N.C A&T Co-Leads Convergence Accelerator summit for Digital and Precision Agriculture

ARDUPdates

ASSOCIATION OF 1890 RESEARCH DIRECTORS

August 2021, Vol. 12, Issue 8

DR. CHANDRA REDDY

Message from the Chair

Dr. Chandra Reddy

Dear Friends and Colleagues,

Last month, in conjunction with Joint COPS, ARD held its summer meeting virtually on July 22. Not only did we focus on the 1890 Centers of Excellence, the 1890 Scholarship Program, 1890 Advocacy, the 2022 research symposium *(see flyer on page 6)* and post-COVID-19 preparedness, we also focused on climate adaptation/mitigation and the 2023 Farm Bill.

Owing to the Biden Administration, along with many federal and state agencies, describing "climate change" as an existential threat and an issue with dimensions in national security, foreign policy, environmental justice, agriculture, transportation, energy, economic development and prosperity, the Regional Executive Directors conducted a survey of its directors to assess climate research capacity of the Experiment Station Section (ESS) as groundwork for positioning the ESS to attract research funding, rebuild infrastructure and build collaborations system-wide advocacy.

Eighty percent of all directors nationwide responded to the survey, including all 19 1890 universities. In terms of the 1890 differentials, the data revealed that most of the 1890s have a growing climate change research portfolio in the areas of 'sustainability agriculture, food security, and food safety;' 'natural resources, biodiversity and water resources;' and 'renewable and biofuels.'

Given these data, and as discussed in our business meeting, the 1890s have the expertise and human capacity to help solve the existential threats of climate change and/or climate resiliency. Consistent with ARD's Strategic Agenda, through a combination of capacity, capacity-building and competitive funds together with strategic collaborations, a path forward was charted to develop a multi-state, multidisciplinary and transdisciplinary project to advance an 1890 Climate Resiliency Research Initiative with a focus on equity and the impact on farmers, low-wealth communities and communities of color.

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ARIA Update

DR. MOSES KAIRO

The Agricultural Research Infrastructure Advocacy (ARIA) is a bold initiative by the Experiment Station Section, endorsed by APLU, to request that Congress support an agricultural research infrastructure investment of $11.5 billion at U.S. colleges of agriculture in any future federal infrastructure initiatives. Specifically, ESS is urging funding over five years for the Research Facilities Act (Act), administered by the USDA National Institute of Food and Agriculture (NIFA). The Act authorizes an agriculture and food-focused research infrastructure program for facility construction, alteration, acquisition, modernization, renovation, or remodeling. ESS seeks to ensure that the Secretary of Agriculture has the authority to waive matching requirements and consider geographic and equity in program administration.

Below is a synopsis of current agricultural research infrastructure activities:

- The Senate voted last Thursday (July 29th) to begin a debate on the bipartisan infrastructure (BIP), which unfortunately did not include ARIA. Even though we were not successful in getting ARIA in BIP, advocacy in the Senate by our champions continues to be invaluable for keeping the ARIA proposal positioned for consideration during the partisan budget reconciliation process.
- Senator Mazie Horono introduced a Marker Bill to support ARIA entitled, "Augmenting Research and Educational Sites to Ensure Agriculture Remains Cutting Edge and Helpful Act."
- I ask you to reach out to your government relations contacts to urge them to encourage your senators' co-sponsorship.
- Republican co-sponsorship is also being sought. Any assistance that you can provide will be appreciated greatly.
- I also ask you to reexamine our relationship/reconnect with our Democratic champions.
- Last month, a "Dear Colleagues" letter signed by Representatives Jimmy Panetta, Kim Schrier, Stacey Plaskett, and Alma S Adams was circulated to the House leadership, including a reference to Cooperative Extension. A Senate letter was also

See ARIA on Page 5

1890S HAVING AN IMPACT

Congress approved the Evans-Allen Act of 1977 to provide capacity funding for food and agricultural research at the 1890 land-grant universities and Tuskegee University (the 1890 Institutions) similar to that provided to the 1862 universities under the Hatch Act of 1887. Research conducted under the Evans-Allen Program has led to hundreds of scientific breakthroughs of benefit to both the unique stakeholders of the 1890 institutions and the nation as a whole. The Evans-Allen Program has been extremely important in allowing the 1890 institutions to attract top-notch scientists to their campuses, conduct high-quality and innovative research and become more fully integrated within the land-grant system.

