



# FEED THE FUTURE HAITI AREA PROJECT MASTER OF SCIENCE STUDENTS









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Strengthening Haitian institutions through agricultural research and extension

On the cover: A group of master of science students supported by the AREA project pose for a photo on the campus of the University of Florida. (Kimberly Pierre/AREA photo.) All photos in this document were taken by the staff, faculty, students or others associated with the AREA project, UF and LSU.

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#### GRADUATING MASTER'S STUDENTS READY TO LEAD HAITI'S AGRICULTURAL SECTOR

n the fall of 2015, the news spread across Haiti via social media platforms, online job sites and word of mouth. A special University of Florida-managed project to build Haiti's capacity to improve its agricultural sector sought applications from Haitians to earn master of science degrees.

After a rigorous selection process, 25 college-educated applicants were awarded scholarships to UF and Louisiana State University to begin graduate studies in nearly every field of agricultural sciences including horticulture, biological engineering and entomology.

These scholars have become an integral part of the Feed the Future Haiti AREA project\*, a multifacted initiative launched by UF's Institute of Food and Agricultural Sciences in 2015 with a \$13.7 million award from the U.S.Agency for International Development.

Now, as many of them complete their studies, it is time to pause to reflect on the journey they have taken.

As you'll read in the pages of this booklet, they have without a doubt learned a lot – and we have learned a lot from them. They have explored all manner of research projects – ranging from cultivating higher-yielding crops to better managing plant diseases and improving production techniques in the face of climate change. They worked in the field throughout Haiti, at the UF/IFAS Tropical Research and Education Center in Homestead, Florida, and in numerous laboratories and research facilities on the main campuses of UF and LSU. Each student studied with professors from their university as well as with Haitian research professionals who served on their graduate committees, and many of them had opportunities to present their research results at academic conferences and work with agricultural leaders and farmers across the Caribbean country.

Also, importantly, they have built priceless relationships with one another, with faculty members and with numerous agricultural professionals. These are relationships that do not end at graduation but last a lifetime.



Now they begin another journey – back home. Graduating students said they are eager to help address a long list of agricultural challenges faced by Haiti, such as improving the fertility of degraded soils, educating the next generation of students, developing higher-yielding varieties of crops, managing crop-destroying pests and plant diseases, and improving agricultural policies and the management of precious water resources.

No matter where they end up working, their research and expertise is going to have a significant impact on the agricultural sector in Haiti. We are confident that they will help address major food production challenges in Haiti that improve household food security and livelihoods.

Rosalie & Koenie

Rosalie L. Koenig, Ph.D. Principal investigator Feed the Future Haiti AREA project

\*AREA is a French acronymn for Appui à la Recherche et au Développement Agricole, which means "Support to Agricultural Research and Development."



# Marie Christelle CALIXTE

Christelle examined agricultural technical and vocational education and training (TVET) in Haiti. Her study provided a picture of how TVET fits into the Haitian agricultural and extension system through the curriculum and the integration of graduates into the workforce. She also explored the sectors with the highest demand for agricultural TVET graduates.

After graduating, Christelle returned to Haiti and she joined the AREA project in spring 2019 to serve as the project's gender specialist. She works with UF faculty and AREA team members on a variety of projects all with the goal to increase the participation and empowerment of women in Haiti agriculture. Long-term, Christelle said, "Wherever I go, I want be useful and contribute to the wellbeing of people around me to the best of my abilities." **M.S.**, Agricultural Education and Communication, University of Florida, Dec. 15, 2018

**Thesis:** Understanding Haitian Agricultural Technical and Vocational Education and Training: Review of Four Schools

Adviser/thesis committee chair: Grady Roberts, Ph.D.

Other committee member: J.C. Bunch, Ph.D.



