THE FAR-B NEWS

Dedicated to promoting the research and education programs of the
Henry A. Wallace Beltsville Agricultural Research Center, Beltsville, MD

Friends of Agricultural Research-Beltsville, Incorporated P.O. Box 1061, Beltsville, MD 20704-1061

JANUARY 2020 Editor: Hank Becker

President's Message

I am pleased to report that after 35 years our organization is still viable and actively supporting a wide range of activities that benefit the Beltsville research programs and employees. I know that over time retirees and even some current Beltsville employees forget, or do not know, the type and extent of the activities that FAR-B is engaged in.

The original mission of FAR-B was largely to support and handle the funds associated with conducting, and publishing the proceedings of, annual Beltsville Symposia that dealt with topics of major and timely scientific interest. Also, FAR-B frequently assisted with the handling of funds and other details associated with many scientific meetings and training programs organized by Beltsville employees and management units.

Beltsville Symposia are no longer held annually and the number of scientific meetings organized and hosted at Beltsville has declined significantly over time, so FAR-B's focus has changed markedly.
Although FAR-B still responds to requests for assistance with special programs and meetings, today, FAR-B's efforts largely focus on supporting student interns working in Beltsville laboratories; providing funds to support a wide variety of programs dealing with diversity education and training for Beltsville employees; and an outreach program that provides students from a local elementary school exposure to science and agriculture. Also, we continue the long-standing practice of providing annual written testimony in support of the Beltsville research programs and facilities to the U.S. Congress and members of the Maryland congressional delegation.

Secretary Kelly M. Shultz (front center) visits the Beltsville Agricultural Research Center on January 13, 2020. Dr. Dariusz Swietlik (Director, Northeast Area) and Dr. Howard Zhang (Director of BARC) are standing to the Secretary's left.

In discussions with the Beltsville administrators we have learned that in many instances young people and potential visiting scientists find it difficult to pay for commuting to Beltsville from throughout the Washington area. Thus, this year we are attempting to increase the pool of interns and underfunded visiting scientists, interested in working in Beltsville laboratories, by providing funds to be used at the discretion of Beltsville administrators, to pay for local travel and short term housing by such individuals. If this is successful, the program could be expanded in the future. As always, the FAR-B Board of Directors is open to suggestions that others may have for our consideration for funding.

***Alan Stoner,** President*

Area Director's Message

On December 22, 2019, Congress passed, and the President signed, two fiscal 2020 spending packages to fund the federal government for the balance of the fiscal year 2020. One of these packages, FY 2020 Further Consolidated Appropriations Act (HR 1865), included measures for the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies.

The Bill provides $1.414 billion for ARS Salaries and Expenses Account--an increase of $111 million (8.5%) from our FY 2019 operating level. Also, it does not agree with any of the proposed project terminations or lab closures.

The Bill also provides $192.7 million for the Buildings and Facilities Account. Included in that amount are the funds to develop designs for the renovation and modernization of some of the buildings at Beltsville Agricultural Research Center. Some of the research areas that will receive funding increases include but are not limited to African Swine Fever, cranberry and blueberry research, East Cost shellfish genetics, food systems, hemp production systems, human nutrition research, long term agro-ecosystem (LTAR), precision and sustainable aquaculture, small farm orchard units and some other research areas which are prominent in the Northeast Area and thus will benefit directly or indirectly.

Dr. Dariusz Swietlik (standing) welcomes and provides an overview of the research program conducted in Beltsville and other parts of NEA to Secretary Kelly M. Shultz and her staff. *— PHOTO COURTESY JAY GREEN*

On January 13, Maryland Commerce Secretary Kelly M. Shultz and her team visited the Henry A. Wallace Beltsville Agriculture Research Center campus. They were met by the leadership of NEA, BARC, BHNRC and USNA and some of their staff. The visitors were appraised on the scope of research conducted on the Beltsville campus and its impact on the American economy, competitiveness of American agriculture in the global economy, the protection of natural resources, and the health and well being of American people.

The visitors were informed about the challenges related to food security and safety, as well as the sustainability of agricultural production facing the world in the next 30 to 40 years. Dr. Hyun Lillehoj and Dr. Alanna Moshfegh gave one presentation each to illustrate how the research conducted by ARS in Beltsville contributes to wholesomeness and healthfulness of the food produced by American farmers and how what we eat affects our health. They also visited a strawberry genetic laboratory at the Genetic and Vegetable Improvement Laboratory where they met with Dr. Kim Lewers, the strawberry breeder and Dr. John Stommel, the laboratory's Research Leader.

