FALL 2024

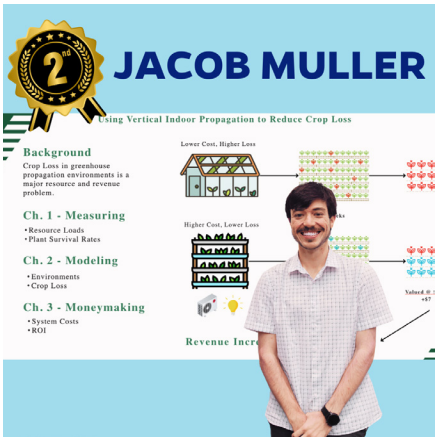
ABE UPDATE

CHANGE IS THE ONLY CONSTANT-
CELEBRATING NEW DEVELOPMENTS

UF | UNIVERSITY of FLORIDA
Agricultural & Biological Engineering

3MT Winners

ABE's Three Minute Thesis competition is a challenge for students to condense the complexitiy of their research into a concise elevator pitch. Congratulations to this year's winners!



The 2024 ABE 3MT participants and judges

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Graduate Biological/ Agricultural Engineering Program by U.S. News and World Report

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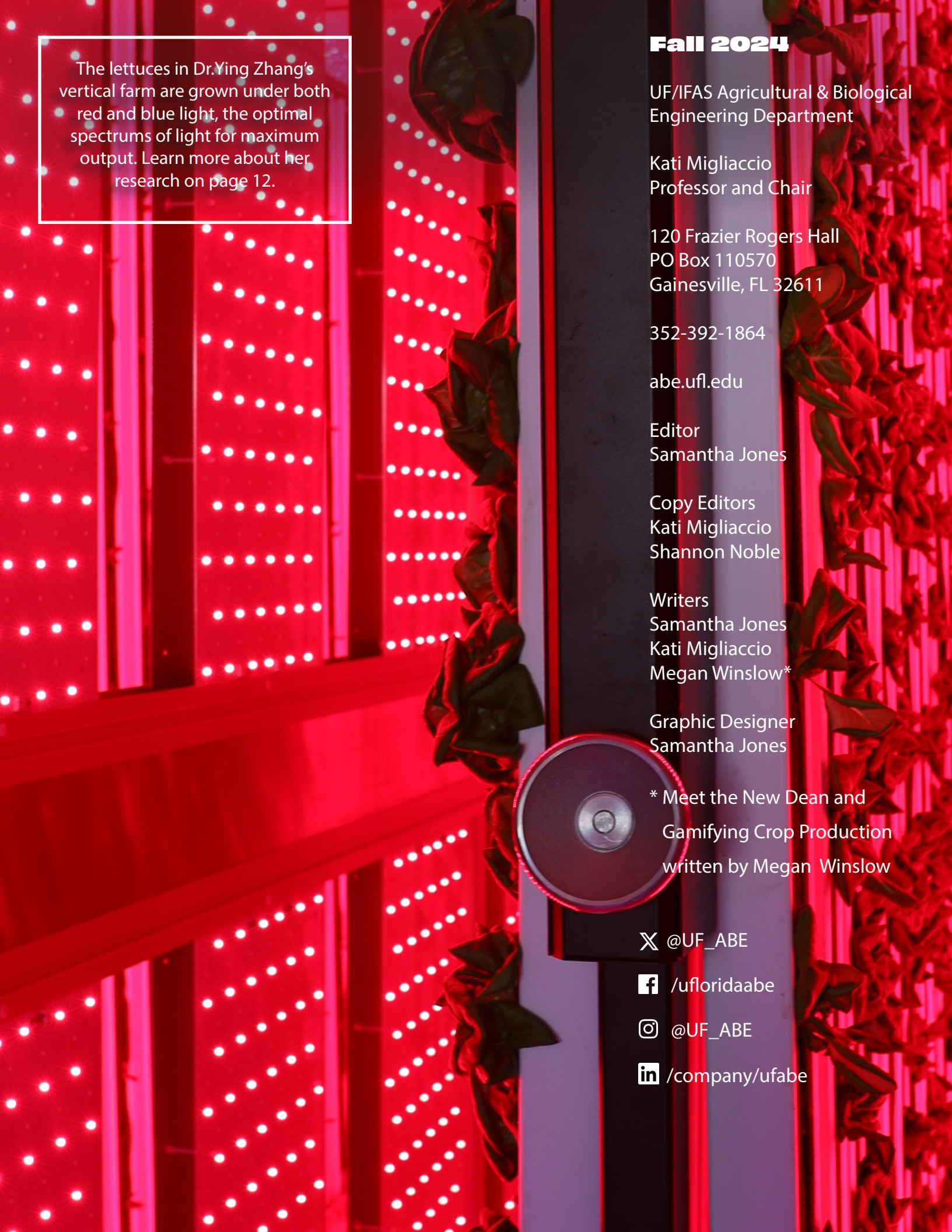

The lettuces in Dr. Ying Zhang's vertical farm are grown under both red and blue light, the optimal spectrums of light for maximum output. Learn more about her research on page 12.

Fall 2024

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LETTER FROM THE CHAIR

KATI MIGLIACCIO, PH.D.
CHAIR AND PROFESSOR

Dear friends,

The Department of Agricultural and Biological Engineering (ABE) has been my home since 2005. You are reading this newsletter likely because you also call the department home or have close ties. When I think about the department, I am excited about its direction. We have expanded activities exploring artificial intelligence (AI), circular bioeconomy systems, and systems modeling. We have robust programs in two colleges that are leading nationally in technology and engineering. Our extension faculty are creating impact throughout the state – working in climate and water systems, agricultural production, safety, and urban settings. New efforts to grow agriculture technology in Florida under a comprehensive program are being proposed by IFAS. The AI initiatives at UF aligns with our continued development of tools to help solve complex challenges in biological systems. Thus, the current environment is prime for continued upward trajectory and success of ABE.

> "In ABE... It feels like home"

> "I'm very happy with everything I got to learn in this major"

Who I am today has much to do with the opportunities, kindness, and generosity provided to me through the department. I imagine many of you feel the same way. This generosity can be seen in the donor funded effort to build a new facility to support our undergraduate teaching program, the W.W. Glenn Teaching Building. We celebrated this gift in October with a groundbreaking event. For me, this is the most exciting event to occur during my time in the department, and it will certainly enhance our students' experience for years to come. This new facility will open in the fall of 2025 and offer state of the art teaching facilities for our courses, student competitions, capstone projects, and the list goes on! The source of new energy and growth in the department and throughout the university can be found in our students.

> "Everyone wants to help you succeed"

Starting January 2025 I will start serving our students in a different role as Dean of the College of Agricultural and Life Sciences (CALS). While I will miss spending my days in Frazier Rogers, I will not be too far away in McCarty. Dr. Greg Kiker has been appointed as Interim Chair of the department. He is going to be fantastic in this role – please congratulate and thank him for serving in this compacity. We greatly appreciate his willingness to lead the department.

As an out-going department chair, I have enjoyed getting to know our staff, faculty, students, and alumni better. I can say that you are a very impressive group! I have also made new friends along the way and feel privileged to have had this opportunity to serve the department. I will miss the day-to- day interactions but look forward to celebrating the great accomplishments of ABE in the future!

