



(2001-2021)

# ARD UPdates

ASSOCIATION OF 1890 RESEARCH DIRECTORS

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DR. CHANDRA REDDY



## *Message from the Chair*

Dr. Chandra Reddy

Dear Friends and Colleagues,

For more than 130 years, the 1890 land-grant universities have provided the essential research, education and public outreach that sustain the U.S. food and agriculture system. The Association of 1890 Research Directors (ARD) has fostered excellence in research innovations while providing avenues to train future global leaders in agriculture and food systems. The Association of Extension Administrators (AEA) has addressed many urgent and critical local, regional, national and global problems, particularly as these problems impact low-income and underserved communities. Sections 1444 and 1445 of the National Agricultural Research, Extension and Teaching Policy Act of 1977 (NARETPA) provided the basis for direct federal appropriations to support Cooperative Extension and agricultural research programs at the 1890 institutions. This federal support constitutes the most significant funding source and reflects the federal-state partnership managed by the National Institute of Food and Agriculture (NIFA).

NIFA has a longstanding partnership with the food and agricultural programs in the 1890 land-grant system. NIFA capacity programs enable work in our Evans-Allen and the Cooperative Extension programs for food and agriculture together with the 1890 Capacity Building Grants and the Facilities Grants programs, the Centers of Excellence and the Scholarships for Students. Along with the 1890 community, I strongly support these six NIFA programs that sustain and advance the food and agricultural programs to meet the growing demands and populations in the 1890 region and beyond.

These six programs support high-priority food and agricultural research, education and Extension needs such as student success and workforce development; improving health, nutrition and wellness; ensuring local and global food and nutrition security; ensuring the viability, sustainability, competitiveness of small and medium-scale agri-

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## House approves budget 1890s slated for increase

On June 30, 2021, the House Appropriations Committee approved the FY 2022 Agriculture Appropriations Bill, inclusive of the 1890 universities.

Discretionary spending for the bill totals \$26.55 billion, \$2.851 billion over FY 2021 and \$279 million below the President's budget request. The bill includes a total increase of \$84.72 million for NIFA, with all nine APLU priorities (AFRI, Smith-Lever, Hatch Act, Evans-Allen, 1890 Extension, McIntire-Stennis, 1994 Extension, payments to the 1994s and 1994 Research) receiving increases. Increases for APLU's nine priority lines represent 65.32% of the total NIFA increase.

The Committee also directed USDA to make every effort to strengthen partnerships and expand cooperation between 1862, 1890 and 1994 land-grant institutions, wherever regionally appropriate, to help close gaps in Extension and leverage joint collaborative efforts. The Committee also recognized the importance of 1890 land-grant universities and the collaborative relationships developed with ARS research facilities and directed ARS to expand coordination of research efforts with the 1890s wherever ARS facilities and 1890s are in the same region, to the greatest extent possible.

See Budget on Page 5

Account	FY 2021 Final	PBR	House	Increase over FY 2021	% increase over FY 2021
(\$ Millions)					
AFRI	\$435.000	\$700.000	\$450.000	\$15.000	3.45%
Evans-Allen	\$73.000	\$92.837	\$92.837	\$19.837	27.17%
1890 Extension	\$62.000	\$62.000	\$67.000	\$5.000	8.06%
1890 Capacity Building	\$26.000	\$26.000	\$28.500	\$2.500	9.62%
1890 Facilities Improvements	\$21.500	\$21.500	\$25.000	\$3.500	16.28%
1890 Scholarships	\$10.000	\$10.000	\$10.000	\$0	0.00%
1890 Centers of Excellence	\$10.000	\$0.000	\$10.000	\$0	0.00%

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## 1890S HAVING AN IMPACT

The Evans-Allen Act of 1977 was approved by Congress to provide capacity funding for food and agricultural research at the 1890 land-grant universities and Tuskegee University (the 1890 Institutions) in a manner 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 Langston and Prairie View A&M universities.

## Langston improves dairy goat production

Langston University has long supported increased economic returns for dairy goat producers in Oklahoma and beyond through an active research program addressing dairy goat production and products supported by 1890 Capacity Funding programs. Areas receiving attention over the years have varied considerably, but management practices influencing production and efficiency have been focal points. For example, goats belonging to breeds highly selected for milk yield do not consume feed in adequate amounts to support the quantity of milk being produced in early to mid-lactation.

One of the main reasons is that diet nutritive value affects tissue mobilization to support milk production in early lactation. However, the magnitude and nature of the effect have not been well characterized in dairy goats. The other most obvious factor influencing this physiological process is initial body condition, as assessed by body condition score.