Dr. Kim Lewers *(facing camera)*, a geneticist and the strawberry breeder in the Genetic Improvement of Fruits and Genetable Laboratory in BARC, explains her strawberry research improvement program to Secretary Shultz *(to her right)*. *— PHOTO COURTESY JAY GREEN*

The visitors were so impressed with what they heard and saw that in the days to follow they met with their Marketing and Communications team to brainstorm on how they can promote BARC, BHNRC and USNA and their technologies as major Maryland assets. They stated that the Henry A. Wallace Beltsville Agriculture Research Center is "one of our best-kept secrets. We would like to reach out to you soon to discuss how best we can promote the ARS."

Dr. William P. Kustas from the Hydrology Remote Sensing Laboratory has received the 2019 Hydrologic Sciences Award, also known as Robert E. Horton Award for outstanding contributions to the Science of Hydrology. This is a career award with an emphasis on the past five years. Dr. Kustas research interests include the use of remote sensing to estimate evapotranspiration, the use of optical and microwave remote sensing for computing land surface fluxes and modeling radiation and turbulent energy flux exchange across the soil-vegetation-atmosphere interface. Bill has made landmark scientific advances in all these areas which have had a high impact on predicting hydrological processes as well as more efficient use of water, e.g, for irrigation. Our congratulations to Dr. Bill Kustas on his research accomplishments and recognition!

A group of BARC scientists led by Dr. Stephen Delwiche from the Food Quality Laboratory at BARC has recently developed a mathematical correction for the so-called "falling numbers" (FN) to normalizes them to a standard barometric pressure such as the one existing at sea level. Starting in May 2019, USDA- Federal Grain Inspection Service has implemented the correction in official grain testing, and the Cereal Grains Association has amended their 'Approved Method' on FN. The implementation of Dr. Delwiche's correction by the grain industry will allow for more accurate management of potentially low FN wheat consignments, with estimated savings of $10 million during years when one-tenth of the harvest is affected by adverse weather. The farmgate value of wheat grown in the Pacific Northwest is $1.5 billion. Most of this wheat is exported to overseas customers and is desired for its highly prized characteristics in pan and steam bread, noodles, sponge cakes, and crackers. Among other factors, the quality of wheat is dependent on the intactness of the starchy endosperm. A world-accepted method for measuring intactness is a procedure known as FN based on viscometry. However, the FN readings are highly affected by the barometric pressure hence the need to normalize the readings to the barometric pressure at sea level.

Congratulations to Dr. Delwiche and his team on this very impactful accomplishment!

I am pleased to announce the appointment of Dr. Jorge Fonseca as the Research Leader of the Food Quality Laboratory (FQL) in the Beltsville Agricultural Research Center, effective December 8, 2019. Dr. Fonseca holds a Ph.D. in food technology from Clemson University and Master's degrees in Horticulture (Clemson University), Business Administration (the University of Costa Rica and the National University of San Diego), and International Food Governance (Open University of Catalonia). Before joining BARC, Jorge worked for the United Nations Food and Agriculture Organization in Rome, Italy where he managed several projects related to the agro-food industry in Africa, Latin America, and the Middle East. Before that assignment, he was an Associate Professor at the University of Arizona. We welcome Dr. Fonseca to this very critical leadership assignment especially since the Laboratory has been without a permanent RL for a long time.

I also am pleased to announce that Ms. Catharine Page is a new Executive Assistant in the Northeast Area Office, supporting the Associate Area Director Rosalind James, as of January 21, 2020. Ms. Page comes to us from the Animal Parasitic Disease Laboratory (APDL) at BARC in Beltsville, MD, where she was the Program Support Assistant for the Laboratory. She has extensive experience with providing support to a large Unit, including processing data in ARS-related systems such as CATS, travel, procurements, budget, acquisitions, and T&As. Ms. Page originally comes from Nashville, TN where she graduated from Middle Tennessee State University with a degree in political science, followed by a master's degree in international studies at the Middlebury Institute of International Studies. Most recently she lived in Hawaii with her husband who serves in the U.S. Air Force. While there, she worked for several local political campaigns. We welcome Catharine in her new role at the Northeast Area Office.