Go Gators!
Kati W. Migliaccio

Breaking Ground

PAVING THE PATH FOR THE WW GLENN TEACHING BUILDING

On Oct. 5, friends and family of W. W. Glenn, along with UF/IFAS administrators, faculty and staff, gathered to celebrate the groundbreaking of the W. W. Glenn Teaching Building. This unique, experiential learning space for students will be located on Museum Drive across from the UF baseball stadium.

The building was made possible thanks to people with deep roots in Florida agriculture, the University of Florida, and former students and faculty members of the UF/IFAS Department of Agricultural and Biological Engineering (ABE): Dana Eller, Wendell Porter, Ray Bucklin, and W. W. "Coon Bottom" Glenn and his family.

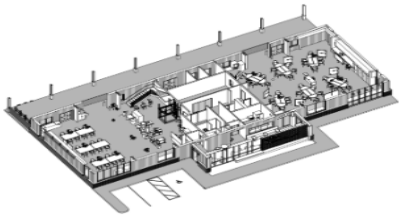
When Dr. Kati Migliaccio became ABE chair in 2018, she noticed an opportunity for improvement in the small, outdated, and unairconditioned Agricultural Operations Management (AOM) workshop.

She envisioned replacing it with a modern makerspace: a hands-on mechanical workshop paired with an engineering design space, bringing together students majoring in biological engineering and agricultural operations management.

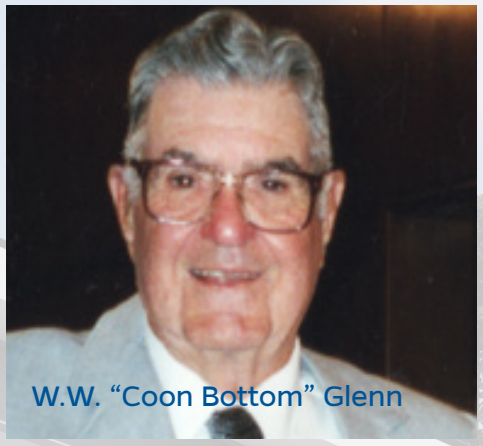
Not only would the space be larger and more comfortable for students, but it would provide opportunities for collaboration and hands-on learning.

"This is a critical part of what we do as engineers," says Dr. Migliaccio. "Our students are the most important part of who we are as a department at the University of Florida."

Fundraising for the building began. One early leader in the effort was Dana Eller, class of '95. Mr. Eller challenged others to give on Gator Nation Giving Day by matching gifts to the project and by bringing attention and excitement to the cause.



The W. W. Glenn Teaching Building will feature an engineering design space as well as a mechanical workshop, encouraging students to collaborate.


W.W. “Coon Bottom” Glenn

Mr. Eller is the president of MWI Pumps, a family-owned and operated company based in Deerfield Beach, Florida.

“One of the things I’m proud of being able to do is help to support the new building,” Mr. Eller says. “The department has a lot of memories, for myself going there and my dad as well.”

Gifts to the building were made in honor of Dr. Wendell Porter and Dr. Ray Bucklin, with the goal of naming rooms inside to recognize the impact of these ABE mentors.

Since 1994, Dr. Wendell Porter was instrumental in leading the AOM undergraduate program through teaching and advising. He moved the AOM program forward for generations of students. He taught courses in the old AOM shop for decades, retiring in 2021.

Dr. Ray Bucklin started his career at the University of Florida in 1982 as a faculty member in the ABE Department. He continued to contribute to the students, the department, and the discipline for 36 years until retiring in 2018. During this time, Dr. Bucklin gave generously to others while serving as a faculty research advisor, the ABE graduate coordinator, and as a fellow faculty member. In addition to his strong expertise, Dr. Bucklin brought his kind, patient, and generous spirit to every conversation. Dr. Bucklin passed away in 2021.

In 2023, the family of Mr. Woodrow Wilson “Coon Bottom” Glenn decided to honor his impact and legacy on Florida agriculture with a leadership gift to fund the teaching building. A Florida panhandle native, Mr. Glenn graduated from the University of Florida with a bachelor’s degree in agriculture in 1942. In 1944, Mr. Glenn began his 30-year career as an Extension agent first in Madison County, and then moved to Jackson County, where he built strong relationships with local farmers to further crop research and production with the ultimate goal of improving the lives of farmers. With his signature Stetson hat and cigar, Mr. Glenn worked hand-in-hand in the fields with farmers to advance agriculture. In 1952, Mr. Glenn earned his master’s degree in agriculture from the University of Florida.

When he retired as the County Extension Director in 1974, Mr. Glenn began a second career when he co-founded the Florida Watermelon Association. He served on the board for many years.

Though Mr. Glenn passed away in 2007, his impact on Florida agriculture will continue through the generosity of his family with the gift of the W. W. Glenn Teaching Building and the W. W. Coon Bottom Glenn Endowed Scholarship.

UF/IFAS is grateful to the community of generous people who are making this new teaching building a reality. It is fitting that this collaborative learning space is itself the result of a collaboration between alumni, friends, faculty and staff.

“The new W. W. Glenn Teaching Building will provide our students with state-of-the-art, hands-on learning experiences to further explore technology, innovation, and creative design, preparing them to be our future problem solvers for agricultural and natural resource challenges,” says Dr. Migliaccio.

Meet the New Dean

DR. MIGLIACCIO WILL TRANSITION TO DEAN OF CALS EFFECTIVE JAN 1 2025

The University of Florida has selected Kati Migliaccio, Ph.D., UF/IFAS Department of Agricultural and Biological Engineering chair, as the new College of Agricultural and Life Sciences dean. She will assume her new role January 1, 2025.

The college administers the educational and degree programs for UF's Institute of Food and Agricultural Sciences (UF/IFAS), which works to enhance and sustain the quality of human life through its research facilities and extension services offered in every Florida county.

"Kati's long and accomplished tenure with UF/IFAS will serve her well as dean," said Joe Glover, interim provost and senior vice president for academic affairs. "Her innovative solutions to the challenges Florida faces in terms of water conservation are exactly what our rapidly growing state needs, and I know the leadership qualities she brings to the position will take the college to the next level."

Migliaccio, a professional engineer, earned her Ph.D. in biological and agricultural engineering. She began her UF career in 2005 as an assistant professor at the UF/IFAS Tropical Research and Education Center in Homestead.

There, Migliaccio focused on water conservation and management, while teaching graduate courses. She became a professor in UF's Department of Agricultural and Biological Engineering in 2015 and has served as department chair since 2018.

Throughout her career in academia, Migliaccio has championed faculty development and enhancement of the student experience through peer mentoring and experiential learning opportunities.

The college will benefit from Migliaccio's commitment to student support and opportunities, said Scott Angle, senior vice president for agriculture and natural resources and leader of UF/IFAS.

"Dr. Migliaccio established a program in her department to fund undergraduate research and participation in national competitions, and she hosted students from 11 schools across the Southeast for a rally that provided opportunities for competition, networking and mentorship," Angle said.

