

From the Director's Desk



Dr. Ronald D. Cave, IRREC Interim Director

The IRREC community said farewell this summer to five retiring faculty members. Accomplished and high-achieving, each departing faculty member was named Professor Emeritus. Their combined years of service total 119 years. Their accomplishments are many and a legacy to our mission.

As part of the University of Florida's Institute of Food and Agricultural Science's stated mission to serve agricultural and natural resources industries with education, extension and research, each of the professors advanced agriculture and natural resource management with outcomes to affect positive, quantifiable change. Their service is admired and appreciated.

Dr. Peter J. Stoffella, and Dr. Charles Powell, retired as our Center Director, and Associate Center Director, respectively. They will now continue with their research work and mentor both graduate students and post-doctoral research scientists.

Dr. Brian Boman's accomplishments advanced the region's legendary citrus industry's sustainability.

He will continue with biofuels research for the research park and with his consultancy work for USAID to alleviate the world's poverty.

Two invasive plants, air potato and tropical soda apple, are now decreasing rapidly throughout the state, as a result of Dr. Bill Overholt's research and extension program. His work to release natural enemies against the two species is phenomenally successful. These accomplishments will continue to benefit the state even though Dr. Overholt will soon be a hops farmer in New Mexico.

Jane Bachelor was first among instructors for the UF College of Agricultural and Life Sciences to teach courses on UF Online. Her curriculum innovations have been adopted all through the nation. Now retired from her role as a senior lecturer, she will serve as Senior Lecturer Emeritus, continuing with her work as a UF lecturer, and as Treasure Coast Research Authority Board member.

We will enjoy the continued presence of four. But, we are grateful and will always appreciate the successes of all. Please read about the work these five departing professors achieved in this newsletter. We are proud to honor their careers.

Dr. Ronald D. Cave

Inside this issue

From the Director's Desk, Dr. Ronald D. Cave.....page 1
Dr. Peter J. "PJS" Stoffella, Professor Emeritus.....page 2
Dr. Charles R. Powell, Professor Emeritus.....pages 3-5
Dr. William "Bill" Overholt, Professor Emeritus.....pages 6-9
Dr. Brian J. Boman, Professor Emeritus.....pages 10-13
Jane Bachelor, Senior Lecturer Emeritus.....pages 14-16

DR. PETER J. “PJS” STOFFELLA PROFESSOR EMERITUS, AND FORMER IRREC DIRECTOR



Dr. Peter J. “PJS” Stoffella and legendary citrus producer, Buddy Johnson

Part of the IRREC community since 1980, Dr. Peter J. Stoffella, “PJS,” served as the center’s Director from 2006 through 2016. In this capacity he was chief administrator to IRREC, and was a liaison to the University of Florida/IFAS statewide program.

Dr. Stoffella was also a leader to the local agricultural community, to stakeholder and interest groups that support education, and to agricultural industries and natural resources organizations.

Now retired, Professor Emeritus Stoffella will continue with his work on the Board of Directors for the Treasure Coast Research Park. Additionally, Dr. Stoffella oversees graduate students along with fellow professors.

During his leadership as IRREC Director, Dr. Stoffella had continued to perform work as a research professor.

As a research scientist of horticulture, he established a program on the development of optimum compost utilization practices in commercial horticultural cropping systems.

Specifically, Dr. Stoffella’s interests were in composts of biological weed controls, composts as peat substitutes for media used in transplant production systems, and composts as partial inorganic nutrient substitutes in field grown vegetable crop production systems.

His efforts to develop a cooperative research program on utilization of compost in a vegetable cropping system was recognized as an important contribution to the industry. The program has been used as a mechanism to reduce nutrient leaching into ground water.

During his noteworthy career as both a research professor and as IRREC’s chief administrator, Dr. Stoffella was recognized with a number of prestigious awards. In 2007 he was elevated as a Fellow of the American Society for Horticultural Sciences, the highest point of achievement for a professor of horticultural sciences.

Other notable awards he was honored with were: Kingenta Agricultural Science Award from the American Society of Agronomy, in 2015; the 2014 Clean Water Award from the U.S. Composting Council; and, the American Society of Horticultural Scientists 2006 Outstanding Researcher Award.

Recognized as an international leader for soil and water science, Dr. Stoffella presented in 2014 at the 10th Latin American Congress of Soil Science in Peru; and at the Academy of Sciences, in Guangzhou, China. In 2015, he presented at the International Composting Conference in Beijing, China.