Wilfrid's research compared different agricultural practices to determine the most suitable ones to manage sugarcane aphids in sorghum, which he said is a high value commodity in Haiti. "Recently this became a major sorghum pest and it can cause yield losses approaching 100%," he said. He also identified natural enemies that prey on sugarcane aphid and alternate hosts such as grasses that can host sugarcane aphids during sorghum's off-season.

Wilfrid said he chose to study agriculture because "I want to be involved in renovating the Haitian agriculture system." After he returns to Haiti, he plans to continue working with farmers to help them find solutions to pest problems. "I hope to work in research since research is very important for long-term development." M.S., Entomology, University of Florida, Aug. 10, 2019

**Thesis:** Assessment of intercropping and biological insecticide applications on Melanaphis sacchari infestations in sorghum, and identification of potential natural enemies and alternate hosts.

Adviser/committee chair: Julien Beuzelin, Ph.D.

Other committee members: Oscar Liburd, Ph.D., Marc Branham, Ph.D., Ludger Jean-Simon (special member)

# "

I think being humble is the key to success. Here you have professors who have years of experience and they aren't arrogant. They are more involved and passionate about what they do.

# **Franky CELESTIN**

UF FLORIDA First Aid Kil

Franky examined the optimum amount of phosphorus and potassium Haitian farmers need to apply to improve the yield of black beans, a staple of the Haitian diet.

Asked what are some of the biggest challenges Haiti agriculture faces, Franky said: "Soil fertility management. In Haiti people have their own way of doing things. We all know farmers have limited resources and things that are beyond their control. But what remains constant is the lack of nutrients in the soil. That's the main issue to solve, other than the lack of money."

He said his experience at the University of Florida allowed him to develop two important qualities that he said the best scientists and professionals need: humility and tolerance. After he returns to Haiti, he plans to join his alma mater, Université Notre Dame d'Haiti, to teach and work to increase the yield of Haiti's crops, especially of maize and rice. He wants to help farmers understand the importance of good nutrient management. **M.S.**, Soil and Water Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Black beans (Phaseolus vulgaris L.) response to phosphorus and potassium in two different soils in Haiti

Adviser/thesis committee chair: Rao S. Mylavarapu, Ph.D.

**Other committee members:** George J. Hochmuth, Ph.D., Yuncong Li, Ph.D., Wesly Jeune, Ph.D. (special member)



# Wanita DANTES

Wanita is researching the systems of suckers, or shoots, that grow in plantains and bananas. She is examining the ways plantain/banana seeds reach farmers and how a "toppling" disease can spread via seeds. She also is evaluating management strategies that may control the spread of the disease.

She said her master's studies is giving her invaluable exposure to the rigors of scientific methods used at a major research university. She is learning modeling analysis tools to forecast plant diseases and map the risk for emerging new pathogens using the R programming environment in Professor Karen Garrett's Plant Pathology Lab in Gainesville. She is learning molecular-based skills in Assistant Professor Romina Gazis' lab at UF/IFAS' Tropical Research and Educational Center in Homestead, Florida.

When she graduates in 2020, Wanita said she hopes to work with Haiti's Ministry of Agriculture, a nongovernmental organization or a company to reduce the impact of bacterial and fungal diseases that are devastating Haiti agriculture, including its banana and plantain crops. "Longer term, I'd like to start a plant pathology consulting firm or a lab to help farmers and farm advisers control diseases that impact Haiti agriculture," she said. She also sees herself teaching at a university level.

M.S., Plant Pathology, University of Florida, May 2020

**Thesis:** Banana diseases in Haiti and the Caribbean: risk assessment integrating climate, trade, and cropland connectivity for Banana Xanthomonas wilt, Fusarium TR4, and Moko disease (chapter one). Optimization of a rapid detection method of Raffaelea lauricola, causal agent of laurel wilt disease of avocado (chapter two)

Adviser/thesis committee chair: Karen Garrett, Ph.D.

