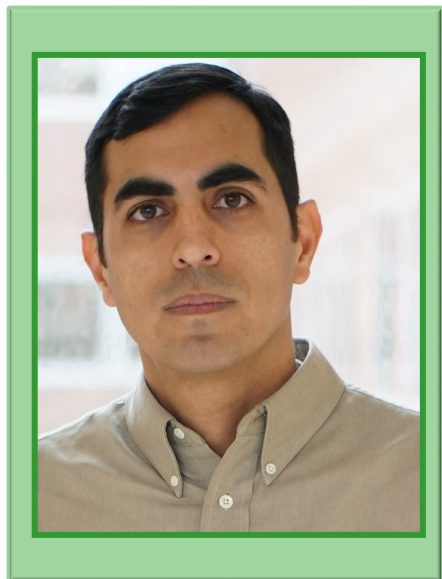
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## Early Career Spotlight:

### José Guillermo Chacón-Jiménez



***Where do you come from, what is your background, what lead you to plant breeding as a career?***

I am from Costa Rica, and I was born in San Jose, the capital, but my family moved a lot due to work, so I had the opportunity to live in different cities and the countryside too. When I went to college, I decided to study General Biology at the University of Costa Rica. At the start I was interested in animal conservation, but soon my interest changed to plant biology and genetics. When I finished, I did a couple of odd jobs for a few years. Then I got the opportunity to return to my university to do my M.S., but this time in Agricultural Science. At almost the same time, I started a part time job at another lab as a tissue culture technician. My Masters project was in taxonomy and genetic resources of *Xanthosoma* spp. (Araceae), an edible tropical plant. That landed me an adjunct position at the Agronomy Department as a plant propagation instructor and extension collaborator. I worked with orchids, citrus crops and cane ornamentals, and I was amazed by their genetic diversity. These experiences gave me the understanding of what I really wanted to do, plant breeding.

***What institution did you attend and what was the focus of your research?***

I was granted a Fulbright Scholarship, and I had the option to go to several places, but I decided to study at North Carolina State University (NCSU) under Gina Fernandez's supervision working on strawberries. NCSU has a strong plant breeding program with scientists that have expertise in traditional and modern breeding technologies. My research focused on identifying necrotrophic and hemibiotrophic anthracnose disease resistance of strawberry. We phenotyped a mapping population for resistance in the field and greenhouse, genotyped the same population using a reduced representation sequencing (NCSU's OmeSeq) method and initially explored the data.

***What path did you take after graduate school?***

I seriously considered looking for an industry job in fruit or vegetable breeding. However, a few months before I finished my program my advisor was awarded a grant that allowed her to hire me as a Post Doctoral Scholar. In hindsight, especially because of the Pandemic and its restrictions that have limited lab and field work, I feel very grateful to have this opportunity to continue my work at NCSU. During these past few months, I was able to refine my data analysis using bioinformatics tools. The opportunity to get involved in the actual yearly breeding cycle from the start of my Ph.D. to present gave me a broader perspective on how breeders advance germplasm through their programs.

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## Early Career Spotlight:

### José Guillermo Chacón-Jiménez

#### *What is your favorite part of your current job?*

Free berries! Strawberries, raspberries, blueberries, blackberries, and muscadines. And a freezer full for fall and winter. But I must admit that I also love the opportunity of exploring new technologies and applications for plant breeding.

#### *Was there any person (or people) who you felt helped you along your career path?*

Oh my, I need several pages to cover all the people that helped me. For starters, I'm grateful to my M.S. advisor, Dr. Francisco Saborio, he taught me a lot. Also, I have to mention a few people that helped me during the last years. My PhD. advisor, Gina Fernandez, was amazing, her patient, experienced and steady hand guided me through storm and stillness. Rocco Schiavone and Maria Lagnese were my companions working together in the lab, greenhouse and field. Dr. Bode Olukolu (UTK) was my bioinformatics lifesaver, he has been extremely patient and helpful. Without minimizing any of them, I have to say that the person who helped me more and kept me afloat all this time was my wife, Laura.

#### *What will be our biggest challenge in the future of plant breeding?*

Climate change is right now the major concern for many breeding programs, for others it is the conservation and utilization of genetic resources, and many are concerned about technological bottlenecks, such as high throughput phenotyping. At least in my perspective, the challenges are not only scientific and technological, but also political and about successful communication with the public.



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# Graduate Student Spotlight:

## Anna Rogers



### Where do you come from and what is your background?

I am from northern Iowa and went to Iowa State University majoring in Genetics and Statistics as a dual degree program. I worked with Mike Muszynski and Erik Vollbrecht's labs focusing on molecular genetics of corn. I had always enjoyed working with plants but research that utilized more of the math and statistics that I was enjoyed.