Below are examples of impacts from the 1890 research program submitted by scientists at Virginia and West Virginia State universities.

VSU explores chronic diseases with fruits/vegetables

Chronic diseases, such as obesity, cancer, diabetes and cardiovascular disease, are prevalent in society. Obesity is one of the leading contributory factors in developing chronic diseases, including cancer, cardiovascular diseases and diabetes. In Virginia, the obesity rate in adults is 30.1%, according to the 2018 State of Obesity: Better Policies for a Healthier America report. In Virginia, cancer is the leading cause of death, followed by cardiovascular disease. About 5.9% of Virginians live with a variety of cardiovascular diseases, while 9.6% of Virginians (nearly 1 in every 10) live with diabetes, which is the seventh leading cause of death in the state.

While those numbers are disconcerting, more awareness of how consuming foods that help prevent and treat chronic diseases, particularly obesity, is helping to educate consumers about the health benefits gained from ginger, turmeric, plums and papayas. Modern science has discovered that most food contains effective disease-preventive biomolecules that can improve our health and reduce our risk for many diseases, including obesity, diabetes, cardiovascular diseases, cancer, poor bone health and neurological diseases.

The Nutrition Science and Food Chemistry laboratory at Virginia State University is actively involved in investigating the beneficial effects of fruits and vegetables for preventing and/or treating chronic diseases. The purpose of this program is to introduce new profitable crops in Virginia for promoting agriculture-based business development and human health and nutrition, providing incentives for farmers to grow these crops in Virginia.

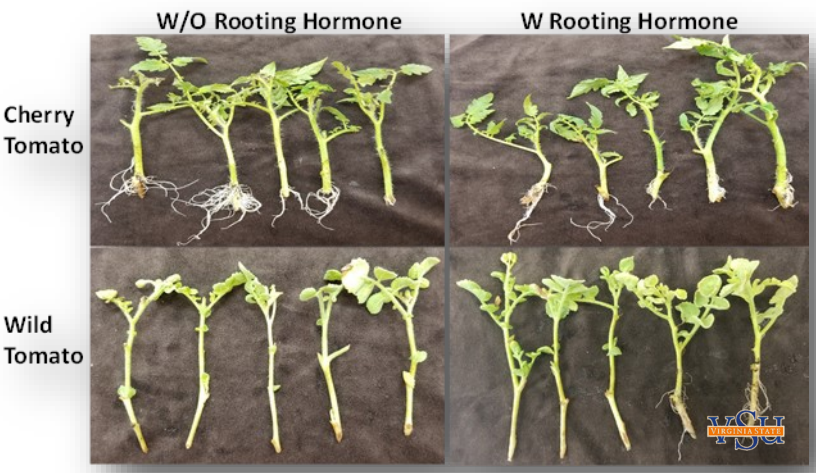
Research at VSU has arrived at the following findings:
Berries are packed with antioxidation activity. Our study also found that blueberries grown in high tunnels are as nutritive as blueberries grown in the field. Aronia berries grown at Randolph farm are superior in phenolic contents and can potentially be a good anti-inflammatory fruit.

Baby ginger (*Zingiber officinale*) contains high levels of phenolic compounds and superior antioxidation activity than mature ginger and the extract

See Chronic Diseases on Page 4

Tomato stem cuttings may provide answers for VSU researchers

Stem cuttings are one of the most used plant propagation methods for woody and ornamental plants. For many ornamental shrubs, stem cuttings are, in general, easy to root; however, for many tree species, rooting stem cuttings is more challenging. Currently, rooting hormones are widely used in the horticultural industry to aid root formation from stem cuttings. Yet challenges remain for many species.