Migliaccio's service spans the entire university, as she played a central role developing UF's five-year Quality Enhancement Plan for 2024-2029. The plan launched the "AI Across the Curriculum" initiative, which prepares students in 16 colleges for jobs of the future through courses and tools centered around artificial intelligence.

"She has distinguished herself as the leader we need to accelerate the rise of the College of Agricultural and Life Sciences to national prominence in the teaching of artificial intelligence and its use as an instructional tool," Angle said.

The search for the new dean commenced in June when Dean Elaine Turner, Ph.D., announced plans to step down. Turner has led the college for a decade.

Migliaccio (pictured above) said she is honored to be selected.

"I look forward to the innovation and discovery ahead as we continue to provide teaching excellence and engagement to address pressing societal challenges and cultivate leaders in agricultural, natural resources and human systems," she said.

Stormwater pond at Cascades Park, Tallahassee, FL

Rainy Day Heroes

ABE'S EBAN BEAN, PH.D. GIVES WATER POLLUTION A RAINCHECK

Stormwater runoff is one of the biggest threats to Florida's natural waterways and water quality. Runoff refers to water from everyday rain events, which happen frequently during our summer months. Contaminants such as fertilizer, animal waste, pesticides, oil or gasoline from parked cars mingle with rainwater, swirl into a toxic tea, and are carried into our rivers, ponds, and oceans. For years stormwater ponds have been presumed to be sufficient to capture and treat runoff- with over 76,000 across the state, they are a staple of the Florida landscape. However, studies have shown that ponds do not typically remove the 80% they are credited, closer to 45% for pollutants like nitrogen. The problem is such a concern that starting next year, new stormwater rules will require greater treatment of runoff, through use of practices like Green Stormwater Infrastructure.

That's where Agricultural and Biological Engineering's Eban Bean, Ph.D., steps in. He works with a team of engineers, researchers and environmental experts to minimize the effects of stormwater runoff through Green Stormwater Infrastructure protocols.

These strategies look at capturing and filtering contaminant carrying runoff before it reaches vulnerable waterways and eventually our aquifer.

Their work is supported in part by a one-million-dollar grant with UF IFAS's Nature Coast Biological Stations from the National Academy of Sciences, and this past July they partnered with the Center for Watershed Protection and collaborators across the southeast US to receive one of only four Stormwater Center of Excellence grants from the US Environmental Protection Agency. Especially prevalent in highly urbanized areas with vast expanses of concrete and asphalt, stormwater runoff occurs in places where water does not have an opportunity to absorb back into the ground. Green Stormwater measures tackle these issues through infrastructural planning, strategic plant placements, and retrofitting existing structures to reroute stormwater.

Bean clarifies, "When you go from a natural landscape to an urban landscape and you look at how rainwater flows, in a natural environment a lot of that water ends up going into the ground. Roots of plants take it up, maybe only 10% becomes runoff. When we increase imperviousness, as places become more developed in built environments, much more of the water becomes runoff."

Green Stormwater Infrastructure use strategies to retain, filter and store stormwater before it flows into our natural waterways, disrupting the balance of vulnerable aquatic life. It's a multipronged approach; initial infrastructural changes such as swales along a sidewalk, tree boxes along a roadway, permeable pavements in parking lots, installing green roofs on buildings, strategic placements of plants, and retrofitting existing structures can all make an enormous impact.

"When water runs off your rooftop, it typically goes into the gutter, it runs off the driveway, into the street, into a storm drain that flows into a stormwater pond;

Biofiltration wall at Coconut Creek Casino, Coconut Creek, FL

there's never a place for that water to absorb into the ground before entering a pond and eventually flowing downstream. One of the impacts of Green Stormwater Infrastructure is to disconnect that imperviousness and provide opportunities for that water to go into the ground, or at least treat the water more effectively along its path," Bean explains.

"For rain gardens and stormwater ponds there are large and small trees, shrubs, and grasses that are native and can handle both drought and saturation during the months when it rains every day. As we know, in Florida, we may go for an entire month or more without rain, and then it rains daily," he continues. Strategic planting can reduce erosion and soak up rainwater by the roots, but also some plants are especially useful for filtering contaminants. Dr. Bean feels strongly about his work in water; "I want to help the people of Florida protect their water resources, to protect the Florida that has been here for so long. It's a passion of mine to help. It's always a good time to implement some green infrastructure!"

Outwitting Environmental Curveballs with Vertical Farming

DR. YING ZHANG OFFERS A GLIMPSE INTO THE FUTURE OF AGRICULTURE

In a world where climate uncertainty and food scarcity are becoming increasingly pressing issues, Ying Zhang, Ph.D., an assistant professor at UF's Department of Agricultural and Biological Engineering, is working on solutions.

Her research focuses on cultivating optimal growing conditions through vertical farming, a method that allows for the cultivation of crops in a controlled environment, using a combination of modified hydroponics, LED lighting, and advanced climate control systems. By maximizing space efficiency and reducing water consumption, vertical farming has the potential to increase crop yields while minimizing environmental impact. Precise lighting and temperature control allow farmers to create an ideal environment for plant growth, regardless of outside weather conditions.

Climate controlled container farming gives a new spin on the idea of a secret garden; you'd never expect from the modest exterior what's going on inside. When you open the shipping container door to Dr. Ying Zhang's vertical garden, an absolute lettuce party lies within. A bright red hue bathes the interior, casting deep burgundy shadows under the plants that are plugged into their substrate pots lining shelves that are organized like rows of books in a library. At timed intervals the light switches to a blue spectrum and the whole mood changes.

"The beauty of using LED lights is we can customize the light 'recipe' or the combination of the light's color or spectrum to maximize production. Blue and red lights are identified as the most photosynthetic, effective light for leafy greens," Zhang explains.

In addition to saving space and protecting plants from weather events, vertical container farms also have a fantastic capacity for conserving water. By recirculating water and using advanced irrigation systems, farmers can conserve up to 90% of the water used in traditional farming methods. This not only reduces the strain on local water resources but also makes vertical farming an attractive option for areas with limited water availability.

"Controlled Environment Agriculture is water efficient, much higher than open field production. Think about the water balance in an indoor farming system - the plants take up the water and they consume the water, but also transpire the water into the atmosphere. The water evaporated into the atmosphere can be condensed through the air conditioning system and back into the nutrient tank," she explains.

Whether vertical container farming is a financially viable option for small scale farmers is not a simple yes or no. While the initial investment in vertical farming infrastructure is high, Zhang's research has shown that the long-term benefits of increased crop yields, reduced water consumption, and improved food quality may have some weight in northern areas with extreme cold conditions. In these circumstances, vertical farming can be comparable to greenhouse compact production in terms of energy use efficiency. This means that farmers in areas like Canada or Scandinavia may be able to reap the benefits of vertical farming without breaking the bank.