One of Langston University's recent Evans Allen projects sought to determine effects and interactions of the initial body condition and diet nutritive value on performance and associated conditions by Alpine goats in early and mid-lactation. In a related study, different pasture access regimes that could influence the amount of energy used for activity were also addressed. An important conclusion was that there is likely to be improved efficiency of milk production by pasture access between morning and afternoon milking com-

pared with continuous grazing and there were no clear benefits from delaying pasture access until leaf surfaces were dry. A similar study in confinement revealed that continuous diet access of dairy goats in early to mid-lactation can affect the partitioning of nutrients between milk synthesis and tissue accretion differently than some restricted feeder access treatments. Study results led to other more broad-based research in which diets varying in concentrate and forage levels were used with highly promising diet access treatments. For example, two recent complementary research trials have investigated how the nature of the diets influences not only the level of milk produced by dairy goats but also the composition, with impact on yield and quality of dairy products, such as cheese.

As a result of the impactful dairy goat research program at Langston University, it is notable that its researchers are integrally supportive of local dairy goat producers in Oklahoma and are frequently invited to make presentations at national and international conferences across the United States and throughout countries in Asia, Africa, the Middle East and the Caribbean.

For more information, contact: Dr. Arthur Goetsch: [arthur.goetsch@langston.edu](mailto:arthur.goetsch@langston.edu) or 405-466-6164. This project was supported by the Evans-Allen Program of the USDA's National Institute of Food and Agriculture (NIFA).

## Langston creates small ruminant nutrition calculator

Langston University has long-used Evans Allen (EA) funding to research the production conditions of goats, with diet and nutrition being a research focal point. These EA-supported research studies paved the way for Langston University to receive a USDA-NIFA 1890 Capacity Building Grant to combine those results with outcomes from other studies to develop nutritional requirements for different classes of goats. Previously, goat nutritional guidelines were primarily based on a limited number of treatments in well-controlled experiments or were simply extrapolated from those of other ruminant species. Hence, there was the need to determine more accurate nutrient requirements directly from experimentation with goats under a broad array of typical farm applications. Furthermore, a simple and widely available means of applying these

findings to specific and varied production conditions would be valuable.

Through complementary funding from the USDA-NIFA 1890 Capacity Building Grant Program (CBG), a database of treatment observations from the literature was created and used to describe energy and protein requirements and project feed intake of different classes of goats. Findings were described in 10 articles in a Special Issue of the Journal Small Ruminant Research (Volume 53, Issue 3). The energy and protein requirements developed were adopted by the U.S. National Research Council (NRC) and featured in the publication entitled "Nutrient Requirements of Small Ruminants: Sheep, Goats, Cervids, and New World Camelids." Moreover, a web-based nutrient requirement calculation system



Sierra Garrett engages in dairy goat production lab analysis.

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# PVAMU shines light on microgreens production, profitability

Microgreen vegetables are extremely popular, and researchers in Prairie View A&M University's College of Agriculture and Human Sciences are studying how to maximize their nutritional benefits.

Assistant Professor of Agronomy Peter Ampim, Ph.D., explores growing microgreens from specialty leafy greens, namely vegetable amaranth and Egyptian spinach. The microgreens are grown under LED lights to determine if they can be grown faster and if the microgreens produced have higher nutritional levels than plants grown to maturity.

The easy-to-grow crops are the first leaves of a plant, representing a growing stage between sprouts and full-grown leafy greens. They are tremendously beneficial as they contain up to 40 times the nutrients of mature vegetables, but they

only require a fraction of the space and water needed to grow. These qualities, along



with a wide variety of flavors and colors, make them perfect for indoor grow operations, ranging from first-time home gardeners to commercial farms.

PVAMU's team studying the crops includes Post-Doctoral Researcher Eric Obeng, Ph.D., Research Scientist Leaders Aruna Weerasooriya, Ph.D., and Godson Osuji, Ph.D. International collaborator Ernesto Olvera Gonzalez from the Technological Institute of Pavilion of Arteaga in Mexico is also assisting with the research. Preliminary results have been published in [The Scientific Journal of Biology & Life Sciences](#).

The initial research results are promising because they provide solid background information to build upon, in terms of continued research, regarding these two specialty leafy greens and others. Researchers now know the kind of light that matters when it comes to the yield of vegetable amaranth microgreens, Ampim said.

The research is valuable for all because the business of growing microgreens is a lucrative one. A recent presentation noted that microgreens, in general, command more than \$50 per pound in upscale markets.

The researchers plan to post information online on how to grow microgreens successfully. According to Ampim, more research is needed to quantify the nutritional levels of the microgreens produced as compared to mature plants.