DR. CHARLES POWELL

PROFESSOR EMERITUS, AND FORMER ASSOCIATE IRREC DIRECTOR



Dr. Powell on the day the IRREC peach grove was installed

A career-long devotion to solving plant diseases and student mentoring, Dr. Charles Powell was recently named Professor Emeritus of Plant Pathology. In his new role, Dr. Powell intends to continue with his efforts to fight citrus greening and to guide up-and-coming students who are working at all scholarly levels.

Dr. Charles Powell's life began under the guidance of his two chemist parents. His father, a University of Florida professor, taught young Charles how to build sugars and to grade student papers appropriately.

EARLY SCIENCE FAIR SUCCESS

Throughout the 1950s, Dr. Powell attended Gainesville schools and in 1963, he twice won First Place at the Florida State Science Fair.

In the 1970s, Dr. Powell earned a Bachelor of Science degree in Chemistry from Texas Lutheran College; a Master of Science in Botany at the University of Nebraska; and then a Ph.D. in Botany at the University of Nebraska. The doctorate was completed in only three years, or about half the time most scholars spend on earning the terminal degree.

Dr. Powell had studied virology and learned how to purify viruses from two of the world's leading experts on the topics. In 1975, he pursued a postdoctoral position at the University of Wisconsin.

WORK ON PEACH TREES

Having completed the postdoctoral opportunity, Dr. Powell was hired for a scientist position with the Pennsylvania Department of Agriculture, working in the plant pathology division.

There, his task was to stop a disease that was killing the state's important peach cash crop. Dr. Powell determined the disease was caused by a virus and recommended growers plant nursery trees in fumigated soil and control weeds that carried the virus. Thousands of trees were saved.

THE FIRST DOT BLOT TEST

Dr. Powell's work with the ring spot virus led to the development of the first dot blot test—a breakthrough in the plant pathology discipline. He presented the diagnosis technique during an international trade organization meeting held in Australia.

DOUBLE STRAND RNA

Through his work with the ring spot virus, his research with monoclonal antibodies was carried out at Hershey Medical Center in Pennsylvania.

JOINED IRREC, 1989

In 1989, Dr. Powell was accepted for his position as a Plant Pathologist at IRREC. He had wanted the position to work on citrus trees that produced the world's peerless fresh fruit product.

SCIENCE FAIR MENTORING

Concurrently, Dr. Powell enjoyed an opportunity to assist his son Robert with a middle school science fair project. Robert's project was a success, and Dr. Powell's mentoring middle and high school student science fair projects continued. He was enlisted to assist the best local students with their scientific research projects. Dr. Powell's mentoring students continues to this day.

DISTINGUISHED STUDENT MENTORING

Not unlike his mentoring scientific parents, Dr. Powell's passion for guiding students helped to launch many successful careers and garnered a number of remarkably impressive awards.

SCIENCE FAIR AWARDS

The many years of mentoring science fair projects resulted in an amazing number and quality of prizes. And, the students who earned the awards are today fighting both human and plant diseases.

Among the awards were 13 First Place winners at the Florida State Science Fair; two students placed first at the International Science Fair; two projects were named "Best of Show" at the Florida State Science Fair; and one, was received the "Intel International Young Scientist Award, the highest award presented at the International Science Fair.



Dr. Powell presents at Dr. Peter J. "PJS" Stoffella's retirement event

SUCCESSFUL SCHOLARS

More than a few of Dr. Powell's students pursued medical degrees at the nation's Ivy League universities, including Harvard and Yale. Other students attended Johns Hopkins and our own University of Florida. The former students are now doctors and scientists who make many contributions to healing diseases.

Dr. Powell mentored student Science Fair Projects: There were 13 First Place winners at the Florida State Science Fair; two students placed First at the International Science Fair; two projects were named "Best of Show" at the Florida State Science Fair; and, one received the "Intel International Young Scientist" award, the highest award at the International Science Fair

CITRUS TRISTEZA

In the 1990s, citrus tristeza was taking the lives of a number of citrus trees. During a visit to one of the legendary Minton groves, Dr. Powell noted that a large proportion of young citrus trees had been infected with citrus tristeza. Detecting the infected trees may have originated at a nursery, Dr. Powell hypothesized. The theory proved to be correct.