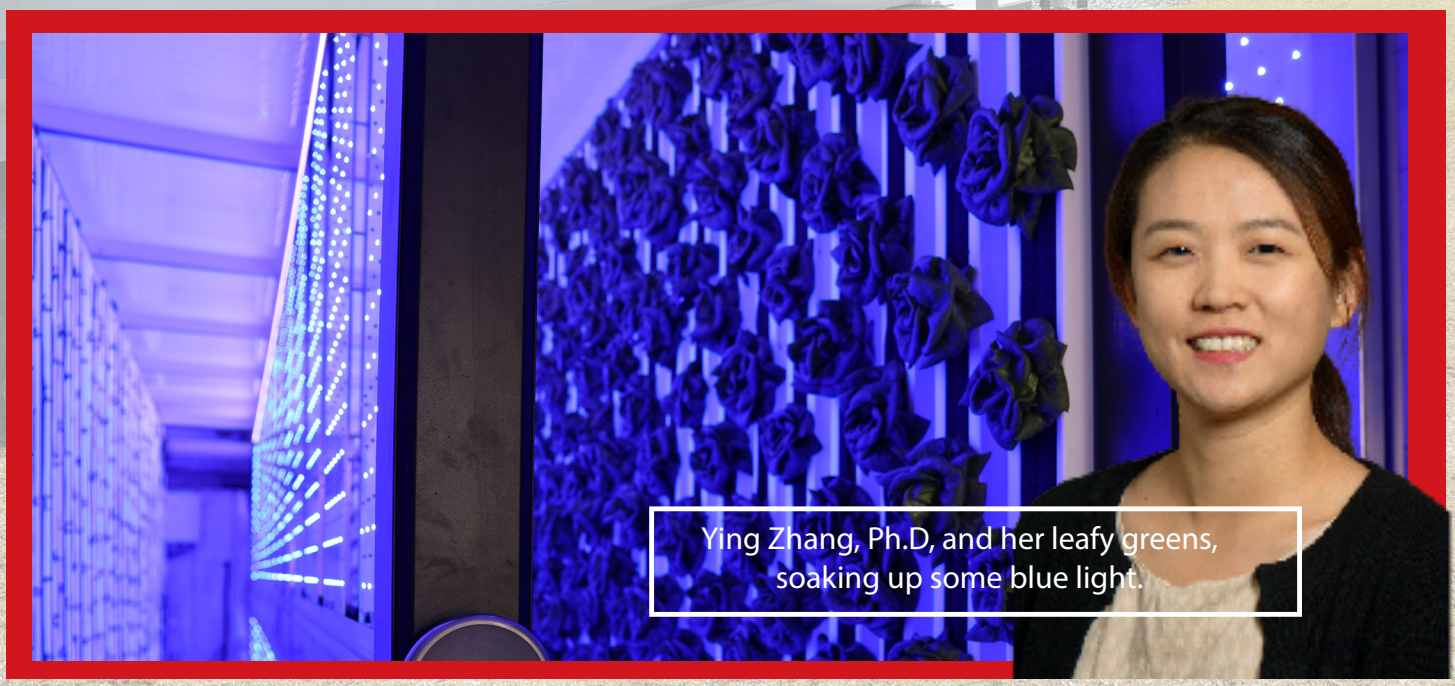
> "Controlled Environment Agriculture is energy and space efficient and conserves water."

So what's next for this revolutionary technology? Zhang is currently working on developing smart climate control solutions using AI to optimize greenhouse control.

While her vertical indoor farming project has far-reaching applications for climate uncertainty or food scarcity, her program also looks into other controlled agriculture systems such as greenhouse production systems.

"Last year we received a 2.5 million dollar grant from the USDA Sustainable Agriculture System program to improve the sustainability of greenhouse production systems and to address carbon emissions. My program specifically contributed to improving greenhouse design and natural ventilation and shading control to improve cooling effectiveness, energy use efficiency and climate uniformity. We are also developing a smart climate control solution, applying AI to optimize the control of greenhouses to further improve their resource efficiency," Zhang professes.

As we look to the future of farming, it's clear that indoor farming can play a major role. And the innovation of vertical farming, with its ability to provide optimal growing conditions, reduce water consumption, and increase crop yields and space efficiency, is an innovative approach that has the potential to feed a growing global population.