**Other committee members:** Romina Gazis, Ph.D., Randy Ploetz, Ph.D.



# **Rocheteau DARÉUS**

Rocheteau researched dual-purpose cowpea lines to assess resistance to root knot nematodes. As part of his project, he traveled to Haiti to conduct a field study on cowpeas that he planted on a plot at a research center. Rocheteau said cowpeas are an important crop in developing countries such as Haiti. Farmers grow cowpeas for subsistence farming, livestock feeding and as a cover crop to improve soil fertility in intercropping systems. M.S., Agronomy, University of Florida, Aug. 10, 2019

**Thesis:** Screening Cowpea (Vigna unguiculata L.Walp) Germplasm for Root Knot Nematodes Resistance (Meloidogyne spp.) and Morphological, Physiological, and Agronomic Traits

Adviser/thesis committee chair: Esteban F. Rios

**Other committee members:** Carlene A. Chase, Ph.D., Michael J. Mulvane, Ph.D., Peter DiGennaro, Ph.D.



# Lynhe DEMESYEUX

Working at UF/IFAS' Tropical Research and Education Center in Homestead, Fla., Lynhe surveyed the major threat that nematodes pose on banana crops. She also explored the yield and quality of miracle fruit, an evergreen shrub known for its berries that is grown in tropical climates such as Haiti and has multiple uses, including for treatment of diabetes and taste disturbances.

When she returns to Haiti, Lynhe said, "I hope to work in a serious extension program with a positive impact on Haitian communities. I would also love to teach at a higher level to pass on knowledge and skills I have learned here."

She said one thing that will definitely help her career is the training she received on how to conduct research. "There is so much to do in Haiti and so many gaps to fill in.With these new skills and my connections with the faculty at the University of Florida, I would be able to design and conduct applied research that would be useful to Haiti." Long-term, Lynhe said she and four other AREAsupported students want to develop a project to spur the development of a vanilla industry in Haiti."As a high-value and shade-loving plant, we believe that vanilla could serve to diversify incomes and to foster reforestation in Haiti."

M.S., Horticultural Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Nematodes' effect on banana and plantains, and the production of miracle fruit in South Florida

Adviser: Alan Chambers, Ph.D.

Other thesis committee members: William T. Crow, Ph.D., and Jonathan Crane, Ph.D.



# **Stéphanie Camelia DOCTEUR**

For her thesis, Stéphanie analyzed Haitian farmers' knowledge of an important leaf-spot disease, black tsigatoka, that is affecting banana and plantain crops, and their attitudes toward prevention methods.

This summer, Stéphanie joined AREA to work as a research consultant to evaluate work on Participatory Integrated Climate Services for Agriculture (PICSA), an approach the project introduced last year to help Haitian farmers and farm advisers to better manage the risks of increasing climate variability.

She plans to seek to additional opportunities to apply the skills she learned while completing her master's in food and resource economics at UF."I firmly believe that agribusiness and research are crucial to the development of Haiti," she said. "It is an exciting time in my life where I am working on inspiring and innovative projects, including personal projects."

"The resources, knowledge and skills that I have gained are invaluable. I am more empowered and confident in conducting research as an agricultural economist while sharpening my skills in management and marketing in the industry," she said. "My short-term goals are to improve my knowledge of the Haitian market and rural environment, identify the strengths and weaknesses, and acquire experiences that will help improve the agricultural sector."

Long-term, Stéphanie said, "my goal is to develop a company that promotes national production, spurs the use of innovative and sustainable technology while strengthening farmer relationships and educating the youth about the opportunities, often hidden, in the sector."

M.S., Food and Resource Economics, University of Florida, May 10, 2019

**Thesis:** Factors affecting Haitian farmers' perception and willingness to adopt the black sigatoka disease prevention methods in plantain and banana plantations

Adviser/thesis committee chair: Zhifeng Gao, Ph.D.

Other committee member: Edward Evans, Ph.D.