“Many trees in the nurseries were infected with severe strains of tristeza,” said Dr. Powell.

Dr. Powell worked along with nursery principals to ensure all nursery stock was tested so that growers could get “clean” resets for their grove operations, effectively minimizing the disease to a more manageable size. He then turned his attention to defeating the citrus tristeza virus in his laboratory. Using disease antibodies, Dr. Powell formulated them to differentiate strains on citrus tristeza virus.

With Dr. Powell’s findings, the disease is not as formidable as it once was.

COLLABORATION WITH DR. DOV BOROVSKY

In other work to defeat citrus pathogens, Dr. Powell collaborated with Dr. Dov Borovsky, who had developed an environmentally friendly method to fight pathogens with a mosquito-

produced hormone that regulates bug meals and hormone regulation. Called TMOF, it controls digestion in the food consumed by plant insects. The two scientists used the hormone to down-regulate plant feeding insects by expressing the mosquito gene.

Now retired, Dr. Powell is relaxing and enjoying camping and other outdoor activities.

But, he cannot separate himself from his passions to save trees and mentor promising students.

ROLE AS EMERITUS PROFESSOR

Dr. Powell continues work with Dr. MuQing Zhang’s research to reduce the bacteria that causes citrus greening, or Huanglongbing ; or HLB. In Chinese the disease name translates to, the “Yellow Dragon Disease.”

Although citrus tristeza has to date killed the most citrus trees throughout the world, citrus greening has proved to be the most complicated. It was first discovered in Florida about 10 years ago.

During a standing-room-only event held recently at IRREC to honor his new status as an Emeritus Professor, Dr.

Powell discussed his desire to “save more trees.”

TREES MUST BE SAVED

Dr. Powell explained the most difficult problem he has faced in his entire career needs resolution.

“Citrus greening needs to go away,” said Dr. Powell.

“We have been working on a method to reduce the bacteria that is causing disease and are hoping later experimentation will save the lives of our trees.”



Dr. Dov Borovsky collaborated along with Dr. Powell

DR. WILLIAM “BILL” OVERHOLT

PROFESSOR EMERITUS OF ENTOMOLOGY AND NEMATOLOGY

When Dr. Bill Overholt arrived in Fort Pierce for his new position with the University of Florida, an invasive plant called tropical soda apple was costing the state more than \$11 million annually for the chemicals and heavy machinery needed to remove the weed.

Dr. Overholt's appointment as Professor at the UF Indian River Research and Education Center began in 2002. He had previously served as a program leader at the International Centre of Insect Physiology and Ecology in Nairobi, Kenya; as a technical advisor for USAID in Washington, D.C., and in Mauritania; and, as a Peace Corps volunteer in Dakar, Senegal.



Dr. William “Bill” Overholt searching for cogongrass natural enemies in Indonesia

TROPICAL SODA APPLE

Much of Overholt's early work for UF was on tropical soda apple, a highly aggressive South American weed that invaded pastures, rangelands and natural areas in Florida. The plant was reported in the state in the early 1980s. Dr. Julio Medal, a former UF scientist, identified a beetle that fed on soda apples leaves in its native South America range in 1994. Overholt, in collaboration with several other scientists, mass reared and released nearly 250,000 tropical soda apple beetles throughout Florida. The releases were made starting in 2003, and continued through 2011.



The tropical soda apple beetle replaced the need to spend untold sums of money to control the tropical soda apple

INVASIVE SPECIES DAMAGE

“Without a plant or insect's natural enemies present in their habitat, exotic plants grow uncontrollably—outcompeting natural flora and fauna for land, water and nutrients,” said Dr. Overholt.

Dr. Overholt's lab staff took a lead in quantifying the impact of the beetles on tropical soda apple. The research and introduction of the biological control program demonstrated that the beetles had spread throughout much of peninsular Florida where they decreased not only the size of plants and the number of fruits, but also drastically decreased the density of the plants.

INVASIVE SPECIES EXPENSES

“St. Lucie County cattle ranches have saved an estimated \$850,000 per year since 2003 with the tropical soda apple biological control project,” said Ken Gioeli, UF/IFAS St. Lucie County Cooperative Extension Agent III, Natural Resources.

“Statewide, the estimated cost savings is \$3.5 to \$8 million every year.”