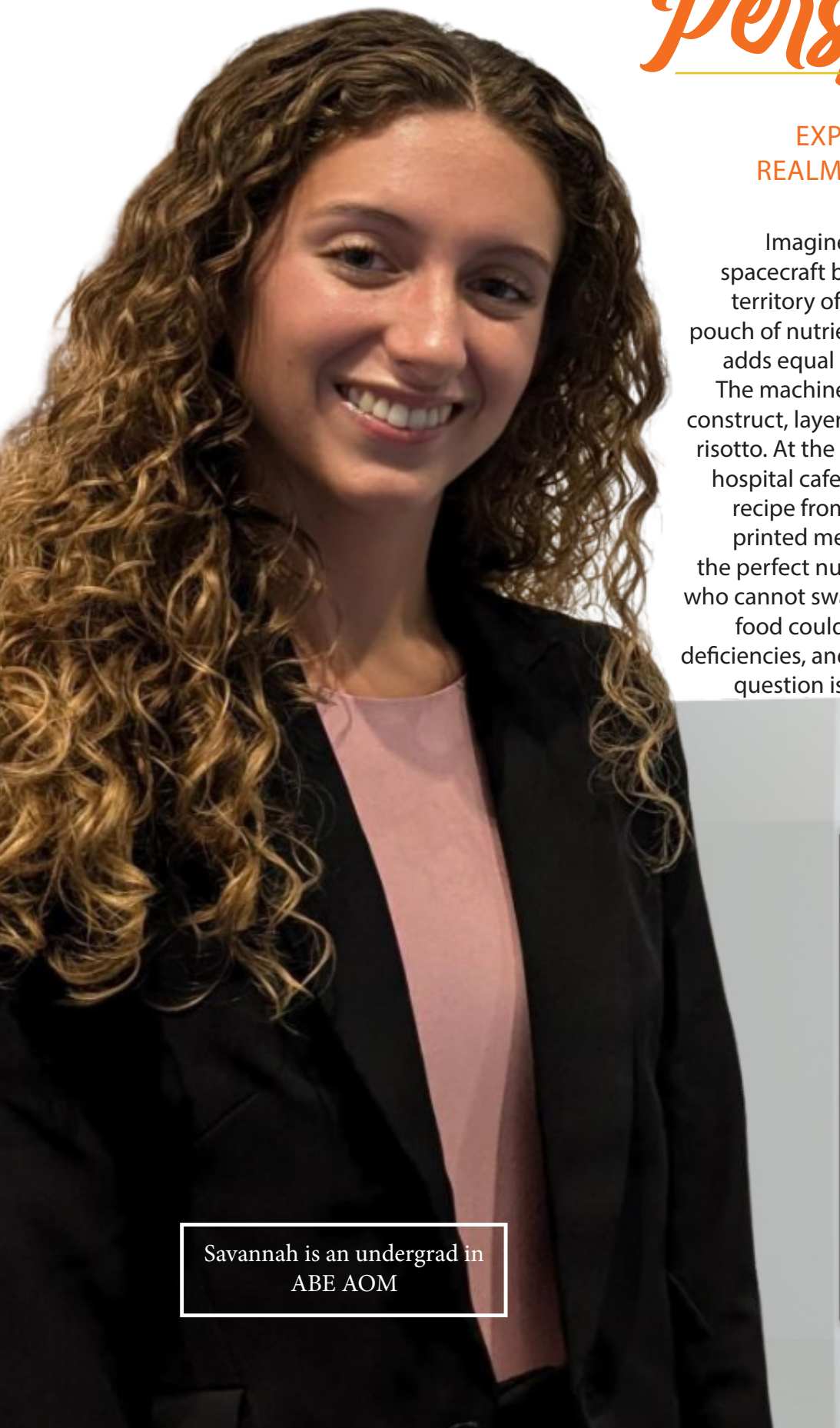


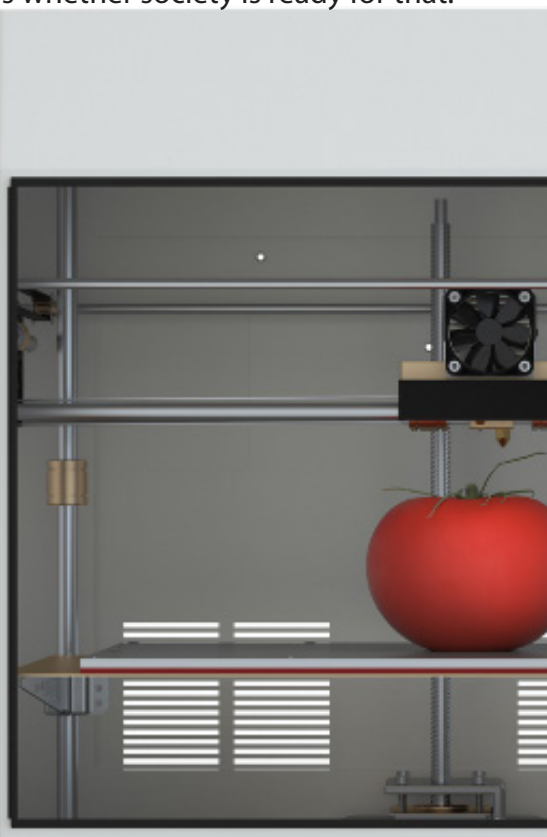
Ying Zhang, Ph.D, and her leafy greens, soaking up some blue light.

Informing Perspectives

SAVANNAH STEPHENS IS EXPLORING THE INTELLECTUAL REALM WHERE SPECULATION AND SCIENCE INTERSECT

Imagine: in the not-so-distant future, in a spacecraft barreling towards the unchartered territory of deep space, an astronaut pours a pouch of nutrient powder into a 3D food printer, adds equal parts water, and presses a button. The machine hums to life, a nozzle working to construct, layer by layer, the beginnings of a nice risotto. At the same time, miles away on Earth, a hospital cafeteria worker is receiving a specific recipe from a dietary specialist to make a 3D printed meal with the ideal consistency, and the perfect nutrient density, to feed to a patient who cannot swallow solid food. While 3D printed food could address food scarcity, nutritional deficiencies, and humanitarian relief efforts, a big question is whether society is ready for that.





Savannah is an undergrad in ABE AOM

Savannah Stephens, a 2nd year ABE AOM student with a specialization in smart agriculture, researches the public perception of 3D printed foods. "3D printed food is a topic that doesn't have a lot of knowledge surrounding it, not many people are familiar with it. My research is focused on the relative knowledge that people have about 3d printed foods and also their perceptions and attitudes towards it, what interests them about it and any barriers or misconceptions they may face. " Savannah explains.

Public discourse on food blogs and sites like Reddit show that opinions on 3D printed food range from optimism to incredulity and skepticism. While some champion the technology, others have questions- What does it taste like? Is it safe? Is it a gimmick or is it the answer to current and future food accessibility issues?

"My undergraduate research exposes a high level of curiosity surrounding 3D printed foods paired with a low level of current knowledge and resources surrounding this topic. There are not a lot of accurate resources available when people are wanting to learn more. This research data can be collectively used to promote educational opportunities surrounding this topic, which will increase the level of trust surrounding the use of 3D printers."

3D printed food is exactly what it sounds like, but rather than plastics, edible materials are used as the 'ink', sometimes referred to as 'bioinks', in the printer. Whether it is a powder, paste, gel or dough, the matrix for 3D printed food is portable, stays fresh longer, and can be made in varying sized portions- resulting in less food waste. Vitamins and other nutrients can be added to satisfy the needs of individuals who have specific dietary requirements. It checks a lot of boxes as it's sustainable, pratical, viable.

3D printed food could be a valuable technology in environments such as space, or places in the world that have less access to fresh food. 3D printed food could also be used as 'functional foods' for individuals with barriers to eating conventional foods, or people with specific nutritional needs, by creating items that have a specific texture, shape, or nutrient density. The technology could support humanitarian relief efforts- mobile and compact food printers can be rapidly deployed in hard-to-reach disaster-affected areas.

Savannah's research investigates why skeptics may reject the novel food technology. For some, a printed meal seems unnatural, unsafe, or can even violate cultural or religious considerations. Dr. Adam Watson, an NACTA Educator Awardee and Savannah's academic advisor imparts, "The ultimate goal is to ensure these solutions align with societal values while addressing critical challenges like food security and sustainability. By studying public perceptions of 3D printed foods, we aim to uncover the factors that drive trust, acceptance, and adoption, paving the way for technologies that truly benefit society."

Having grown up in the agricultural industry, Savannah has a unique perspective on the intersections of technology and the food that we consume; her research leans on empirical knowledge, a vision for the future, and an interest in the human experience.

"I have the opportunity to build upon my early experiences and have an impact on the future of agriculture. This collective data can be used to support additional educational initiatives to lower the level of skepticism surrounding 3D printed materials in general and promote the use of new technologies."

Gamifying Crop Production

DR. VIVEK SHARMA'S STEP PROGRAM OFFERS AN ANNUAL COMPETITION FOR FARM MANAGEMENT

A 2022 USDA survey of American farms categorized 69% as "high risk," meaning they operated with a profit margin below 10%.

"Farming is very dynamic, and there are a lot of lessons we learn each year," Dr. Vivek Sharma said. Sharma, a UF/IFAS assistant professor of precision water management, who developed the STEP program based on a similar one at the University of Nebraska-Lincoln, his alma mater.

The UF/IFAS Florida Stakeholder Engagement Program (STEP) ia a free competition that promotes the adoption of science-based education and best-management practices like controlled-release fertilizers and soil moisture sensor-based irrigation scheduling by creating a risk-free environment for testing results. Each competition focuses on a single crop. Teams are assigned plots on a UF/IFAS property, and participants manage them virtually by logging decisions about inputs, insurance and marketing on a website. After harvest, the most efficient and most profitable teams are awarded cash prizes. The first Florida competition, a contest between 10 teams growing corn at the North Florida Research & Education Center – Suwannee Valley (NFREC-SV), took place in 2022. The competition expanded to 14 teams in 2023.

Fifteen teams participated in the 2024 corn competition, which wrapped up with a banquet Oct. 24 at NFREC-SV in Live Oak. The most efficient teams, in order of ranking, were Wilkerson Farms of Trenton, Riverbend Farms of Branford, and Team Columbia of Lake City. The most profitable teams were Team Pursell of Sebring, Riverbend Farms, and Team Columbia.