### What institution do you attend, and who is your advisor?

I currently attend North Carolina State University and work with Dr. James Holland while pursuing a PhD in Genetics. I recently completed my masters in Statistics concurrent at NC State as well.

### What is the focus of your research?

My research focuses on understanding Genotype-by-Environment interactions (GxE) and utilizing environmental and genetic data to perform genomic predictions. Our goal is to better understand the relationship between environmental conditions and germplasm performance, create models for genomic prediction that allow provide a more comprehensive understanding of the contributions of GxE to the architecture of complex traits.

### What is your favorite part of your job?

My favorite part of my job is that I get to use my expertise in statistical genetics to help solve problems that can help both farmers and consumers. I really enjoy applying the theories I've learned in courses and research to real-world problems and am excited about the prospects that big data can bring to improve plant breeding.

### What would you like to do after graduate school?

I am currently working on a collaborative project with the USDA and had an internship with Bayer over the summer - which excited me about the potential research for someone who comes from a classic quantitative genetics background to help with crop improvement and have an impact not just for farmers where I'm from in Iowa, but around the world. I know there are a lot of interesting things to do in the future, and I'm thinking the next big puzzle to solve for me is waiting in an industry career.

### According to you, what will be our biggest challenge in the future of plant breeding?

To me, two major challenges are the next big ones. I feel one is a more obvious challenge - climate change is a major threat to where we grow crops, how we grow them, and how we feed people. The second challenge I see is how we utilize the vast amount of data to answer many questions that we've never had the ability to before - but the sheer amount and how to incorporate these data for practical applications to plant breeding is a challenge in and of itself.

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# Graduate Student Spotlight:

## Brianna Heilsnis



### Where do you come from and what is your background?

I'm originally from North Carolina and earned my bachelor's degree in Horticulture at Auburn University, Alabama, while competing as a student-athlete on the Track and Field team. My interest in plants was instilled early on when I lived in a vineyard in Germany and had the weekly opportunity to explore the extensive flower gardens on the Isle of Mainau in Lake Constance.

### What institution do you attend, and who is your advisor?

Currently, I'm finishing my master's degree in the Cotton and Soybean Breeding Lab at Auburn University, under Dr. Jenny Koebernick.

### What is the focus of your research?

The focus of my projects are to characterize the mode of transmission for *Cotton leafroll dwarf virus* (CLRDV) and to develop a screening protocol for the rapid testing of germplasm for resistance. My transmission projects investigate seed, grafting, and aphid transmission of CLRDV, with a heavy emphasis on identifying the speed at which the aphid vector can acquire and transmit the virus. Understanding how the virus is transmitted is crucial to developing disease management strategies.

### What is your favorite part of your job?

I thoroughly enjoy how dynamic the work of plant breeding is. Every day, and every season, is something different and brings its own set of challenges and rewards. There is a constant need to problem solve and think on your feet. Beats being in an office cubicle, hands down.

### What would you like to do after graduate school?

I will be moving to Oregon State University to study eastern filbert blight in hazelnuts under Dr. Shawn Mehlenbacher for my PhD. Ultimately, I want to pursue an industry career in breeding horticultural food crops.

### According to you, what will be our biggest challenge in the future of plant breeding?

Our biggest challenge is going to be the loss of experienced breeders to retirement and the lack of new plant breeders to step up and carry on their work. This is already evident by the number of shrinking programs across the United States. The other side of that coin is the shortage of students interested in agriculture. Plant breeding is an art and a science that is best learned in the field from a seasoned plant breeder, before their knowledge is lost. We can have the technology and the genetics, but without plant breeders, there isn't a future.

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On behalf of the NAPB, we are pleased to communicate the opportunity for undergraduate and graduate students in plant breeding and related plant science and agricultural fields to participate in an upcoming virtual conference sponsored by the American Seed Trade Association (ASTA) at no cost to students. Leadership at NAPB strongly encourages students to take advantage of this unique opportunity to interact with members of ASTA at one of their key annual conferences. The experience will provide excellent virtual networking with private sector colleagues. Further details are described below with a link for you to register.

The American Seed Trade Association (ASTA) extends a special invitation to agricultural students to participate and enjoy free registration to attend the CSS & Seed Expo Virtual, being held December 7 – 9.