PROGRAMMATIC SUCCESS

Dr. Overholt said that at some release locations, a 90 percent reduction in soda apple plants was realized within 1-2 years after the beetle's release. The plant's natural enemy is now permanently established in Florida where it is expected to sustainably control the invasive species without the necessity of releasing more of the laboratory reared insects.

The tropical soda apple is a new addition to the list of Florida's highly successful biological control programs, said Gioeli.

STATEWIDE PROGRAMMATIC SUCCESSES

An abbreviated list of the state's celebrated successful biological control programs are: alligatorweed, the pink hibiscus mealybug and the infamous melaleuca. Alligatorweed was in the early 1960s choking 97,000 acres of Florida's canals. Today, with the introduction of a biological control, the alligatorweed flea beetle, alligatorweed grows at such low densities it was removed from the list of problematic invasive species.

Another biological control success involved the release of three insects against the pink hibiscus mealybug, which protects Florida's native hibiscus and the state's most important crop, citrus. Melaleuca, the tree that consumes water resources like a sponge, had formerly overcome thousands of acres in the Everglades National Park. Today, the tree's population in the Everglades is steadily decreasing as a result of a biological control program, said Gioeli.

"About 1,500 exotic plants grow outside of cultivation in Florida, and of those, 164 are known or suspected to cause economic and ecological damage," said Dr. Overholt.

"It is estimated that state agencies spend \$60 to \$80 million annually on the control of invasive plants."

OTHER PROJECTS IN PROGRESS

Dr. Overholt's additional research projects were with the Brazilian peppertree, air potato and cogongrass, each of which are costly to manage and present formidable threats to Florida's ecosystem.

BRAZILIAN PEPPERTREE

Brazilian peppertree has risen to the same level of infamy as the melaleuca tree had once held. The peppertree produces pink peppercorns and, similar to the melaleuca, it grows so rapidly it displaces native trees and wildlife. Along with UF Gainesville

Professor, Jim Cuda, the scientists recently discovered the trees in Florida are hybridized and expect that several biological controls will be needed to control the tree, Overholt said.

Officials with Florida's water management districts, the U.S. Army Corps of Engineers, the National Park Service, and the U.S. Fish and Wildlife Service, know a biological control is needed to control the peppertree.

"The state and federal agencies spent more than \$35 million controlling Brazilian peppertree during a nine year period from 2005-2014, or an average of \$4

million every year," said Overholt.

"Two insects are waiting federal approval for release," said Dr. Overholt. "In greenhouse trials these insects reduced growth of Brazilian peppertree by 11 percent and up to 89 percent."

The Florida Fish and Wildlife Service has funded grants for Dr. Overholt and Dr. Cuda's Brazilian peppertree research program. Overall, Dr. Overholt's research programs have been funded with more than \$8 million by federal, state, and private interest organizations.



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In the 1960s, alligatorweed once choked Florida's canals and waterways. Today the plant is no longer a problematic species as a biological control, the alligatorweed flea beetle, keeps this plant population small, as it is in its native environment

AIR POTATO

A third plant Dr. Overholt has worked with is air potato, an Asian vine that often consumes tree canopies to the point of which native trees receive no sunlight and eventually collapse under the weight of this rapidly spreading vine.

Dr. Overholt worked with U.S.D.A. scientists who discovered an Asian beetle enemy expected to fight the invasive vine.

"Along with officials from the U.S.D.A. and FDACS, more than 430,000 beetles have been released from 2012 to 2015 at nearly 2,000 locations, in 42 of the state's counties," said Dr. Overholt.

"The program is still underway and early results show up to a 60 percent reduction in air potato abundance at some locations."

A recent survey revealed that the beetles have spread throughout most of Florida, moving on their own at a pace of about 5 miles per year.

COGONGRASS

A fourth control program for which Dr. Overholt has worked considerably is with cogongrass. A vibrant green, the tall-blade grass was first introduced to Florida as a possible forage grass.

But, as with all invasive species, is now overcoming the state's native vegetation. The plant's native habitat includes Africa and Asia.

SEEKING THE NATIVE ENEMY

Seeking the natural enemies of cogongrass, Dr. Overholt journeyed to Japan, the Philippines, Indonesia and to several countries in Africa. He returned with an Indonesian gall midge, and stemborers from Uganda, Tanzania, the Philippines and Japan.

"The grass is invasive in much of the southeastern U.S.," said Dr. Overholt.

"It outcompetes desirable vegetation, forms monocultures, and it increases fire frequency and severity."