2024 STEP Winners

HIGHEST INPUT-USE EFFICIENCY

1ST- WILKERSON FARMS
2ND- RIVERBEND FARMS
3RD- TEAM COLUMBIA

PROFITABILITY

1ST- TEAM PURSELL
2ND- RIVERBEND FARMS
3RD- TEAM COLUMBIA

TEAM MEMBERS:

WILKERSON FARMS- BJ WILKERSON AND KELSEY WILKERSON

RIVERBEND FARMS- KYLE KELLEY, TERA KELLEY AND ED WHITE

TEAM COLUMBIA- RONALD MORRIS

STEP winners 2024

For the second year in a row, Billy Browning earned $2,000 as a member of the "most profitable" team. Browning sells fertilizer, and he entered the competition to showcase controlled-release fertilizer's ability to decrease nutrient loss and enhance nutrient-use efficiency.

"I'm doing this to show people you can be profitable, and you can be successful with it," Browning said.

"Profitable," however, was a relative term this year. A combination of challenging weather conditions, low harvest yields and low corn prices resulted in lackluster returns, and none of the corn competition teams showed a profit. Browning came closest, "selling" 193 bushels per acre for a loss of $178.

"Farming is a risky business," said Kevin Athearn, UF/IFAS regional specialized agent for rural and agribusiness development. "You can do a lot of things right and still end up losing money some years." Athearn provides economic guidance for the program.

The nine teams competing in the inaugural cotton competition may fare better, however. Spearheaded by Sharma and Hardeep Singh, a UF/IFAS assistant professor and cropping systems specialist, the contest is wrapping up at the West Florida Research and Education Center (WFREC) in Jay.

Singh has begun harvesting the teams' cotton bolls, and he plans to announce the winners of the competition at a banquet in February.

"So far, the competitors have learned that the agricultural field is constantly evolving, and keeping up with advancements in technology and management practices, as well as sustainability practices and research techniques, is crucial," Singh said. "The competition likely reinforced the idea that staying curious and continuously seeking knowledge is essential for success in this field."

Brazil's Commitment to Pesticide Best Practices

DR. RAFAEL MUÑOZ-CARPENA BRINGS SOPHISTICATED MODELING TO BRAZIL

Brazil, a vast swath of tropical land with more arable acreage than most countries, hugs the equator on the Western border of South America. Agriculture in Brazil provides roughly 10% of the world's supply of food. Paired with its hearty agricultural activity, its long coastline along the Atlantic ocean raises environmental concerns about agricultural pollution, specifically of pesticides. As one of the world's largest exporters of coffee, soybeans, sugar cane, cotton, cocoa, and rice- every effort to keep Brazil's practices robust and sustainable makes a global impact.

UF ABE Distinguished Professor Rafael Muñoz-Carpena recently co-organized and presented a workshop in Brasilia, Brazil focused on pesticide runoff and mitigation strategies. The workshop was a joint venture between U.S. CERSA (Center of Excellence for Regulatory Science in Agriculture), EMBRAPA (Brazilian Agricultural Research Corporation, a consortium of UF universities), and CropLife Brazil, and was created to understand and discuss feasible mitigation strategies to reduce pesticide exposure from runoff, erosion and drift in the Brazilian agricultural context. The joint initiative aims to develop new approaches to mitigate the risks associated with pesticide use in water resources.

Brazil is taking significant steps to address the issue of pesticide exposure in surface water. On September 18 and 19, forty-eight participants from around the world attended the workshop, including experts and stakeholders from regulatory authorities, agriculture research organizations, academia, and the pesticide industry. Their presentations and discussions focused on agricultural practices and mitigation measures, pesticide risk assessment, and quantification of the effectiveness of mitigation measures within regulatory pesticide risk assessments.

Prof. Muñoz-Carpena presented on "Edge-of-field measures: Vegetated Filter Strips and Quantitative Mitigation with VFSMOD". VFSMOD, being a computational model he developed, explores quantitative tools for mitigation measures in the context of pesticides. Vegetative filter strips (VFS) are used by farmers to filter and reduce runoff and sediments from production areas, which would reach water bodies. Factors controlling VFS effectiveness for mitigating nutrient runoff, soil erosion, and pesticide runoff are well-established; additionally, the Forestry Code in Brazil also defines the need to include them as mitigation measures.

Participants of the Brasilia workshop

The workshop was designed to bring together experts from different areas to explore and discuss the use of VFSMOD as a suitable modelling tool to quantify effectiveness of VFS and explore the availability of data and suitability of other risk mitigation options. Participants explored conversations around drift reduction measures, precision agriculture, and reduced/no till practices. Their goals were to pave a path forward towards incorporating the use of VFSMOD and other quantitative risk mitigation assessment options in the regulatory frameworks for pesticide approval in Brazil.

> "It was a great opportunity to learn about Brazilian agricultural practices, the Brazilian Forest Code, and drift and runoff reduction"

The group focused on enhancing stakeholders' perspectives regarding the suitability of these quantitative tools and support the development of strategies to increase farmer engagement and adoption of VFS and other mitigation measures to protect soil and water resources. Muñoz-Carpena and colleagues led discussions on how to model pesticide mitigation practices and refinements and how they may fit into risk assessment both on their experiences in North America and the European Union.

"It was an excellent forum for collaborating with Brasilian stakeholders about ways to mitigate potential pesticide runoff, erosion, and/or drift from agricultural fields," Muñoz-Carpena reflects.

The implementation of the mitigation measures explored in the Brasilia workshop supports a regulatory risk assessment for pesticides- enabling stakeholders to quantify the impact that a runoff/erosion or drift mitigation measure has on the Environmental Exposure Concentrations in surface water.

Conservationist John Muir once said, "When one tugs at a single thing in nature, he finds it attached to the rest of the world," and when we turn our eyes to Brazil, one of the world's major producers of food supply, and its adjacency to the world's second largest ocean, we see the importance of that connection. A win for Brazil is a win for all.

Doctoral and Master's Degree Graduates

Bibeck Acharya
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Alwin Hopf
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Stephen Mark Lantin
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Isreal A Ojo
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Nathan Laurence Oneil
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Hanyu Qian
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Fitsum Tilahun Teshome
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Vinay Vijayakumar
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Joe Barrett Carter III
Doctor of Philosophy (Ph.D.)
Agricultural and Life Sciences

Moses Ernest Chilenje
Master of Science (M.S)
Engineering

Garrett Sheridan Jackson
Master of Science (M.S)
Engineering

Zhengkun Li
Master of Science (M.S)
Engineering

2024 Summer and Fall Biological Engineering Bachelor's Degrees

Melanie Amador
Bachelor of Science (B.S.)
Biological Engineering

Ryan S Lam
Bachelor of Science (B.S.)
Biological Engineering

Nicholas Jacob Guttierez
Bachelor of Science (B.S.)
Biological Engineering

Joshua Parrish
Bachelor of Science (B.S.)
Biological Engineering

Kayla Emily Herman
Bachelor of Science (B.S.)
Biological Engineering

2024 Summer and Fall Agricultural Operations Management Bachelor's Degrees

Bailey Ann Corba
Bachelor of Science (B.S.)
Agricultural Operations Management

Eli Matthew Sklapsky
Bachelor of Science (B.S.)
Agricultural Operations Management

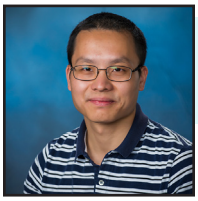
Katherine M Steel
Bachelor of Science (B.S.)
Agricultural Operations Management

Zhengkun Li at graduation

Welcome our *New* Faces!