Dariusz M. Swietlik, Area Director, NEA

CFC Update

The pledges and donations to FAR-B reached $4,389 after the 2019 CFC Campaign ended. This is close to the amount achieved in the 2019 CFC Campaign, and the FAR-B Board thanks everyone who participated for this support. We also appreciate the support of our members, and as always, would like to increase memberships to help maintain our sustainability. The Associate Membership is just $15, which is for ARS employees, and three higher levels are available. Information on membership, donations, bequests, FAR-B news, sponsored events, and Congressional testimony provided by FAR-B is available at our website, far-b.org. The website is currently being updated and revised with a new web hosting arrangement.

As always, the FAR-B Board of Directors welcomes those who are planning on retiring in 2019 or have already retired to consider becoming a Board member. It is a stimulating and gratifying way to sustain the ARS mission in the Northeast Area-Beltsville Locations after leaving government service. When you know someone considering retirement, please let them know of this opportunity.

***Dave Prevar,** CFC*

BELTSVILLE ACADEMY GETS FAR–B SPONSORED MOBILE SCIENCE LAB

From January 13 to 17 FAR-B sponsored a mobile science lab at Beltsville Academy, the public elementary school that serves the Beltsville community.

Operated by the Maryland Agricultural Education Foundation (MEAF), the "Ag in the Classroom" mobile laboratory was the first exposure that many of the young students had to hands-on science. Each class had about 30 minutes to perform an age-appropriate experiment with assistance from a MEAF teacher along with BARC and BHNRC volunteers.

The K-3rd graders learned how football and agriculture are connected though turf, football leather, uniform fabrics, fan concessions, etc. The 4th-5th graders learned about the organic, inorganic, mineral, air, and water components of healthy soil. All the students made necklace charms with products representing the activities to remind them to discuss what they had learned with friends and family.

Several hundred students participated and the responses were enthusiastically positive from students and teachers alike. About 30 BARC and BHNRC staff helped ensure the classroom was staffed continuously from 8 am until 2 pm each day for the week. FAR-B was very pleased to sponsor this outreach event and grateful for the strong participation from the BARC and BHNRC employees who volunteered their time to support it.

***Gary Kinard,** Liaison with BARC*

IN MEMORIAM

Karl Norris

Karl Howard Norris, recently of Alexandria, VA., was recognized internationally as the founder of the field of near-infrared spectroscopy. He died peacefully at Inova Mount Vernon Hospital, at the age of 98, on Wednesday, July 17, 2019 following a brief illness.

Karl was born on May 23, 1921 in the village of Glen Richey, Clearfield County, PA. For over 65 years, Karl resided in Beltsville, MD, where he worked at BARC. Dr. Norris served as a Research Leader for ARS' Instrumental Research Laboratory.

Over his long and distinguished career, he received numerous accolades. Among the highlights are his induction into the U.S. National Academy of Engineering and his receipt of the eponymous Karl Norris Award in Near-Infrared Spectroscopy (NIRS), which was established in his honor by the Japan Council and later adopted by the International Council on NIRS.

Karl Norris grew up on his family farm in Pennsylvania and attended Curwensville High School. After he completed his B.S. in Agricultural Engineering at the Pennsylvania State College in 1942, he joined the US Army Signal Corps. Army training and studies qualified him for a B.S. in Physics. He subsequently transferred to the Office of Strategic Services and received two bronze stars for his service in World War II, after which he spent several years working at the University of Chicago, Institute of Radiobiology and Biophysics.

In 1950, Karl Norris joined the USDA at the Beltsville Agricultural Research Center (BARC). He developed a machine to automate light-transmission-based sorting of eggs, which at the time was a labor-intensive process of visual inspection and candling by hand. In 1957, he was selected to lead the newly formed Instrumentation Laboratory, which remained under the Agricultural Marketing Service until a 1960 reorganization transferred postharvest research to the Agricultural Research Service. A 1972 reorganization found the lab renamed as the Instrumentation Research Laboratory, still under Norris' direction. In 1988, he retired from the Instrumentation Research Laboratory, by then renamed as the Instrumentation and Sensing Laboratory, but continued working with academia and private companies as a collaborator and an independent consulting engineer.