# **Marie Darline DORVAL**

Darline's research project examined new lines of sorghum with higher yields and increased pest resistance than the varieties currently grown in Haiti. She conducted her research at the UF/IFAS Tropical Research and Education Center in Homestead, Florida, and in Haiti.

Her research assessed implementing modern breeding technologies such as genomic and marker-assisted selection to accelerate the breeding cycles. The goal of her research was to use these models to predict the yield and stem sugar content of sweet sorghum under different environments. The best-performing lines will be released to farmers and could be used as parents for more sorghum breeding programs.

When she returns to Haiti, Darline said she hopes to implement more breeding programs for a variety of important crops, teach at a university and manage her own crop production business. She also said she will continue to work with CHIBAS, a nonprofit research center based in Haiti that is devoted to bioenergy and sustainable agriculture. Her experience at UF reinforced the importance of education. "Education remains the key to success and no country could develop without making education one of its priorities. I also learned that the 21st century is the era of information and almost everything is available on the internet; it is up to you to sort the information you receive. Only you can limit yourself."

**M.S.**, Horticultural Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Genomic prediction of sweet sorghum agronomic performance under drought and irrigated environments in Haiti

Adviser/thesis committee chair: Geoffrey Meru, Ph.D.

**Other committee members:** Gael Pressoir, Ph.D., John Erickson, Ph.D., Wilfred Vermerris, Ph.D.



#### **Vovener EDMOND**

Vovener is investigating biotechnological methods in tissue culture and genetic transformation in an effort to improve the yield and characteristics of vanilla cultivars. His study has three aims: 1) Quantify the suitable concentrations of two selection agents; 2) Compare the suitability of two different gene reporters; 3) Compare the efficiency of three different Agrobacterium tumefciens strains.

Vovener said when he completes his master's he plans to return to Haiti to share his knowledge by teaching at universities and working at any number of institutions, such as the Haiti Ministry of Agriculture, the World Bank and the International Development Bank. He wants to work with farmers and others "to build their capacity in horticultural practices, tissue culture, and the development of plant biotechnology tools."

Longer term, "I would like to start a tissue culture company to produce healthy seedlings for farmers, conserve endangered species in Haiti and conduct research in agriculture. The idea is to produce vanilla beans and vanilla extract and some other valuable crops, and provide agricultural services to farmers."

To accomplish his goals Vovener said he eventually intends to continue his education to earn a doctorate degree. "I believe that the tissue culture technique is vital for my career, and I want to learn more about tissue culture and plant biotechnology. I also learned that a master's degree is not enough to conduct research. You should have at least a Ph.D. to conduct research in the U.S. To accomplish what I really want to do in agricultural research in Haiti, I believe that having a Ph.D. is essential. It will help me to contribute, as I wish, to the improvement of the Haitian agricultural system."

**M.S.**, Horticultural Sciences, University of Florida, Dec. 14, 2019

**Thesis:** Biotechnology for breeding improved vanilla in South Florida and Haiti

Adviser/thesis committee chair: Elias Bassil, Ph.D.

Other committee members: Jonathan H. Crane, Ph.D., Alan Chambers, Ph.D.



# **Cassandre FEUILLÉ**

Cassandre's research involved evaluating the light quality and light levels for in vitro production of bananas, which are an important crop for farmers. She conducted her research experiments at the UF/IFAS Tropical Research Education Center in Homestead, which has a similar climate as parts of Haiti.

Cassandre said she grew up in Haiti to parents who were educators, and she said she didn't personally experience food insecurity as a child. But she gained some firsthand knowledge of farming from her grandparents, who grew beans, sweet potatoes and other crops on their land. While earning a bachelor's in agronomy at Universidad ISA in Dominican Republic, her adviser sparked her interest in horticulture.

Cassandre plans to return to Haiti and open her own horticulture lab, where she hopes to share the knowledge and research she's done at UF with other Haitians.

"I learned a lot, especially pertaining to the risk of starting a horticulture lab and how I can address those risks. Now I feel more equipped to help."