Dr. Nasser Najibi

Assistant Professor



Dr. Denjung Wang

Assistant Professor

Alejandro Drausal

Engineer I

Austin Grawe

Administrative Assistant II

Samantha Jones

Marketing and Communications Specialist

Filip Tecza

End User Computing Specialist III

Lee Tolbert

Engineering Technician III

Dr. Clyde Fredrick Kiker always relished a challenge, be it teaching students at the University of Florida, working with his wife Suzanne to raise 4 boys, fixing a problematic car, vigorously arguing a point about politics, or working long hours to help defend Florida's environment, He faced his last challenge of Lewy body dementia bravely, and passed away peacefully at 84 on August 18th, 2024.

Born in Bushnell, FL on September 10th, 1939 to Cecil and Hazel Kiker, Clyde moved with his family to St Petersburg and graduated in Boca Ciega High School's class of 1957. Clyde fared well in class but even better in football, earning All-State honors as a Center. Clyde then attended St Petersburg Jr College before transferring to the University of Florida, where he earned a BS and MS' in Agricultural Engineering followed by a PhD in Systems Engineering and Food & Resource Economics. He then went on to become a Professional Engineer and a tenured Professor at UF in Environmental Policy & Resource Economics, where he remained until his retirement in 2007. Always a lover and defender of Florida's outdoors, Clyde worked to both instill that love in his sons by leading them and many others in Boy Scout Troop 92, and to stop the Cross-Florida Barge Canal and its impact on the Ocklawaha River. He celebrated the outdoors with many trips to Summerhaven, pulling oysters from the rocks and cooking them over bonfires with friends and family, while his sons learned bodysurfing in the Atlantic.

Clyde was a dedicated tinkerer, with a garage filled with probably too many cars, boats, and motorcycles in various stages of long-term repair. He put those skills to use in teaching his sons the basics of repairing most anything and in working with his son Greg to build a house in east Gainesville, where he lives today.

We'll never forget too, his love of Gator sports, even when it included rants against opposing teams or coaching incompetence. He held family season tickets to Gator football for over 40 years, and passed them down to the next generation. Some of his sons' most joyful memories are attending those games with him and family- in all kinds of weather!

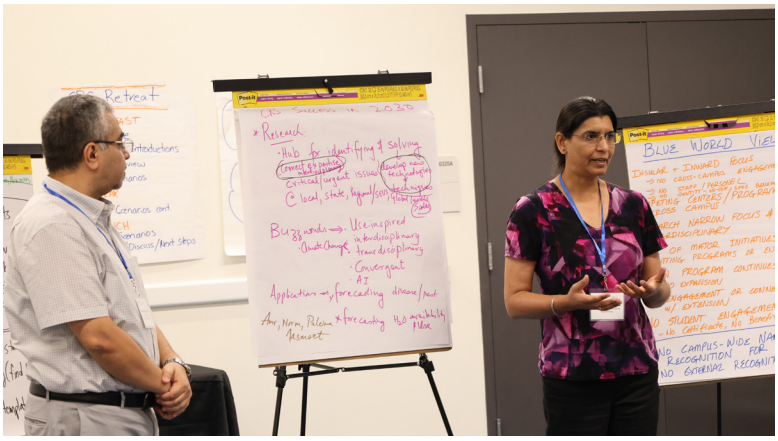
Awards and Accomplishments

Faculty, Staff, and Alumni Awards

- Cyrus Hall McCormick- Jerome Increase Case Gold Medal, ASABE Award- Dr. John Schueller
- ASABE PEI Professional Engineer of the Year Award- Dan Rutland
- NACTA Educator Award- Dr. Adam Watson
- 2024 FL ASABE Professional Engineer Award- Dr. Eban Bean
- 2024 FL ASABE Young Researcher Award- Dr. Ziynet Boz
- 2024 FL ASABE Young Extension Worker Award- Dr. Dana Choi
- 2024 FL ASABE Young Educator Award- Dr. Dan Hofstetter
- 2024 FL ASABE Distinguished Achievement Award- Dr. Richard Scholtz
- 2024 FL ASABE Outstanding Service Award- Vivek Sharma
- UF Distinguished Professor- Dr. Rafa Muñoz-Carpena
- 2024 UF/IFAS Culture of Nomination Award- Dr. Rafa Muñoz-Carpena
- 2024 UF/IFAS High Impact Research Publication Award. PLOS Water, doi: 10.1371/journal.pwat.0000059- Dr. Rafa Muñoz-Carpena, Dr. Alvaro Carmona Cabrero, Dr. Ziwen Yu
- 2024-2027 UF Research Foundation (UFRF) Professorship Award- Dr. Yiannis Ampatzidis
- 2024 UF Water Institute Fellow Award- Dr. Haimanote Bayabil

Student Awards

- ASABE 2024 Annual Internation Meeting Presentation Excellence Award- Rakesh Singh
- ASABE 2024 Presentation Excellence and Poster Award- Jacob Miguel Muller
- ASABE AIM Oral/Poster Competition- Liyike Ji
- ASABE AIM Presentation Excellence award- Liyike Ji
- ASABE AIM ITSC Paper Award- Daniel Petti
- AOC ASABE AIM 1st place Best Paper Award- Zhengkun Li
- AOC ASABE AIM 2nd place Best Paper Award- Chenjiao Tan
- ASABE AOCABFE Leadership and Service Award- Zhengkun Li
- 2nd place K.K. Barnes Student Paper Award Competition- Kennedy Belknap
- 2024 North America Poster Contest- People's Choice Award Bayer ICS- J. Adam Howe
- AGU Horton Research Grant Recipient- Rio Bonham
- 2024 FL ASABE Outstanding Student Award- Serenity Wilcox
- 2024 FL ASABE Best Undergraduate Presentation- Jacob Muller
- UF Postdoc Association excellence in engineering and applied sciences research Award- Dr. Henrique Boriolo Dias
- Fall 2024 Water Institute Travel Awardee- Dogil Lee
- UF ABE 3 Minute Thesis competition – 1st place- Rio Bonham
- UF ABE 3 Minute Thesis competition – 2nd place- Jacob Muller
- UF ABE 3 Minute Thesis competition – 3rd place- Ruijie Wang



LEFT TO RIGHT: 1. ABE GSO STUDENTS WITH THEIR JACK O LANTERNS. 2. ABE STUDENT UCHECHUKWU ILODIBE PRESENTS HIS THREE MINUTE THESIS. 5. ABE FACULTY DR. JOSE REYES AND STUDENT GABBY FISHER ADMIRE A CHOCOLATE CASTING IN HIS LAB. 6. STUDENTS BROUGHT THEIR RESUMES AND THEIR A GAME TO THE CAREER FAIR. 7. JING HUANG DEMONSTRATES TECHNOLOGIES DEVELOPED TO PREDICT STRAWBERRY YIELDS. 8. RETIRED AND EMERITUS GATHERED AT HOGGETOWNE CREEK HEADWATERS FOR THEIR FALL LUNCHEON. 9. JASMEET JUDGE, PH.D., PRESENTS AT THE REMOTE SENSOR RETREAT.