Karl's combination of experience, skills, and education with farming, engineering, electronics, and computers eventually led him to the research career and achievements for which he is now internationally recognized as the "father of near-infrared spectroscopy." Although near-infrared (NIR) radiation was discovered by Herschel in 1800 and NIR spectra were first measured in 1881, spectroscopists long considered the analysis of the complex NIR spectra to be a fruitless endeavor. Not a spectroscopist, he used his skills in physics and electronics and the newly (1960s) developing digital computer technology for quantitative analysis of agricultural samples.

In 1962, he built an instrument for NIR transmission measurements of ground and whole seed samples immersed in organic solvents, which was later changed (for user health and operational simplicity) to diffuse reflection measurements on the dry sample. Essential to the commercial application of these methods was the development of multiple regression analysis that related signal to the analyte concentration, in a procedure that would become known as chemometrics.

Finding success in his analyses but then disappointed after trying the best commercial spectrometer available at the time, he redesigned and built his own instruments. The technology from these endeavors spawned an entire industry specialized in the manufacturing of near-infrared spectroscopy instruments and associated software for analysis of food (grains, oilseeds, fruits, vegetables, meat), petrochemicals, and pharmaceutical products.

Karl Norris worked with several BARC scientists (including Warren Butler, Harold Siegelman, Harry Borthwick, and Sterling Hendricks) who, together, isolated phytochrome in 1959, the light-sensitive protein which controls photoperiodic plant processes such as germination, growth, and flowering. The identification and measurement of phytochrome were some of the most important discoveries in plant science of the 20th century, with global impact for both food crops and ornamental plants.

Karl Norris received many USDA recognitions that include but are not limited to Superior Service Awards in 1955 and 1963, a Distinguished Service Award in 1986, and induction into the ARS Science Hall of Fame in 1989.

His numerous other honors and awards include being named a Fellow of the American Society of Agricultural Engineers (ASAE) in 1967, receiving the Cyrus Hall McCormick Gold Medal by the ASAE in 1974; being honored by the American Academy of Achievement in 1975; receiving the Alexander Von

Humboldt Prize in 1978; election into the National Academy of Engineering in 1980; being named an outstanding engineering alumnus in 1986 and an alumni fellow in 1988 by the Pennsylvania State University; receiving the Thomas Burr Osborne Medal by the American Association of Cereal Chemists; receiving the Maurice F. Hasler Award at the 1991 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy; being selected in 1995 by the International Committee on Near-Infrared Spectroscopy to become the honorary First Fellow of NIRS; receiving the Sir George Stokes Medal of the Royal Society of Chemistry, United Kingdom, in 2002; and receiving the newly established Karl H. Norris Award in Near-Infrared Spectroscopy from the Japan Council of NIRS (JCNIRS). In addition, Karl Norris attended every meeting from 1982 to 2016 of the International Diffuse Reflectance Conference held biennially at Wilson College; he was awarded an honorary Doctor of Science at the 2006 meeting, and a surprise second Karl H. Norris Award in NIRS at the 2014 meeting after the award had been transferred from JCNIRS to the International Council for NIR.

Joseph Stavely

Dr. Joseph Rennie Stavely of Silver Spring, MD died on Sunday, Oct. 13, 2019, at Georgetown University Hospital. He was 80. Dr. Stavely was a Research Plant Pathologist at BARC. After a 34-year-long career, he retired from the Molecular Plant Pathology Laboratory in 2000.

Dr. Stavely was born on May 28, 1939, in Wilmington, DE the son of the late Joseph Glover Stavely and Susan Frances Stavely. After graduating in 1957 from Newark High School, he received his B.S. in Entomology and Plant Pathology at the University of Delaware and then did his graduate program at the University of Wisconsin where he received his Ph.D. in Plant Pathology in 1965.

In August of the same year, he married Nancy Carol Gall. He was a member of the Toast Masters Club in Beltsville, MD, and a lifelong member of St. Philips Episcopal Church in Laurel, MD where he served on the vestry for two terms. He was also a member of St. John's Episcopal Church in Ellicott City, the Sons of American Revolution, and president of I.U. Families Association. His interests included genealogy and family research. He also enjoyed traveling and gardening.