Held for over 70 years and anticipated as the largest virtual event in the seed industry, the CSS & Seed Expo [conference agenda](#) includes two special student-focused sessions on the mornings of December 8 and 9, where participating students can present a brief, 5-minute pre-recorded presentation focused on their research area and/or poster presentation. Heavily attended by senior seed industry executives, ASTA's CSS & Seed Expo provides an opportunity for students to get in front of potential future employers and with this year's virtual format, is easier and less expensive to attend than ever before.

In addition to the presentation opportunities, the conference features a series of crucial sessions for agricultural professionals, including the annual Global Agricultural Economy Forecast by renowned economist Dan Basse, the "Majors' Crystal Ball" panel discussion featuring top executives from the industry's four largest companies, ASTA's own policy analysis on election outcomes, and much more. Accredited for Certified Crop Adviser continuing education, ASTA's session series offers up to 12 credit hours for CCAs, just in time for the end of the year. Special post-conference sessions, included in registration, will be held December 15 & 16, focusing on hemp seed and corn and soybean agronomy.

Built with a focus on business networking, the virtual conference allows for video business appointment setting with other conference registrants, features over 70 virtual exhibitors, and even a virtual "Big Bar" for personal connections.

A [special link](#) to student registration instructions is provided on the conference website. Register today!

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## News from the Field: Announcements

**Early-Bird discount** for UC Davis Hemp Breeding and Seed Production course extended until October 16!



UC Davis Hemp Breeding and Seed Production will be offered on-line on October 27-29, 2020. Course will be held remotely via Zoom conferencing platform. Registration now open - Class size is limited! Held over three half-days, this course is designed to enhance the knowledge of professionals working on hemp improvement and propagation. **Full agenda, information and details**

**Improving Climate Resilience in Crops** - The Foundation for Food and Agriculture Research (FFAR) is accepting grant funding applications for projects to provide "... transformative approaches and solutions to increase a crop's tolerance for higher temperatures. The resulting research will improve crop's climate resilience ... Specifically, FFAR is seeking applications that increase the basal or acquired thermotolerance of crop plants, allowing them to better survive when exposed to high temperatures. This funding opportunity is focusing on solutions that can be applied to one or more of the following crops: maize, rice, sorghum, millet, wheat, sweet potato, cassava, banana, yam, common bean, cowpea, chickpea and groundnut. Matching funds will be provided by the Bill & Melinda Gates Foundation and are not required from researchers ..." - The proposal funding range is \$250,000 - \$1,000,000.

**Applications Due By:** November 11, 2020

**Web site:** Source: September 16, 2020 Foundation for Food and Agriculture Research (FFAR) News Release, titled "FFAR Seeks Research Proposals to Improve Climate Resilience in Crops", posted at <http://foundationfar.org/2020/09/16/ffar-seeks-research-proposals-to-improve-climate-resilience-in-crops/>

The FFAR Request For Applications is posted at <http://foundationfar.org/climate-resilience-rfa/>

Information about FFAR's Next Generation Crops Challenge Area is available at <http://foundationfar.org/challenge-areas/next-generation-crops/>

Information about FFAR is available at <http://foundationfar.org/about-us/vision-mission-values/>

**Contact:** Questions may be directed to the FFAR Grants Management staff at [Grants@FoundationFAR.org](mailto:Grants@FoundationFAR.org)

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## News from the Field: Announcements

Take a second to check out the video from Allen Van Deynze to the USDA on funding for education and mentoring: [https://video.ucdavis.edu/media/1\\_1cyhbv5g](https://video.ucdavis.edu/media/1_1cyhbv5g)

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## Connect with us!

Website: [www.plantbreeding.org](http://www.plantbreeding.org)

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Have an idea for a future newsletter?

Email the communication committee:

**Chair:** Zach Jones — [zachary.jones@corteva.com](mailto:zachary.jones@corteva.com)

**Vice Chair:** Allison Thompson-[allison.thompson@usda.gov](mailto:allison.thompson@usda.gov)

**Secretary:** Brian Gardunia — [brian.gardunia@bayer.com](mailto:brian.gardunia@bayer.com)



### NAPB: *Improving Plants to Improve Lives*

**Our Mission:** The National Association of Plant Breeders strengthens plant breeding to promote food security, quality of life, and a sustainable future.

**Our Vision:** The NAPB works to help create a future in which 1) Strong public and private sectors work independently and together to deliver varieties and improved germplasm to society, 2) The value and importance of plant breeding to food security, quality of life, and a sustainable future are known and appreciated by the public, and 3) Plant breeding is viewed as dynamic, problem solving, and creative. The NAPB intends to become a recognized and valued advocate for plant breeding research and education, helping to guide and implement a cohesive national plant breeding agenda.

[Join NAPB today!](#)



### “Grapes Galore”

Photographer: Sarah Potts