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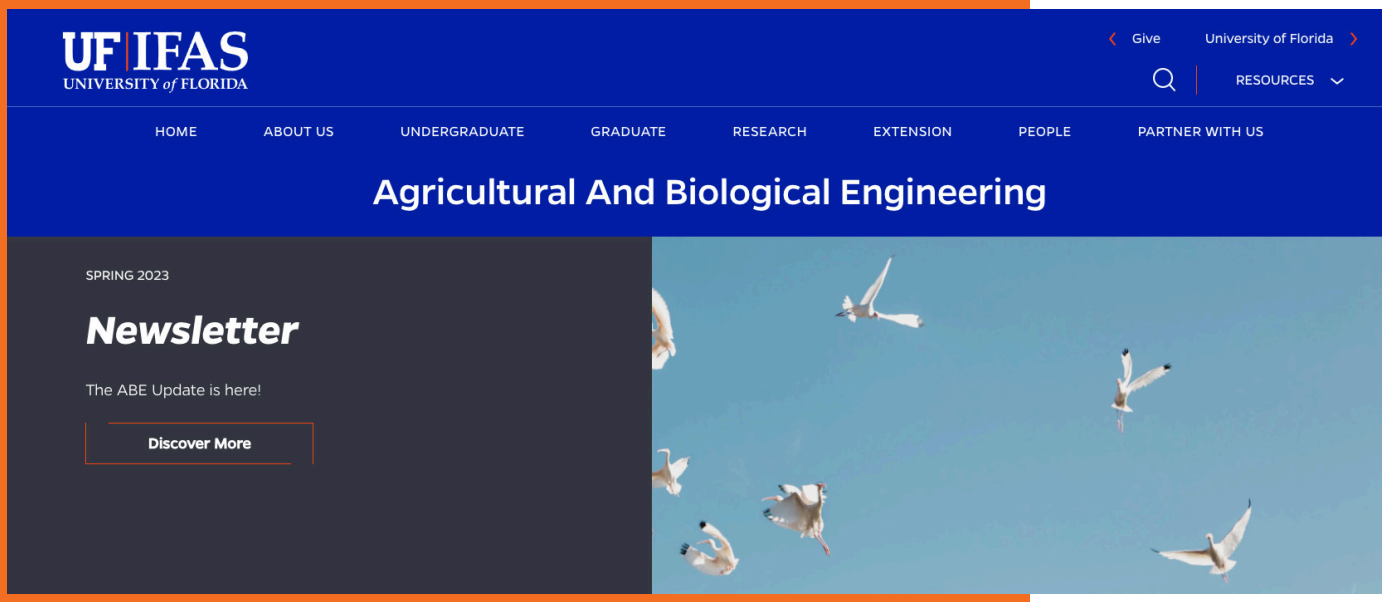
Learn More About ABE on Our Website



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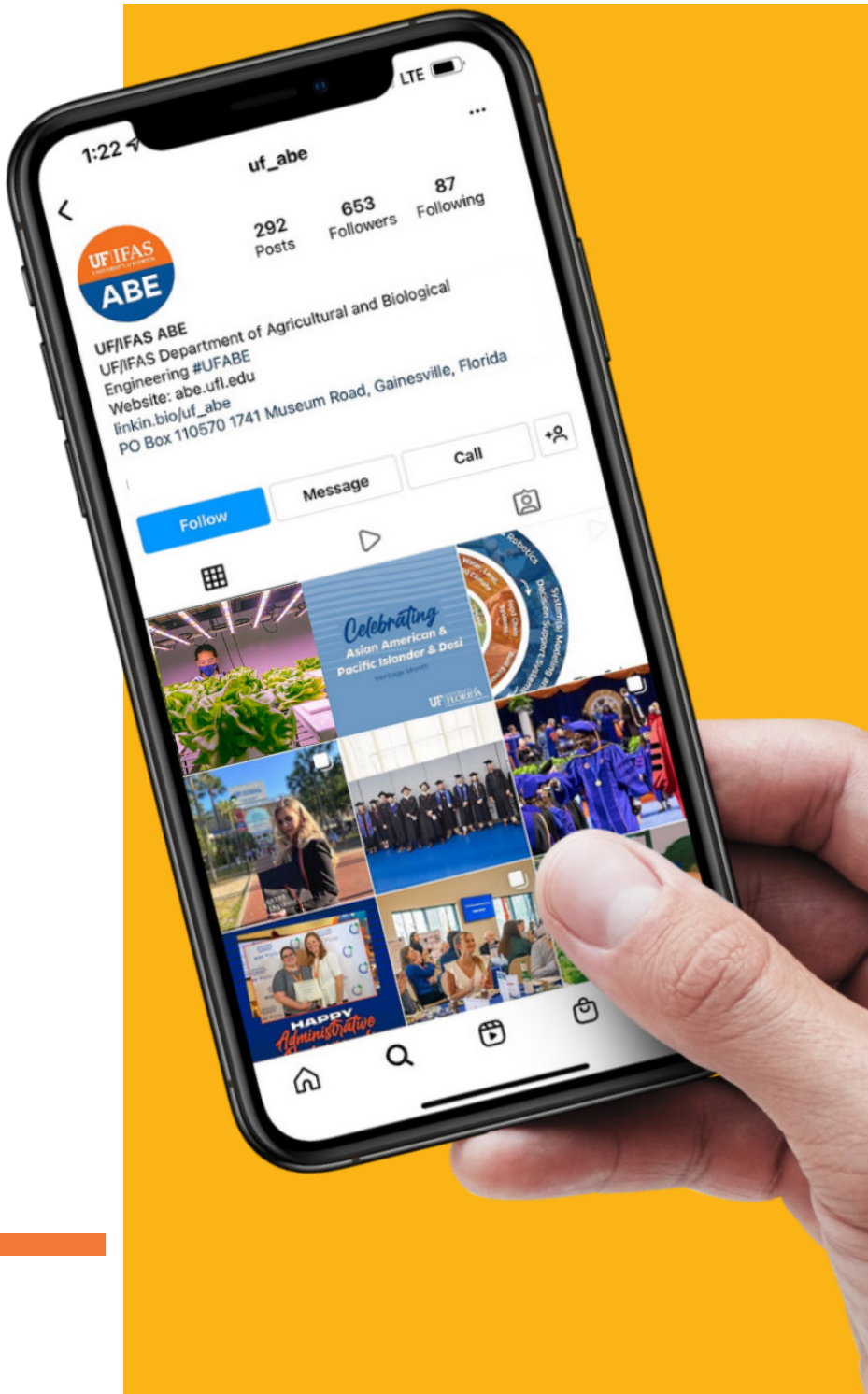

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