One such challenge is that the application of external plant hormones is not environmentally friendly and will pose health risks for those in direct contact with the hormone compounds, as well as anyone who consumes the products contaminated through environmental pollution. Fortunately, improving the rooting ability of stem cuttings without external hormones will provide an economically sound and environmentally friendly strategy to mass propagate many woody and ornamental plants. Such technology could also be applied to hybrid vegetables for mass propagation and save both time and labor.

At Virginia State University, researchers found that the cherry tomato will easily form roots from stem cuttings. Still, wild tomato (*Solanum pennellii*) cannot root at all, even with a 30-day water culture system. Researchers therefore systematically conducted experiments to characterize the genetic control of rooting from stem cuttings.

The root formation of the cherry tomato is independent of plant hormones. Even without rooting hormones, all stem cuttings

See Tomatoes on Page 4

West Virginia focuses research on water quality

In 2014, residents in West Virginia's Kanawha Valley became hyper-focused on water quality like never before when a chemical spill near the capital city of Charleston left more than 300,000 residents without drinking water for days.

Many urban areas, like Charleston, use water derived from rivers, but these rivers and associated watersheds are often degraded due to municipal, agricultural or industrial uses. The Kanawha River and its watershed have been greatly impacted by heavy industrial use and pollution since World War I. When the 2014 water crisis occurred, it brought the safety of our water once again to the forefront, and researchers at West Virginia State University have stepped up to learn more about the quality of one of the state's biggest sources of water.

Biology professor Dr. David Huber's research involves the Kanawha River and its watershed, which extends for more than 12,000 square miles and enters Virginia and North Carolina.

"This is an interesting and important watershed that encompasses a highly variable, multi-use landscape, including natural forests, mountaintop coal mining, agricultural land, municipal areas and heavy industry," Huber said. "The watershed is important because it provides fresh water for consumption by hundreds of thousands of people, while simultaneously serving chemical manufacturing processes which can damage water quality."

Huber's team seeks to understand which areas of the Kanawha River ecosystem are most degraded and which are healthiest using microbial ecology techniques.

"Microorganisms are the engine that keeps the biosphere running," he said. "All plant and animal life are ultimately dependent upon microorganisms living in soil, oceans and freshwater environments. Our research requires that we sample microbial diversity and environmental chemistry of the Kanawha River and its tributar-

See Water Quality on Page 8

Watermelons—the healthy fruit

While it is celebrated as a tasty treat at summertime picnics and cookouts, many people do not fully realize the health benefits of watermelon. It is low in calories and carbohydrates, chock full of vitamin C, citrulline and potassium and contains no fat, cholesterol or sodium. It's also a disease fighter, containing more lycopene, an antioxidant linked to lowering the risk of cancer and heart disease, than any other fruit or vegetable (May Clinic, 2018). And since 92% of watermelon is water, it is hydrating – and very appropriately named.

These benefits, not to mention the delicious taste and the fact that watermelon is suitable for growth in the state's climate, suggest that watermelon could be a lucrative crop for West Virginia farmers and providing growers with the strongest, healthiest and most disease-resistant fruit on the vine is the goal of research at West Virginia State University.

While there are several different types of watermelons grown in the U.S., WVSU scientists are focusing on studying seedless watermelons, largely in response to consumer demand. U.S. shipments of seedless watermelon rose from 51% in 2003 to nearly 85% in 2014 (AgMRC, 2018).

In the labs of Drs. Umesh K. Reddy and Padma Nimmakayala, students, are using grafting techniques to create value-added fruits crops. Grafting involves placing a portion of one plant into or on the stem or root of another, resulting in a union that allows for continued growth. Grafting on hard rootstocks, as is done at WVSU, enables them to grow and withstand toxins and acidity deposited in the soils that are contaminated with coal mine runoffs, soil-borne diseases and insect pests and has been used as a sustainable alternative for watermelon cultivation.

The results? Promising.

See Watermelon on Page 5

Lincoln University establishes hemp institute with $600,000 grant

Lincoln University of Missouri (LU) has recently established the Industrial Hemp Institute and awarded a $600,000 capacity building grant by USDA-NIFA to promote industrial hemp research and enhance sustainable hemp production in the Midwest.

The Institute and the research aim at building the research, Extension and education capacity of industrial hemp and conducting nationally recognized quality hemp research and Extension for farmers, especially small, underserved and minority farmers.