Each of Dr. Overholt's projects have demonstrated an enduring commitment to the science of biological control, said Dr. Ron D. Cave, interim director for IRREC.



Air potato grows rapidly, consuming native palms

THE NORMAN C. HAYSLIP BIOLOGICAL CONTROL AND RESEARCH AND CONTAINMENT LABORATORY

Dr. Cave worked with Dr. Overholt for the last 14 years in the Norman C. Hayslip Biological Control and Research Containment Laboratory. Dr. Overholt, however, retired from UF in late May.

"Bill Overholt is an excellent scientist and although his departure is a loss, he has left behind a distinguished research program for a new scientist to continue work he started," said Dr. Cave.

MORE SUCCESS EXPECTED

"I expect projects begun by Bill will at some point be added to the list of Florida's successful biological control programs, as was the tropical soda apple project," said Dr. Cave.

Dr. Overholt's contributions while working for the university are bringing about the culmination of the exceedingly successful tropical soda apple biological control program.

STUDENT MENTORING

Dr. Overholt also mentored research projects for 30 graduate students. Sixteen students successfully completed PhD's; 14, master's degrees.

PUBLISHING

Dr. Overholt published 184 research articles in some of the world's prestigious peer-reviewed science journals, including Nature, the Annual Review of Entomology, Biological Invasions, Biological Control and many others.

He also published two books, five book chapters and served as a journal editor.

PRESTIGIOUS AWARDS

In 2014 Dr. Overholt was honored by the Japanese Society for the Promotion of Science with a Research Fellowship. The tropical soda apple biological control program was recognized nationally with the National Association of Natural Resource

Extension Professionals Outstanding Team 2010, bronze award; and a second time with The Florida Entomological Society "Team Research Award for 2010."

LEADERSHIP

Dr. Overholt sits on the editorial board for the International Journal of Tropical Insect Science. He has been a long-term member of the Entomological Society of America, the Florida Entomological Society, Florida Exotic Pest Plant Council and the Florida Weed Science Society.



Air potato produces bulbs that become entrenched in the ground

HOPS FARMER

During a recent well-attended event held at IRREC during which Dr. Overholt was honored for his service to the university, he told his colleagues and co-workers he does not like the word "retirement."

"I'm actually starting a new career as a hops farmer in New Mexico," said Dr. Overholt. "I have enjoyed my work here, but am ready to start a new chapter of my life."

Dr. Cave and Ken Gioeli both agree Overholt's new endeavor will reap wondrous results.

DR. BRIAN BOMAN

PROFESSOR EMERITUS OF AGRICULTURAL ENGINEERING



A Haitian ambassador and Dr. Boman met in Haiti

For 30 years Brian Boman's work as a University of Florida professor transformed the world's most prominent citrus industry with engineering technology advancements. Throughout his career, his agricultural engineering expertise was sought worldwide to assist developing countries in efforts to improve agricultural productivity and alleviate poverty.

Following his retirement, Dr. Boman plans to continue with that tradition in several of the world's most impoverished regions.

BEST MANAGEMENT PRACTICES, OR BMP'S

In Florida, Dr. Boman spearheaded the development and implementation of Best Management Practices (BMPs) for the citrus industry in the late 1990s. The BMPs were developed jointly with growers, state and federal regulators, water management districts, environmental groups, agricultural associations, and with local officials. The protection standards were developed to reduce the impact of farming operations on the environment and water resources of the state. The BMPs have proved to sustain the environment and often reduce production costs. In the last 15 years, BMPs have been implemented for every agricultural industry in the state.

"Dr. Boman's BMPs were so progressive, university administrators appointed him the statewide leader to design standards for all of Florida's production commodities," said Dr. Peter J. Stoffella.

RETIREMENT EVENT

Dr. Boman retired in May from his post with the University. A rousing party was held in his honor at the prominent and historic Adams Ranch in west St. Lucie County, under a rustic pole barn. The ranch is famous in the cattle industry for its hybrid brand Braham cattle, citrus production, and environmental stewardship practices. Adams Ranch is one of the nation's largest cow/calf operations.



Former IRREC Director Dr. Calvin Arnold presents at Dr. Brian Boman's retirement event. Then-IRREC Director Dr. Peter "PJS" Stoffella looks on.

"It's research professors like Dr. Boman who keep us in business," said Robbie Adams, as he opened the event to honor Dr. Boman. "Brian's expertise with irrigation, fertigation and water management brought our industry to a higher level."