Dr. Stavely joined the ARS-USDA in Beltsville in 1966. He was an internationally recognized authority on bean rust and led a cooperative bean improvement program, with 400 publications to his credit. The program resulted in the commercial release of 75 snap and dry bean germplasm lines with resistance to all 65 known strains of the bean rust fungus. Several of these lines also contained genes conferring resistance to two viral pathogens and have been used extensively by breeders in the U.S. to develop dry bean varieties for their states and in South Africa for the development of rust-resistant varieties.

Dr. Stavely was a member of the American Phytopathological Society and served as President of the Society's Potomac division. Over the years he received several awards including the George M. Worrilow Award from the University of Delaware Ag Alumni Association, the American Phytopathological Society Distinguished Service Award for his research services by the National Dry Bean Council, and the Bean Improvement Cooperative Meritorious Service Award.

Dr. Stavely is survived by his wife Nancy Carol Gall Stavely and his son Joseph Carl Stavely and daughter in law Sandi as well as nieces, nephews, and cousins. A visitation was held on Friday, Oct. 18, at Fellows, Helfenbein and Newnam Funeral Home in Chestertown, MD. A memorial Eucharist was held on Sat. Oct 19, 2019, at Christ Church in Worton, MD.

George Steffens

Dr. George Louis Steffens of Silver Spring died on August 20, 2019, at the age of 89. Dr. Steffens was a Research Plant Physiologist and retired from the USDA-ARS in the early fall of 1992.

Dr. Steffens had an illustrious career with the ARS and served in several leadership positions, ending his career in the Fruit Laboratory in Beltsville. He received his Ph.D. from the University of Maryland, where he also received his B.S. and M.S. His Ph.D. was in Agronomy and Plant Physiology and he graduated in 1956. He spent two years in the Army at the U.S. Army Chemical Center. He then accepted a position at General Cigar Co. in Lancaster, PA. From there he went to the USDA-ARS, first in Tifton, GA working on tobacco before transferring to Beltsville

Agricultural Research Center (BARC) in Beltsville, MD before 1970.

While in Beltsville, he served as a Research Leader for the Tobacco Laboratory, then the Plant Hormone Laboratory. He had a sabbatical year at Cornell University about 1980 to 1981 and then joined the Fruit Laboratory after returning from the sabbatical leave. He was a very gifted Plant Physiologist, an expert in the bio-regulation of plant physiological processes. He made important scientific contributions to our understanding of how plant indigenous hormones control various plant living processes and how plant growth regulators can practically be used to improve productivity, growth, and quality of harvested plant parts. He was not only great mentor but also as a very positive human being and a true gentleman.

Dr. Steffens was a longtime member of the Plant Growth Regulator Society of America (PGRSA) and served as the Society's President. He also was a longtime member of the American Society for Horticultural Science and the American Association for the Advancement of Science.

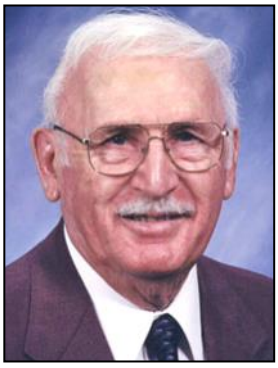
Memorial Service for Dr. George L. Steffens was held on September 14, 2019 at Christ Lutheran Church in Washington D.C. He is survived by his wife of 23 years, Margaret C. Steffens; children, Christopher Steffens and Lisa Steffens and their families; stepchildren, Penelope O'Hearn, Vivienne Heines and Valerie Cook and their families; and numerous nieces, nephews, and cousins.

James Svoboda

Dr. James A. Svoboda died at the age of 85 on January 11th, 2020.
James A. Svoboda initially joined ARS as a Postdoctoral Research Associate in 1964. Originally from Montana, he had previously obtained a B.Sc. at the College of Great Falls in 1958 and obtained his Ph.D. from Montana State University in 1964. In 1965, he joined the Pioneering Insect Physiology Laboratory as a Research Entomologist and was appointed Laboratory Chief (Research Leader) in 1979, a position he kept until his retirement in the early 1990s.