Dr. Babu Valliyodan, the chair of the LU Industrial Hemp Institute and assistant professor of Plant Molecular Biology & Genomics, is collaborating with local farmers and several Missouri institutions, including University of Missouri (MU), Truman State University (TSU), Missouri State University (MSU) and Southeast Missouri State University (SEMO), in an effort to conduct hemp variety trial experiments, establish genetics and genomic tools and best stable hemp genetics through molecular breeding approach, share the various hemp uses and benefits and develop the best management practices for the production of four major types of industrial hemp such as fiber, grain, dual and oil/cannabinoid.

The research is also to find ways to reduce the levels of tetrahydrocannabinol (THC) produced in industrial hemp, which is a national problem facing by farmers. LU State Integrated Pest Management Specialist Dr. Clement Akotsen-Mensah will conduct field research to address current and potential IPM management issues.

The education and Extension efforts are intended to enhance training programs for growers, law enforcement and college students majoring in agriculture, molecular biology or plant science. Additionally, the partnership with hemp farmers and the multi-institutional and multi-disciplinary teamwork will strengthen the collaborations in industrial hemp research with Extension and education among 1862, 1890, and non-land grant institutions.

Moreover, the LU Industrial Hemp Institute team is representing the state of Missouri in the National Hemp Yield Trials project funded by the USDA, where more than 25 other states are participating.

Julie Smith/News Tribune Lincoln University graduate student Samira Mahdi sprays a light mist of water on the industrial hemp plants being grown in a lab at Lincoln.

Chronic Diseases ... from page 2

from ginger effectively reduces lipid deposits in adipocytes (fat cells).

The phenolic compounds in turmeric (*Curcuma longa*) have strong anti-inflammatory and anticancer activity for breast cancer.

Papaya (*Carica papaya*) pulp increased glucose uptake in liver cells and can be beneficial to reduce blood glucose levels. In addition, Papaya seeds possess the wound-healing activity and have the potential to be used for treating diabetic wounds, a complication that is common in diabetes patients.

Further research is needed to evaluate the effects of berries in reducing chronic inflammation, such as atherosclerosis. Research is needed to test different varieties of ginger (white, yellow, pink, and blue ginger) for their potential health benefits against obesity.

The impacts of this research can already be seen and are expected to grow. Small Farm Outreach Program (SFOP) at VSU and Virginia Cooperative Extension (VCE) conducted statewide workshops in 2019 on ginger, turmeric and berry production, which were attended by nearly 100 interested growers and other individuals. In 2019, Virginia consumers had access to locally grown ginger and turmeric substituted for imported ginger and turmeric from other countries. Virginia growers at local markets sold a total of 3,000 pounds of ginger and 2,000 pounds of turmeric with a total value of $55,000.

Consuming baby ginger will impact a reduction in the incidences of obesity. Efforts led by SFOP and VCE are expected to generate 10,000-15,000 pounds of blackberries and 5,000-7,000 pounds of blueberries per acre of land. Our study will promote high tunnel container-grown blueberries. The increased consumption of berries will help reduce pro-inflammatory conditions in affected populations to prevent chronic diseases.

***For more information, contact**: Dr. Rafat Siddiqui or (804) 524-5957. This project was supported by the Evans-Allen Program of the USDA's National Institute of Food and Agriculture (NIFA).*

Tomatoes ... from page 2

from cherry tomatoes formed roots within seven days after cutting.

However, the wild tomato is partially dependent on plant hormones for its root formation. Without external hormones, none of the stem cuttings formed roots, while about 30% of the stem cuttings were able to initiate and develop root systems when rooting hormones were applied.

During further studies using F1 and F2 generations from the cross of cherry tomato x *S. pennellii*, we found that an easy rooting phenotype in cherry tomatoes is controlled by a dominant gene. Through next-generation sequencing techniques, in combination with the pooled strategy in an F2 segregating population, we were able to pinpoint the corresponding gene onto ~4 MB region of Chromosome 3 or 2.5 MB region of chromosome 10. Further functional analysis within the regions leads us to identify only three interesting candidate genes that warrant further investigation.