"It's research professors like Dr. Boman who keep us in business," said Robbie Adams, owner of the famous Adams Ranch.

"Brian's expertise with irrigation, fertigation and water management brought our industry to a higher level."

ALTERNATIVE CROPS DEVELOPMENT

The Indian River region's citrus industry producers grow the world's undisputed premier citrus product. But, the area's production operations are nearly stalled at this time due to a disease called citrus greening.

While research professors work with growers to find a solution to the pathogen, Dr. Boman has been working with Treasure Coast Research Park Chief Executive Officer, Ben DeVries, to produce industrial sucrose feedstock crops.



Above are the four stages by which Energybeets Dr. Boman produced are converted to biofuel

BIOFUELS DEVELOPMENT

"Dr. Boman's work with sweet potatoes is necessary to produce airline fuel as fossil fuels have been identified as a worldwide pollutant," said DeVries. "We are grateful Dr. Boman will continue his research to supply this need."

INTERNATIONAL CONSULTANT

Dr. Boman said he will work for the research park, serve as an international consultant, and enjoy his family more as he departs the university.

WORLD CLASS ENGINEER

Dr. Boman is a world-class agricultural engineer at the intersection of water management. Prior to completing a Ph.D. in Agricultural and Irrigation Engineering at Utah State University, he was a water management consultant in New Mexico and in Utah. He also served the U.S. Bureau of Reclamation as chief of the Consumptive Use Division in New Mexico, and as a drainage engineer in North Dakota.

In the more recent years of his career, Dr. Boman's work has taken a sharp and unplanned turn towards humanitarianism.

THE FATHER OF HAITI'S GREENHOUSE REVOLUTION

Dr. Boman began his work in Haiti after having been selected by USAID officials to develop irrigation and protected agriculture facilities. The international helping agency's water management and agricultural production initiative was implemented following a 2010 earthquake that left the island nation devastated.

USAID is the lead American federal agency that works to "end extreme global poverty and enable resilient, democratic societies to realize their potential," as stated in its mission.

For USAID, Dr. Boman's engineering projects involved rainwater capture and storage systems to supply irrigation water. The water is directed to hoop house greenhouses he designed for peasant mountain farmers in Haiti.

Dr. Boman worked along with Robert Estime, a USAID organizer, to train Haitian residents in food production of high value crops. Today, the farmers' crop production businesses sustain the growers and their families.

To achieve their sustainability goals, Dr. Boman worked with the Haitian growers to design simple hoop house greenhouses. The greenhouses were easily constructed on the island's steep mountainsides and are maintained by the farmers.

WATER SUPPLY

While working in Haiti to construct the greenhouses, Dr. Boman watched as women carried clean water from fresh water springs at the foot of the mountain to their villages in the higher altitudes.

“I decided to expand the water supply system needed for a greenhouse complex system to also serve the nearby village and the local school there,” said Dr. Boman.

“The villagers spent the better part of their days sustaining basic life needs,” said Dr. Boman.

Families who live in the mountainous villages now have clean fresh water for drinking, cooking, bathing, and cleaning clothes.

“Dr. Boman is the father of Haiti’s greenhouse revolution,” said Robert Estime.

“His work here in Haiti has multiplied farmer income 10 to 20-fold and the farmers are staying in their communities to earn a living instead of having to move to cities and find work.”

ENVIRONMENTAL CONSERVATION

Estime said the greenhouses have also contributed to environmental conservation because the farmers no longer produce food on the steep slopes of Haiti’s mountainsides.

The new farming techniques have put an end to severe erosion problems that Haiti had been facing because the land is now more stable.

TANZANIA

Dr. Boman has taken his sustainability practices to Tanzania, where small rice farms had been abandoned due to salinization.

Implementing irrigation systems for about 2,500 hectares in two villages, Dakawa and Ndungu, the land was returned to partial production in only one season, and to nearly full production in two seasons.

IMPACT

The impacts from this work are improved productivity and economic position of growers in two regions, said Sophia Kashenge-Killenga, project principal investigator.



Hoop house greenhouses are now a part of Haiti’s restored agricultural production industry

“Thanks Brian, for boundless energy, enthusiasm and dedication for the project to improve rice growing conditions of farmers in Tanzania with the main focus of improving their productivity, income and livelihood,” said Dr. Kashenge-Killenga.