For more information, contact: Dr. Peter A.Y. Ampim: [paampim@pvamu.edu](mailto:paampim@pvamu.edu) or 936-261-5096. This project was primarily supported by the Evans-Allen Program of the USDA's National Institute of Food and Agriculture (NIFA).

## PVAMU works to develop Texas hemp strain

Hemp (*cannabis sativa*) has recently been legalized and identified as a potentially valuable industrial crop for Texas. However, the most suitable strain identification for the Texas hemp industry is still in its infancy. To support the future viability and sustainability of a hemp industry in Texas, understanding the basic science behind the species of *cannabis sativa* and preliminary assessment of the germplasm must be established before commercialization.

In the Prairie View A&M University (PVAMU) College of Agriculture and Human Sciences (CAHS), research is being conducted to identify strains of *cannabis sativa* suitable for Texas and provide authentic samples for further research. The research will also illustrate how human-involved evolutionary processes have shaped the genetics of *cannabis sativa* and provide insights for further plant improvement.

Researchers use a large-scale data matrix to characterize each of the hemp strains. Additionally, researchers are establishing herbarium and chemically preserved collections for reference material of hemp, aiming at the current and future morphology-based research. Based on this data and material, researchers will be developing the first public and a

curated digital repository for the herbarium and preserved collections of hemp, critical to global hemp research. Anatomical studies differentiate strains with their internal cellular distribution and are used to enrich the data matrix. Additionally, the fiber's mechanical strength and heat resistance are being tested. To understand the genome duplications, cytological studies of *cannabis sativa* are conducted to help to recognize the neofunctionalization of genes controlling important characters such as fibers, seeds, and chemicals.

In genetic characterization, to obtain DNA sequences, certified hemp accessions and their wild relatives are used and compared. The draft genome of *cannabis sativa* available from the NCBI public database is used as a reference for marker development to identify loci for characterization and functional genes in each of the accession. Ultimately, morphological, anatomical, cytological and genetic data will be integrated, and principal component/cluster analyses will be performed to determine the best clusters in the germplasm to select the best strains suitable for diverse environments in Texas and different end-usage.

Understanding biochemistry is another vital compo-

See Hemp on page 5

ARD UPD. TES/JULY 2021

# Rep. Plaskett makes case for 1890 facility funding

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 urges funding over five years for the [Research Facilities Act](#), administered by the USDA's NIFA. The Act authorizes agriculture and food-focused research infrastructure program for facility construction, alteration, acquisition, modernization, renovation or remodeling. ESS seeks to ensure the Secretary of Agriculture has the authority to waive matching requirements and consider geographic and equity in program administration.

Below is Congresswoman Plaskett wrote the op-ed article.  
*Editor's Note: Agri-Pulse and The Chicago Council on Global Affairs are teaming up to host a monthly column to explore how the U.S. agriculture and food sector can maintain its competitive edge and advance food security in an increasingly integrated and dynamic world.*

Over the last year, America's food and agricultural sectors have faced robust challenges. The coronavirus pandemic has highlighted the need for a more resilient food system, which is why I'm calling for an investment of at least \$40 billion for agricultural research and infrastructure, as well as agricultural innovation.

The U.S. is a world leader in agricultural production. Still, we need to continue investing in research and infrastructure to remain competitive with our friends and neighbors around the world and meet challenges to global food security. Last month, top [economists reported at the Federal Reserve Bank of Kansas City's annual Agricultural Symposium](#) that while the United States' share of global agricultural R&D investment was 20% in 1960, it declined to 8.9% in 2015. This issue was only exacerbated by the global pandemic, which challenged our agricultural supply chains and magnified the need to expand our agricultural research. We are currently falling behind our peers, but we can regain our footing as the leader in global agriculture with smart investments.

The U.S. cannot reestablish our agricultural research prominence, however, when our research facilities are aging and in dire need of revitalization. Unlike our global partners and competitors, much of the agriculture research in the U.S. is being done in facilities built in the 1950s or 1960s. According to a [recent report, 69% of the buildings at U.S. colleges and schools of agriculture](#) are at the end of their useful life. We are asking an era of students to lead cutting-edge research that will feed generations well into the future in facilities built for their grandparents.

Our land-grant university system fosters excellence in

research innovation while providing training opportunities for the global leaders of the future. We know from [research by leading economists that U.S. public food and agriculture R&D spending](#) from 1910 to 2007 returned, on average, \$17 in benefits for every \$1 invested. Our nation's [Cooperative Extension System](#) keeps farmers in business and transfers important agricultural and food information to people, farmers, businesses and communities. Land-grant universities aren't just pillars of their communities – they're pillars of our entire country's agricultural and research systems. As the new infrastructure proposal is developed, we need to keep federal agricultural research infrastructure, research and Extension delivery of agricultural innovation as part of the package. Now is the time to invest in these land-grant universities – our incubators for talent, outreach and agricultural innovation.