With the results obtained, we are excited to examine the expression of all candidate genes and compare them between cherry tomato and *S. pennellii*. We will also clone all three genes from the cherry tomato and overexpress them in *S. pennellii* to check if the overexpression can override *S. pennellii* phenotype and make it root more easily. Once the corresponding gene is confirmed, we will be able to apply it to other species to help facilitate the rooting process from stem cuttings.

Through this research, we have the potential to discover new knowledge on rooting capacity from stem cuttings and identify the gene corresponding to the rooting phenotype and to develop a new strategy for environmentally friendly mass propagation of many woody and ornamental species.

***For more information, contact**: Dr. Shuxin Ren or (804) 524-3094. This project was supported by the Evans-Allen Program of the USDA's National Institute of Food and Agriculture (NIFA).*

Reddy … from page 1

Dr. Vernon Jones, ARD's representative on the APLU/BAA Committee on Legislative and Policy (CLP), and past ARD Chair, led the membership in an important discussion on ARD's strategies to work with the Association of Extension Administrators (AEA), the 1890 Council of Deans of Agriculture and the 1890 Universities Foundation on how best to effectively participate in this process and how to ensure that the 1890 system priorities are included in the 2023 Farm Bill's authorization language. In addition to the 1890 six priority programs (Evans-Allen research program, 1890 Extension, 1890 Capacity Building Grants Program, 1890 Facilities Improvement Program, Centers of Excellence at 1890 Institutions and Scholarship for Students at 1890 Institutions), ARD will not only be examining Title VII, (research and related matters) but other Titles in the 2018 Farm Bill as well. ARD will remain vigilant in this legislative process and will collaboratively work with the land-grant system.

Dr. Louis Whitesides, ARD chair-elect and administrative head at South Carolina State University, led the 1890 research delegation at the recent Southern Administrative Heads & CARET Joint Summer Meeting at Clemson University. South Carolina State and Clemson are working hard and collaboratively to help increase agriculture, the state's top industry, from an annual economic impact from $46.2 billion to $50 billion in the next few years. Whitesides updated ARD activities focusing specifically on the agriculture infrastructure initiative, leadership development programs (FSLI and LEAD-21), the 1890 Scholarship Program, the 1890 Centers of Excellence, the fall 2021 ESS annual meeting and the 2022 ARD research symposium.

Regarding the 1890 Centers of Excellence, Dr. Moses Kairo also gave an overview of the Center of Excellence for Global Food Security & Defense hosted by the University of Maryland Eastern Shore; Dr. Renita Marshall gave an overview of the Center of Excellence for Nutrition, Health, Wellness and Quality of Life hosted by Southern University; and Dr. Ralph Noble gave an overview of the Center of Excellence for Student Success and Workforce Development hosted by North Carolina A&T State University.

Finally, at the Southern AHS/CARET Joint Summer Meeting, Whitesides led a very impactful discussion on improving the state match for the 1890s, including some specific strategies from South Carolina.

Watermelon … from page 3

"We identified grafting methods that are better suited to growth in West Virginia's acidic and heavy metal-contaminated soils," Reddy said. "Grafting with bottle gourd rootstock increased the size and rind thickness of watermelon fruits."

This results in a larger fruit, ideal for those extended family picnics, with a thicker rind that is able to withstand potential pests and disease better.

The research has also identified two genes responsible for citrulline variation in watermelons. Citrulline is an amino acid that has been demonstrated to possess health benefits to fight cardiovascular disease, the leading cause of death in West Virginia (CDC, 2020).

In the long run, this work will result in a better, stronger, healthier fruit option for growers and consumers alike from West Virginia and the USA.

Reddy and Nimmakayala's work with watermelons has appeared in such publications as the Plant Journal, Plant Molecular Biology, Plant Science, International Journal of Molecular Sciences, Plant Biotechnology Journal, and **the** Journal of the American Society for Horticultural Science.

Resources

AgMRC. (2018). Watermelon. Retrieved from https://www.agmrc.org/commodities-products/vegetables/watermelon.