Dr. Boman said he has enjoyed seeing the economic benefits agriculture best practices bring to growers in Florida, Tanzania, and in Haiti.

But, the most satisfying results are seeing entire villages and their people become happier and healthier, able to sustain their livelihoods with clean water and healthful food production.

His next project as an engineering consultant took him to the former Soviet Union.

KAZAKHSTAN

"The former Republics of the Soviet Union faced very difficult times following its collapse," said Dr. Boman, who is now working in Kazakhstan, the last republic to declare independence after the Soviet 1991 fall.

"It's an interesting place and there are many opportunities to help the people there."

BUMPER RESULTS

Three years ago, when Dr. Boman began his work there, tomato growers in the Almaty Oblast of Kazakhstan produced 15 to 25 tons per hectares of tomatoes. By 2015, the same growers reported 90 tons of tomatoes per hectare, or up to five times more than they had been producing in 2012.

The bumper results were achieved with improved varieties, good cultural practices, weeding, irrigation, and fertigation, Boman said.

STUDENT MENTORING

Dr. Boman also mentors three students who attend the Kazakhstan National Agrarian University in Almaty. He said the students are eager to participate in adopting new technologies to collect much of the field and production data.

Dr. Boman said the response from local farmers to participate in the programs has been so great, it was necessary to develop a process by which to select farmers he would work with.

"We developed a list of potential projects that we wanted to demonstrate and had interested farmers submit a proposal on what they wanted to do," said Dr. Boman.

This year, twenty projects were selected, with Dr. Boman and the students working to ensure the farmers have the necessary tools and information to be successful.

"I will be returning to Kazakhstan this fall to wrap up the growing season and make plans for the next season," said Dr. Boman.

"The students are great and we are looking at additional vegetable varieties, fruit trees such as apples, pear, and peaches, that can be produced in the region and be profitable for the farmers." During his foreign visits, Dr. Boman is immersed in the country's culture.

Dr. Boman said he enjoys his time interacting with many local families, understanding their culture and needs. Most of the families there depend on agriculture to support their families and their children are exceedingly important to them, he said, a value he well understands.

Dr. Boman said his son Michael is "the second doctor" in his family. Mike recently completed a Doctor of Physical Therapy program and works in St. Petersburg. His other son, Robert, is an engineer.



Dr. Boman presents his wife and son's family during his retirement celebration event

RETIREMENT

Together, Dr. Boman and his wife Myrna, envision long afternoons relaxing on their new porch along with their grandchildren, Riley and Zander, both nine months old; and Zachary, who is three years old.

"I will work as a consultant, goof-off on the front porch, take-up golf along with my wife, and be a grandfather," he said.

Apart from relaxing on the porch with his family, Dr. Boman envisions helping more people in the world's impoverished nations to enjoy a better life.

"I have an opportunity to visit Senegal in Africa," he said. "I'm looking forward to seeing and learning how they grow food and how to help them live better."

JANE BACHELOR

SENIOR LECTURER EMERITUS OF AGRIBUSINESS MANAGEMENT



Senior Lecturer Emeritus Jane Bachelor

After having made contributions to national curriculum, set student enrollment records, and being recognized with a number of prestigious awards, IRREC Senior Lecturer Emeritus Jane Bachelor is retiring a second time.

But, Bachelor's second retirement will not really be a retirement, she said. She had more than a decade ago retired from a long and successful career as a sought-after human resources consultant. While employed with the university for the last 12 years she instructed and developed courses related to her expertise and served a local research park on its board of directors.

EMERITUS ROLE

"I will continue to serve on the Treasure Coast Education, Research and Development Board of Directors for the Treasure Coast Research Park, and in fall, 2017, I will resume teaching a graduate course, Human and Organizational Management of Natural Resources, for the UF School of Forest Resources and Conservation," said Bachelor.

CURRICULUM INNOVATIONS

In 2013, UF Food and Resource Economics Department (FRE) Chair Ray Huffaker asked Bachelor to create curriculum for a graduate-level course. In the three semesters since the course was launched, Bachelor has instructed 31 graduate students.

"Ms. Bachelor has a unique knack of delivering her vast human resources knowledge," said an unidentified student in an official course evaluation. "She is fun, motivated and involved with her students and subject matter."