He was a founding member of the Editorial Board of *Insect Biochemistry and Physiology*, and in 1987 he was awarded an ARS Fellowship to do research for four months at the Department of Biochemistry, the University of Liverpool with Professor Huw. H. Rees. His area of expertise was insect sterols and steroid hormones and he published numerous papers and review chapters on the utilization of sterols by insects. He is best known for his research showing that different insect species handled dietary plant sterols differently, some converting or dealkylating these plant sterols to cholesterol, while other species were either incapable of dealkylation, or dealkylated ingested plant sterols to a product other than other than cholesterol.

Dr. James A. Svoboda is survived by his wife Evie and five children. The Funeral Mass and Graveside Services were held in the Sacred Heart Chapel and Sacred Heart Cemetary, respectively, in Bowie, MD on January 18, 2020.



Bill Welker

Dr. William (Bill) Welker, Jr., of Charles Town, WV died on August 16, 2019, at the age of 90. Dr. Welker was an ARS Research Horticulturist. He retired from the USDA-ARS Appalachian Fruits Research Station in 1991.

Dr. Welker received his Ph.D. from the University of Wisconsin in 1962. Soon thereafter he embarked on his scientific career with the USDA- ARS Worksite in Chatsworth, NJ as a Research Horticulturist specializing in weed control in cranberries. This Worksite, which is now physically located in the Philip E. Marucci Center for Blueberry and Cranberry Research and Extension at Rutgers University, Chatsworth, NJ (Burlington County), is programmatically and administratively affiliated with the Genetic Improvement of Fruits and Vegetables Laboratory at Beltsville Agricultural Research Center in Beltsville, MD. While in Chatsworth, Dr. Welker developed different wiper devices, including the so-called hockey stick applicator. They allow safe applications of post-emergent herbicides to effectively control weeds without harming cranberries and other cultivated crops. Dr. Welker is listed on a number of patents for inventing these devices. The New Jersey cranberry growers to this day credit Dr. Welker with revolutionizing weed control programs in cranberry bogs. In recognition of his contributions to the cranberry industry, one of the new cranberry

varieties developed by Rutgers University was named after him.

About 1980, Dr. Welker transferred to the USDA-ARS Appalachian Fruit Research Station (AFRS) in Kearneysville, WV. He continued his work on weed control in temperate fruit orchards, e.g., apple, peach, nectarine, pear, and some small fruit crops. Also, working with other scientists in the AFRS, especially Dr. Mike Glenn, Dr. Welker contributed to the development of very innovative new methods of soil management systems to improve tree performance, conserve soil moisture and to control vegetative tree growth.

Bill had a knack for separating practical from non-practical solutions to weed, soil management and cultural practices. His quick wit and dry humor, was enjoyed very much.

Dr. Welker is survived by his wife, Barbara, daughters Catherine Salge, Carol Diaz, sons William and Robert, sister Jacqueline Welker, nine grandchildren, and three great-grandchildren.

A Mass of Christian Burial was held for Dr. Bill Welker on September 5, 2019, at St. James the Greater Catholic Church in Charles Town, WV. He was a veteran and was laid to rest with military honors at St. Peter's Cemetery in Harpers Ferry, WV.

Minnie Finger Lime Makes Its Debut

Minnie Finger Lime, a new citrus cultivar developed by Agricultural Research Service scientists.

Minnie Finger Lime is the perfect name for a new citrus cultivar developed by Agricultural Research Service (ARS) scientists. It's as small as your thumb and was bred to grow well in Florida, the home of Minnie Mouse and Disney World! Finger limes are typically grown in California, but a niche presented itself in Florida, and ARS researchers filled it.

Plant geneticist Kim Bowman and colleagues at the U.S. Horticultural Research Laboratory in Fort Pierce, FL, are the masterminds behind this new citrus wonder. Minnie Finger Lime is a very small fruit—a little over 2 inches long, but only three quarters of an inch around—and weighs about one third of an ounce.

Dear President Stoner and FAR-B membership,

We must applaud you for your continual support of the outreach and collaborative efforts of the scientific community in Beltsville. Your unwavering dedication has been critical in making the programs that we spearheaded successful. As you know, we here in Beltsville have coordinated an Agricultural Research Learning Experience (ARLE @Beltsville) in conjunction with USDA-NIFA's Division of Community Education for Hispanic Serving Institutions (HSIs) under the direction of National Program Leader Dr. Irma Lawrence for the past 8 years. ARLE @ Beltsville has been celebrated through the years with awards from the area, agency and the Organization of Professional Employees within USDA. Most recently, the group was award the 2019 Northeast Area's Outreach, Diversity and Equal Opportunity Award.