CDC. (2020). National Center for Health Statistics: West Virginia. Retrieved from https://www.cdc.gov/nchs/pressroom/states/westvirginia/wv.htm.

Mayo Clinic. (2018). The wonders of watermelon. Retrieved from https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/the-wonders-of-watermelon.

***For more information, contact**: Drs. Umesh Reddy: or (304) 766-3066 or Padma Nimmakayala or 766-3258..*

This project was supported by the Evans-Allen Program of the USDA's National Institute of Food and Agriculture (NIFA).

ARIA… from page 1

sent before the Senate negotiations on the bipartisan infrastructure agreement and in anticipation of reconciliation. The turnaround was less than 48 hours. We appreciate Senators Amy Klobuchar and Mazie Horono for their leadership on this issue. We continue to need other members to support the request in collaboration with these Champions.

Op-Eds:

- As printed in last month's edition of *ARD Updates*, Rep. Stacey Plaskett wrote a very impactful op-ed article in Agri-Pulse. The best op-ed is one by a member of Congress in support of our request.
- ESCOP Chair Moses T. Kairo, PBD Chair Thomas Coon, BLC Chair Glenda Humiston and Chris Watkins, ECOP chair, are developing an article to support this effort.
- As part of the effort, SoAR has also asked the University of Nebraska and the University of Wisconsin to participate in an op-ed in Agri-Pulse.

THE 1890 RESEARCH AND INNOVATION AGENDA: PATHWAYS TO BUILD BACK BETTER

April 2 – 5, 2022 | *Atlanta Marriott Marquis, Atlanta, GA*
Registration: -Deadline for Early Registration – Nov. 12, 2021— $550
Regular Registration – Nov. 13, 2021 – Feb. 25, 2022—$575
Late Registration – Feb. 26 – March 25, 2022—$625
On-Site Registration - $650

REGISTRATION

Pay by purchase order, check or credit card. No funds (Note: Credit card users need to pay an additional fee to cover bank charges). Register here.

HOTEL REGISTRATION

Hotel Guest Room Rates:
Single and Double Occupancy: $194
Triple Occupancy $214 | Quadruple Occupancy: $234
Tax and Surcharges: Hotel rates are confirmed in 2022 and are subject is applicable state and local taxes (currently 16.9% plus a $5.00 per night State of Georgia Hotel Motel fee) in effect at the time of check in. Deadline to book, March 10, 2022.

ABSTRACTS & POSTERS

Click for submission form. Deadline – Nov. 15, 2021

DISPLAYS & EXHIBITS

Each 1890 campus is invited to display a university display at no-cost. Additional exhibits and non-1890 exhibits must pay the fee of $2,000 by Feb. 11, 2022. All exhibitors, including the 1890s, must submit the Exhibit Registration Form by the deadline of Feb. 8. To become an exhibitor, click here. To become a sponsor, click here.

MORRISON-EVANS & MAYBERRY AWARDS

The application deadline for the Morrison-Evans Outstanding Scientist Award and the B.D. Mayberry Young Scientist Award is Jan. 21, 2022. External reviewers, i.e. NIFA National Program Leaders will evaluate the applications. Access the applications here.

For additional information contact: Dr. Alton Thompson, ARD Executive Director, (336) 285-2955 or Dr. Orlando McMeans (225) 771-4310.

1890 Universities Foundation Congressional Fellowship Program

The 1890 Universities Foundation has established a Congressional Fellowship Program for 2021-2022 and is seeking qualified applicants for the first Fellowship to be awarded in September 2021. The award includes a stipend of up to $60,000 with an additional subsidy toward living expenses and health insurance.

The Fellow will focus on agricultural public policy issues and will be assigned to a congressional office and/or either the House or Senate Agriculture Committee. The Fellow will assist with legislative affairs issues, engage with the Foundation and its constituent members, as well as liaise with our partners for relevant professional development purposes.

At the conclusion of the 12-month fellowship, the 1890 Universities Congressional Fellow will have benefitted from extensive exposure and access to how Congress works, which could lead to employment opportunities with a range of organizations and federal agencies (such as the U.S. Department of Agriculture) and opportunities to work in congressional staff positions, agri-business corporations, and other industries.