M.S., Environmental Horticulture, University of Florida, Aug. 10, 2019

Thesis: Evaluation of light quality and light levels for in vitro production of ornamental bananas (Musa sp.).

Adviser/thesis committee chair: Wagner A. Vendrame, Ph.D.

Other committee members: Michael E. Kane, Ph.D. (co-chair), Kimberly A. Moore, Ph.D.



# Jean Ribert FRANÇOIS

Jean Ribert is studying the emotional and public support, and relative deprivation, of Haitian-American emerging adults (18-25 years old) who come from agricultural backgrounds. He is exploring how these young people set their aspirations and the ways their family and community affect their goals.

"It is not a secret that immigrant-origin families have their daily struggles to deal with in American society," he said. "Coming from a developing country put these families at an increasing risk of marginalization."

He said his work in the Department of Family, Youth and Community Sciences has allowed him to add social science to his agricultural background. "There is a lack of social science research in the context of the Haitian agriculture. A focus on the social issues that can affect the agricultural sector is an important step toward the development of good strategies to improve the living conditions of Haitian farmers."

He said his academic program has taught him how to apply social theories to our daily problems, issues or needs.

"Social theories help me develop my critical-thinking skills which will lead my future career."

**M.S.**, Family, Youth and Community Sciences, University of Florida, Dec. 14, 2019

**Thesis:** Uncovering future aspirations of Haitian-American emerging adults

Adviser/thesis committee chair: Marilyn E. Swisher, Ph.D.

**Other committee members:** Jorge Ruiz-Menjivar, Ph.D., Bénédique Paul, Ph.D.



# **Jhonson LÉONARD**

Jhonson's research included developing biocontrol agents using silica fertilizer to manage sheath blight in rice. Sheath blight is caused by the soil-borne fungus Rhizoctonia solani and is one of the most devastating rice diseases worldwide. Jhonson isolated bacteria from diverse parts of the rice plant to inhibit the development of sheath blight.

During his studies at LSU, Jhonson said he learned how to conduct scientific research in a variety of environments, from rice fields down to the molecular level in a lab."I had the chance to improve my ability to research, to think critically and to develop a good network."

Before earning his master's, Jhonson worked as a manager of a protected area in Northeast Haiti for the country's Ministry of the Environment, and he said he hopes to couple his new knowledge and skills with his background in natural resources and environmental protection to work on any number of projects. "I want to work in any program with the goal of increasing agriculture in Haiti, with the main focus of helping farmers improve their crops, especially in the area of plant pathology." He also gained valuable experience in working with the U.S. Department of Agriculture, whose staff showed him what it takes to plan and develop a project. "This is a good insight that I can use to be involved in the planning of projects in Haiti," he said. Finally, Jhonson said he is interested in transferring his knowledge to the next generation of students by teaching at a university.

M.S., Plant Pathology, Louisiana State University, Aug. 2, 2019

**Thesis:** Biological control activity of rice rhizosphere bacteria and their interactive effects with silica treatment against sheath blight of rice

Adviser/thesis committee chair: Dr. Jong Hyun Ham, Ph.D.

**Committee members:** Brenda S. Tubana, Ph.D., Ely Oliveira-Garcia, Ph.D.



# Marie Rachèle LEXIDORT

Rachèle examined major species of weevils that impact sweet potatoes in Haiti and the ways to control them with integrated pest management (IPM) and phytosanitary methods.

Rachèle said her entomology training at Louisiana State University gave her a firsthand experience of the devastation pests can have on growers' fields. Also, she gained a better understanding of the complex interactions between plants and insects, and the tools and strategies she can use to manage them.