**REP. STACEY PLASKETT**



**Advocacy resources:**  
[Click on this link](#):  
[Leave behind Request talking points](#)  
[Gordian report](#)  
[Communications Toolbox](#)  
[Rebuild Rural Coalition presentation](#)

Key investments in these agricultural institutions will support American jobs, develop climate-smart practices for farmers and ranchers across the country and world, increase global food security and help ensure that the agricultural sciences pipeline looks like *all* of America, not just one region or group.

Right now, we are presented with an opportunity to think critically about what tools we want our agricultural researchers and students to have going into the next decades, and I believe that with this bold research investment, we can make strides to reposition the U.S. as the world agricultural leader well into this century.

*Congresswoman Stacey Plaskett represents the at-large district of the U.S. Virgin Islands in the United States House of Representatives. She is an African-Caribbean attorney who has practiced law in New York, Washington D.C. and the U.S. Virgin Islands. Plaskett is best known for her understanding of economic development and public-private partnerships for growing the economy of developing areas. She is an active community advocate in the Virgin Islands.*

## Reddy ... from page 1

culture enterprises; assisting rural and underserved urban communities in creating prosperity and promoting economic development; extending positive 4-H and youth development to all youth, especially, those that are underserved; advancing innovations at the nexus of food, energy and water; climate change and mitigation; and protecting the environment and natural resources.

The pandemic has opened eyes to the disastrous impacts of COVID-19 in low-income, low-wealth communities and communities of color. The 2020 COVID-19 pandemic exposed the fact that while there have been many advances in education, economics and health care in the U.S., many disparities have persisted and, in some cases, widened. Historically, people of color and low-income individuals have faced greater barriers to advances in education, economic well-being, and access to health care, including lower levels of education and income and higher uninsured rates. For people of color and low-income individuals, there are also glaring disparities in housing, access to transportation, nutritious foods, employment opportunities, among other things. The land-grant philosophy is even more relevant today, given the dynamic complexity of the socioeco-

nomic environment where a co-created, integrated, iterative systems approach provides the best likelihood of generating solutions that are responsive to bridging the gaps in the complex dynamism of our environment.

Continued investment in the 19 1890 land grant universities would play a significant role in achieving economic recovery and mitigating these interlocking disparities at the local and regional levels. Continued investment in these NIFA-funded programs would also provide the 1890s with the financial resources to sustain its human resources capacity and enhance the network needed to rebuild the 1890 region in a post-COVID-19 economy.

The House Appropriations Committee supported our FY 2022 requests for increased funding in our six priority areas. Indeed, I'm thankful for the FY 2022 Agriculture Appropriation Bill approved by the House Appropriations Committee to invest in our universities and in the future of our communities and the people we serve. We still have a ways to go in this process, but this is an excellent first step. I remain optimistic. Let's remain vigilant in our advocacy efforts. Our stakeholders deserve no less.

## Hemp ... from page 2

ment of this research. Researchers are conducting various chromatography techniques to develop chemical profiles of the entire plants. They will also trace the biochemical pathways of enzymes in cytosolic extractions of different hemp varieties, mainly focusing on cannabidiol (CBD), cannabigerol (CBG), and tetrahydrocannabinol (THC), and other interesting phytochemicals.

After narrowing down the best strains, researchers will use the greenhouse living collection samples for transcriptomic analysis. Taking transcriptomic, morphological and biochemical data into account, CRISPR-mediated transgenic hemp will eventually be designed. Using the live accessions from the greenhouse, the next-generation instrumentation facilities at the PVAMU laboratories and cutting-edge computational analyses, the researchers will identify a suitable CRISPR/Cas9 system for *cannabis sativa*.

Hemp research has attracted many private partnerships to CAHS, improving research capacities towards product and analytical tool development, student training and developing new curricula. This will also generate a number of deliverables that will include the first curated public digital repository for hemp, hemp genomic data for public databases fostering future studies and outreach activities such as workshops, field days and online courses. Overall, thorough investigations of *cannabis sativa* will significantly contribute to the limited knowledge of hemp in Texas and will provide promising results on selecting the best strains and improving its genetics for many hemp-based industries.

For more information, contact: Landry Christi: [calan-dry@pvamu.edu](mailto:calan-dry@pvamu.edu). This project was supported primarily by the Evans-Allen Program and the Capacity Building Program of the USDA's National Institute of Food and Agriculture (NIFA).