How to Apply

To be considered for the fellowship, applicants must have:

- recently graduated from one of the 1890 Land-Grant Universities (current graduate students are also eligible);
- earned an undergraduate degree in the Agricultural Sciences or a related discipline, including Environmental Science, Public Policy, or Business & Economics; and
- earned a minimum 3.0 cumulative GPA at the time of graduation.

Interested applicants must submit a letter of application (cover letter), along with a resume and official academic transcript at the time of graduation from an 1890 University.

Deadline to Apply: September 3, 2021

Letter of application and supporting materials must be submitted as an email attachment (PDF) to the 1890 Universities Foundation at submissions@1890foundation.org with the following subject line: "**1890 Universities Foundation Congressional Fellowship – Applicant's last name**".

Tel 202.478.6091
1220 L Street, NW, Suite 1000 | Washington, D.C. 20005
WWW.1890FOUNDATION.ORG

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1890 Land Grant Universities

Alabama A&M University
Alcorn State University
Central State University
Delaware State University
Florida A&M University
Fort Valley State University
Kentucky State University
Langston University
Lincoln University
North Carolina A&T State University
Prairie View A&M University
South Carolina State University
Southern University and A&M College
Tennessee State University
Tuskegee University
University of Arkansas at Pine Bluff
University of Maryland Eastern Shore
Virginia State University
West Virginia State University

ARD Updates is published monthly by the Association of Research Directors. To suggest articles, contact Dr. Alton Thompson at athompson1@ncat.edu

Database team moves and Putman joins APLU

ANDREA PUTMAN

On July 15, ESCOP voted to move the National Impact Database Team, whose duty is to implement and maintain the website **landgrantimpacts.org**, to become a joint sub-committee of the **Communications and Marketing Committee** (CMC). The transition will occur over a year. Also, Karla Trautman, chair of the CMC, director of Extension at South Dakota State University, said, "One of the hallmarks of CMC's strategic communications roadmap is a monthly calendar of events." Monthly suggestions for engagement **like this** are sent to university communicators. To either verify or add contacts for Extension to that list, please contact Rick Rhodes at **rcrhodes@uri.edu**.

On the same day, ESCOP members met Andrea Putman, APLU's new assistant vice president, Communications and External Partnerships, Food, Agriculture & Natural Resources. The Experiment Station Section Cooperative Extension Section is equally invested with Cooperative Extension Section and the Academic Heads Sections of the Board on Agriculture Assembly in Andrea's work through 2022. ESS Directors should be aware of their multi-dimensional role with the **Strategic Communications Roadmap Plan** that Andrea is now hired to lead and implement.

Water Quality … from page 3

ies."

Microbial diversity is sampled using gene-based DNA methods, which allow Huber and his team to collect river sediment, soil and water samples and extract total DNA, which is then analyzed using sequencing techniques to provide the information content of the DNA.

"This process allows us to identify individual microorganisms and their genes without actually seeing the organisms themselves," Huber said. "We then compare different regions of the river that have been affected by various natural or manmade processes. Chemical analyses are done with spectroscopy, chromatography and chemical probes that are deployed to measure water quality of the river over time."

While the work is still in the research analysis stage, in the future it should provide insight into which regions of the Kanawha River watershed require the most remediation effort because of pollution and which are the healthiest. And a healthy river provides better quality, safer water for human consumption, as well as for the animal life living within it.

The work began through funding from the National Science Foundation's Established Program to Stimulate Competitive Research. WVSU recently received funding from the USDA National Institute of Food and Agriculture's Capacity Building Grants Program to expand the project by examining the effects of storm events on water quality and greenhouse gas emissions in the Kanawha River watershed.

***For more information, contact**: Dr. David Huber: huberdh@wvstateu.edu or (304) 766-5127. This project was supported by the Evans-Allen Program of the USDA's NIFA.*

NEW APPOINTMENT

DR. JOHN J. GREEN has been named the Director of the Southern Rural Development Center. Click here for the full press release.

CALENDAR

Experiment Station Section (ESS) Fall Annual Meeting, Sept. 27-30, 2021 | In-person, Olympic Valley, CA