"When I go back home I hope I can find or create a structure (big or small) where I can share the rich knowledge I acquired in Entomology at LSU," she said. She wants to participate in this work at any level, as a researcher, an educator or extension agent."This field is one of the most important to improve agriculture in Haiti if we want growers to regain interest in crops that farmers have dropped due to pests, and if we want young people to stay in agriculture to replace their parents in this important economic activity. They will do it if they see that their

parents can solve pest problems and increase yields."

In addition to her scholarly work, she also learned the importance of volunteerism, partly from her participation in 4-H at LSU AgCenter. "You can see how students and other people on campus can achieve big things by volunteering," she said. "I really appreciate that and I think it's a good thing to promote."

M.S., Entomology, Louisiana State University, Aug. 2, 2019

**Thesis:** Determining the presence or absence of the Euscepes postfasciatus (Fairmaire) in Haiti and the use of molecular markers for the distinction of Cylas formicarius elegantulus (Summers) biotypes

Adviser/thesis committee chair: Jeffrey A. Davis, Ph.D.

Other committee members: Michael J. Stout, Ph.D., and Daniel R. Swale, Ph.D.



In 2018, Jean Maude spent about six months in southern Haiti where he examined the effectiveness of various cover crops in suppressing weeds and pathogenic rootknot nematodes in eggplants. He found one of three cover crops he studied, Sunn hemp, performed the best. He said Haiti's small-scale farmers, who often can't afford expensive fertilizers and pesticides, can benefit from planting relatively inexpensive cover crops during fallow periods to improve their soils and increase yields of higher value crops, namely eggplants.

During his studies at UF, Jean Maude said he learned many things he will take back to Haiti. "The most important thing is the improvement of my research and communication skills, which will help me reach my shortand long-term goals."

Jean Maude said he plans a number of activities to supplement his own cacao farm, which he plans to continue to operate. "I hope to build a nematode diagnostic center in the southern region of Haiti," he said. This would be a place farmers can have crop samples tested for pests. He said he would like to train small-scale farmers how to mitigate crop pests and to implement new practices to improve crop production and increase yields.

"I am flexible person and I want to positively impact the area," he said. He hopes to serve as an educational leader and support a "progressive view of Haiti."

**M.S.**, Horticultural Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Evaluation of leguminous cover crops as a component of weed and nematode management in the lowlands of Les Cayes, Haiti

Adviser/thesis committee chair: Carlene A. Chase, Ph.D.

**Other committee members:** Zane Grabau, Ph.D., Wesly Jeune, Ph.D., Ludger Jean-Simon



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#### **Riphine MAINVIEL**

Riphine evaluated the performance and genetic diversity of bean cultivars in Haiti, where beans are widely consumed and are of the most important sources of nutrition. Yet growing higher-yield beans faces many challenges in Haiti, ranging from biotic stress (disease and pests) and abiotic stress (drought, flooding, salinity, low soil fertility), low investment, and a lack of knowledge among farmers and farm experts of the genetic structure of bean varieties. In her research, Riphine identified a bean variety that is the best-performing based on yield and resistance to common plant diseases in Haiti. This line could be further developed and released to Haitian growers, she concluded.

When she returns, Riphine wants to continue to work in plant breeding, and especially with vegetables like common beans. "I chose to study agriculture to both contribute to the improvement of the agricultural sector in Haiti, and also because there are a lot of opportunities for employment or to run a family business."

She wants to develop new varieties of crops with essential traits such as high yield, disease, and pest resistance that

can thrive in conditions faced by Haitian farmers. "I dream of a great career in vegetable breeding. Also, I would like to share my knowledge to the future generation by teaching some breeding courses at the undergraduate level.

**M.S.**, Horticultural Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Agronomic performance and genetic diversity among select common bean varieties in Haiti

Adviser/chair of thesis committee: Geoffrey Meru. Ph.D.

**Committee members:** Raphael Colbert, Ph.D., C. Eduardo Vallejos, Ph.D.



# **Rédjino MOMPREMIER**

Rédjino investigated the linkage between the upstream watershed and downstream agricultural areas in a major river watershed. Haitians need such information to make efficient management decisions to improve crop production. He also evaluated the impact of changes in upstream land use on the water availability during dry periods. The result of his work can help experts better manage watersheds.