## Budget ... from page 1

As depicted in the table on page 1, the 1890 universities were funded quite favorably. From FY 2021, the Evans-Allen program was approved for an increase of \$19.8 million (27%), while the 1890 Extension was approved for an increase of \$5.0 million (8%). The 1890 Capacity Building Grants Program and the 1890 Facilities Grants Program were approved for increases, respectively, of \$2.5 million (9.6%) and \$3.5 million (16.3%). Together with the \$10 million in mandatory funds, the \$10 million in discretionary funds approved for the 1890 Scholarship Program (championed by U.S. Rep. David Scott (D-GA), who now serves as Chair of the House Agriculture Committee) brings the total amount of scholarship funds for students at 1890 universities to \$20 mil-

lion, or slightly more than \$1 million per institution. This is a transformational federal investment in the 1890 universities and will result in a diversity of talent for the agricultural science pipeline and ensure U.S. competitiveness. Finally, given our efforts to foster and coordinate research, education and Extension programs consistent with USDA/NIFA priorities and programs, \$10 million was appropriated to the 1890 Centers of Excellence.

The 1890 community would like to thank our congressional champions, including but not limited to the Congressional Black Caucus and the Congressional Bipartisan HBCU Caucus, for supporting equitable funding for the 1890 universities.

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## 1890 Land Grant Universities

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

## Mathews tapped as USDA national science liaison

Michael Mathews will serve as NIFA's National Science Liaison, focusing on minority-serving institutions. Mathews, a graduate of an 1890 land-grant university, is pleased and excited to be in this role. He will focus on capacity building and strengthen NIFA's partnership with the 1890s, 1994s and Hispanic-serving institutions.

He was born in West Texas in the small town of San Angelo. He received a USDA 1890 scholarship as a senior at Skyline High School and earned his bachelor's degree in management and international business from Prairie View A&M University in Prairie View, Texas.

Mathews began his career with USDA's Rural Development (RD) Mission Area and has held various positions. He served as New Jersey Housing Programs Director from 2016-2019, where he managed single and multi-family housing programs (residential and commercial housing) for the State of New Jersey. Before that, Mathews served as special assistant to the Rural Development Deputy Under Secretary in Washington D.C., providing critical support to the Office of the Under Secretary on high-level initiatives, projects and matters impacting RD's service to rural America. Most recently, he served as chief of staff to the chief operating officer at Rural Development.



**MICHAEL MATHEWS**

## Goat Calculator ... from page 2

for goats (LINC; i.e., Langston Interactive Nutrient Calculation system) was developed to apply these results for supplement and diet formulation.

One aspect of LINC that was not based directly on published research findings is how associative effects between feedstuffs are addressed. An associative effect is when the presence of a feedstuff or dietary component influences nutrients and(or) energy derived from one or more others. Therefore, a current Langston University CBG project entitled "LINC 2.0 – Enhanced Goat Research and Extension Tool" includes meta-analysis to develop prediction equations for associative effects that will be incorporated in the "Estimating Supplemental Concentrate Needs" and "Total Mixed Ration" calculators. There will be other upgrades to improve function and user-friendliness for use domestically and worldwide. For example, the 2021 virtual Annual Goat Field Day of LU included a workshop on LINC. In the current project, "Targeted Research and Extension Interventions for Enhanced Goat Production in Jamaica," supported by the Center of Excellence for International Engagement and Development (CEIED), there will be on-station and on-farm research demonstrating the value of LINC.

**For more information, contact:** Dr. Arthur Goetsch: [arthur.goetsch@langston.edu](mailto:arthur.goetsch@langston.edu) or 405-466-6164. This project was supported by the Evans-Allen Program and the Capacity Building Program of the USDA's National Institute of Food and Agriculture (NIFA).

## NEW APPOINTMENTS



**DR. CHERESE WINSTEAD CASSON**, interim dean, Research director, and 1890 administrator of the College of Agriculture, Science and Technology, Delaware State University, effective July 1, 2021

**DR. MICHELLE M. CORLEY**, dean, College of Engineering, Science, Technology and Agriculture, and director of Land-Grant Programs, Central State University, effective July 1, 2021.

## CALENDAR



**2021 JOINT COPS**, July 19-23, 2021 | VirtualAHS Executive Committee, July 19 @ 3-4 p.m. | ESCOP Meeting, July 20 @ 12:30-3:45 p.m. BAA/PBD Meeting, July 21 @ 11-12:30 p.m. | ARD Meeting, July 22 @ 10 a.m. to Noon | BAA Policy Board of Directors, July 22 @ 3-5 p.m.

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