This employee organized and ran endeavor is a part of the Department and Agency's initiatives associated with accountability, program delivery, and employment of minorities in support of ARS' civil rights goals. We have had an opportunity to provide an 8 to10 week overview of our programs, hands-on learning experiences, and group activities to enhance knowledge of research as it relates to ARS programs and future careers in agricultural research to more than 200 students from HSIs across the country during this time. We anticipate this year will be no exception. In the coming month, we will be opening applications to participating Project Directors to extend to their students. We are welcoming students at various stages of their academic careers (undergrad freshman through PhD) and from many different disciplines, therefore we generally have placement throughout the Area's centers. All the students will be matched with outstanding scientists in one of three ARS centers located in Beltsville that will mentor them while students assist on their current projects. This continues to be a phenomenal learning experience for both students and mentors which contributes to the Area's goal of increasing collaborations and diversity.

FAR-B members have helped make all of these endeavors successful with their constant support. We anticipate that our efforts will inspire a diverse community of future scientists to see the wealth of possibilities in Agricultural Sciences and **FAR-B** will be an integral part of that achievement. Again, we praise your dedication to promoting the importance of Agricultural Science through outreach.

Verneta Gaskins,
Plant Pathologist, Northeast Area

It has pale-yellow to pale-green pulp-vesicles that are ovoid shaped instead of the typical teardrop shape of regular limes. These traits have inspired chefs to use finger limes as an attractive fresh garnish.

The finger lime is also described as citrus caviar because of the appearance of the pulp-vesicles and their firm, popping texture. "Minnie Finger Lime is intended for use as a garnish and for flavoring, much like the closely related Australian finger lime," says Bowman.

Minnie Finger Lime was developed and evaluated as a novelty or specialty cultivar and for its ability to grow in Florida. "Minnie Finger Lime typically grows as an attractive and very compact tree, suitable for pot culture and the backyard," says Bowman, adding "We developed Minnie Finger Lime for Florida growers who want to expand their portfolio and provide this cultivar to the local niche restaurant market."

Source plant material for Minnie Finger Line is available from the Florida Bureau of Citrus Budwood Registration clean budwood program. Genetic material of this release will be placed in the National Plant Germplasm System, where it will be available for research purposes, including development and commercialization of new cultivars.

Sharon Durham, *ARS Office of Communications*

New Breakfast Cereal Made With ARS Wheat Share


PHOTO COURTESY PEGGY GREB

Waxy-Pen, a wheat developed by ARS breeders and collaborators, is a main ingredient in the commercial cereal *Hi! Happy Inside*, shown above with raspberries and blueberries.

A new breakfast cereal made its commercial debut in January 2019, and one of its main ingredients is a type of wheat developed by Agricultural Research Service (ARS) breeders and collaborators.

The wheat cultivar, named Waxy-Pen, is what's known as a waxy wheat. The starch in normal wheat kernels contains about 75 percent amylopectin, a sugar molecule. But Waxy-Pen's starch contains 100 percent amylopectin. The starch's unique composition can improve the texture, shelf life, and other qualities of foods made with it.

"Waxy starch has dramatically different processing properties, such as lower gelatinization temperature and higher water swelling. It puffs really well, with large expansion and crispy texture," says Craig Morris, a research chemist at the ARS Western Wheat Quality Laboratory, a part of the Wheat Health, Genetics, and Quality Research Unit in Pullman, WA.

Morris and his colleagues released Waxy-Pen (then named Penawawa-X) in 2006, after more than a decade of conventional breeding to alter the wheat kernel's starch composition. To identify possible uses for Waxy-Pen, Morris sent dozens of samples to bakers, millers, food companies, and others. Ultimately, Kellogg's collaborated with Morris to explore the wheat's potential, and now, whole-grain Waxy-Pen is a major ingredient in HI! Happy Inside cereal, which the company markets as promoting intestinal health.

The cereal brand's debut represents one of the first commercial uses of waxy wheat and could attract the interest of millers, food processors, health-minded consumers, and wheat growers looking to tap new value-added markets.

Sue Kendall, *ARS Office of Communications.*