FIRST UF ONLINE INSTRUCTOR

Bachelor was selected by Dr. Alan Wysocki, the Associate Dean for the UF College of Agricultural and Life Sciences (CALs) to be the first FRE instructor to teach courses for UF Online, the university's highly successful distance learning program.

RECORD-SETTING STUDENT NUMBERS AND EVALUATIONS

During her tenure at UF, Bachelor instructed nine different courses related to human resources, agribusiness management, entrepreneurship, and strategic selling. The courses were delivered a total of 56 times to 3029 undergraduate students, the largest class sizes for all of the UF FRE department instructors' courses. Bachelor's courses averaged a record 700 students per year, she said.

According to Bachelor's departmental peers, her most impressive achievement is with her student evaluations: the summaries consistently rank her course delivery in the upper 10 percent, routinely exceeding college and departmental averages.

A colleague of Bachelor's and UF Department Chair for Environmental Horticulture, Dr. Sandra Wilson said, "Jane Bachelor knows and remembers every single student she has ever had and her student evaluations are consistently well above department or college means."



Members of the Treasure Coast Research Research Park Authority Board

NATIONAL COLLABORATIONS

Working closely with students also translates to working well with colleagues at other land-grant universities, according to Wilson and Wysocki. Bachelor began work with teaching professors at Purdue, Michigan State, North Carolina State, and Texas A&M universities in 2014, to create authentic learning experience collaborations. That work is continuing beyond her retirement, said Bachelor.

COMMITTEE AND COUNCILS

"I've also supported the development of distance education at UF through participation in a number of UF distance education committees and councils," said Bachelor.

Her most recent appointment was on a committee to search for her successor, and on 11 additional committees including the Distance Education Quality Assurance Committee for Online Course Delivery, the UF College of Agricultural and Life Sciences Teaching and Innovative Council, and the Food and Resource Economics Department's "Distance Learning" Administrative Committee.

As a result of the course enhancements and noted success, Bachelor was a sought-after speaker at national symposiums and annual meetings, at an average of four engagements each year. She spoke before the North American Colleges and Teachers of Agriculture earlier this year. Her topics were, "Is an Online Gathering Place Important for Distance Education Student Success? A Comparison of the UF College of Agricultural and Life Sciences Teaching and Innovative Council, and the Food and Resource Economics Department's "Distance Learning" Administrative Committee.

MINI-GRANTS

Bachelor earned six mini-grants for a total of \$18,000 for course development and learning materials. A couple of the grant titles were: "Building a Sense of 'Community' for Distance Education Students," and "Developing Reusable Learning Objects for UF Online Courses."

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Her presentation topics were, "Is an Online Gathering Place Important for Distance Education Student Success? A Comparison of the Perceptions of Online Professors and Students," and "Gathering to Cultivate Student Success...Utilizing Multi-University Collaboration to Enhance Distance Education Material for Principles of Professional Selling Courses—A Case Study."

PRESTIGIOUS AWARDS

For the course innovations, for her national collaborations and for her success as a university senior lecturer, Bachelor was honored with three prestigious awards.

In 2016 her peers recognized her as a University of Florida Emeritus Senior Lecturer. Last year she was honored with a national

recognition by the North American Colleges and Teachers of Agriculture with its 2015 Educator Award.

For academic year 2014-2015, Bachelor was recognized as a UF CALS Roche Teaching Fellow, for "Innovative Teaching Approaches: Authentic Learning Through Online Delivery in Principles of Agribusiness Management." The program was designed to enhance students' learning experience with managerial exposure and with student-to-student interaction in an online platform.

"Jane Bachelor's work to improve distance education will assist our faculty for many years going forward," said Dr. Stoffella, who had served as IRREC's Director for most of the years when Bachelor was a Senior Lecturer.

"While she was a lecturer she created new courses and improved online course delivery to the point of which departments at other universities across the country sought her expertise."

DISTINGUISHED BUSINESS CAREER

Dr. Stoffella said Bachelor's background working as a consultant and for some of the nation's most recognized institutions brought business-world experience to the university and greatly benefited the student experience.

Bachelor's work as a human resources management consultant began in New York, New York, where she handled human resources for Avon Products, Inc.; The New York Times Company; the New York Times Magazine Group; and KPMG Consulting, where she segued to consultancy work, both domestically and internationally, advising leaders for Fortune 100-500 companies.



Bachelor enlisted the help of local executives to evaluate student business plans in the popular entrepreneurship course she developed as part of IRREC's Agribusiness Management degree program