Asked why he studied agriculture, Rédjino said, "the field of agricultural engineering chose me. I believe it's because it is one of the best ways to help others in Haiti. I understand that food insecurity is a systemic problem inherent to Haiti. I have seen farmers lose their crops due to drought, pests and disease infestation. Farmers rely on their harvests to take care of their families. When they lose crops this directly affects the food and money they have to feed and take care of their families. It's not surprising to see negative impacts, such as the deforestation of the mountainous areas by farmers desperate to make money. Food insecurity is in the structural organization of the country."

Rédjino has no shortage of ideas of things to do when he returns to Haiti."I want to advocate for a program to collect

long-term weather and water flow measurement data to help Haitians better manage watersheds and improve agricultural productivity. I plan to train students from agricultural engineering schools via seminars, workshops and field visits so that they know the importance of collecting, managing and extracting hydrological data to make better decisions."

He also wants to collaborate with Haiti's Ministry of Agriculture as a researcher and extension specialist. Finally, he said, "I am interested in working with the Unité Hydro-Météorologique to manage weather stations in Haiti."

**M.S.**, Agricultural and Biological Engineering, University of Florida, Aug. 10, 2019

**Thesis:** Evaluating the effects of upstream temporal water availability and forestation on downstream agriculture in a watershed system at Arcahaie in Haiti

Adviser/thesis committee chair: Young Gu Her, Ph.D.

Other committee members: Kati W. Migliaccio, Ph.D., Gerrit Hoogenboom, Ph.D., Rafael Muñoz-Carpena, Ph.D., Zachary T. Brym, Ph.D.



# **Floyid NICOLAS**

Floyid used computer models to examine how climate change might impact rice yields in the Artibonite Valley, where the majority of Haiti's rice is grown. Such research on this region hadn't been done before. Floyid found that farmers may be able to reduce the potential impact of increasingly variable climate conditions by changing the dates that they plant. This is the most affordable way to increase yields, compared with alternatives such as using more fertilizer or creating new rice cultivars.

Asked what he wants to do when he returns to Haiti, Floyid said, "My main concern is having a positive impact. I've learned many good things here at UF, like last week I went to a conference where I met a lot of scientists and presented my findings."

He said there are many obstacles to solving Haiti's food security challenges. He cited structural issues, such as ineffective agricultural policies and management, poor infrastructure, lack of data and not enough skilled people.

"I'd like to encourage research in Haiti and my goal is to be able to help people – either the farmers directly or through a farmers' association, for which I've worked with before. My goal is to help people improve crop yields and to create the information we need. We don't have data and so how can we plan future solutions? We don't have the weather stations in Haiti that we need to collect much more data. We can use technical skills to improve farming in Haiti."

**M.S.**, Agricultural and Biological Engineering, University of Florida, Aug. 10, 2019

**Thesis:** Assessing the impacts of climate change on rice yields in Haiti

Adviser/thesis committee chair: Kati W. Migliaccio, Ph.D.

**Other committee members:** Gerrit Hoogenboom, Ph.D., William R. Eisenstadt, Ph.D., Balasubramani Rathinasabapathi, Ph.D.

I want to work for youth and women's empowerment for many reasons, mainly to improve their access to education and to support entrepreneurship.

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# Liliane POINÇON

Shesterefirst

Liliane's research explored how farmer associations serve women in Haiti. Her research comes at a time that scholars worldwide are looking into a "gender gap" in developing countries that limits the contributions of women because they tend to have reduced access to land, fertilizer, technology and other assets. Liliane explored the roles that women play in farmers' organizations in Haiti, the degree to which they serve in leadership, and their perceptions of the benefits they gain from membership.

"I have learned a lot, not only about academic subjects but also about creating good relationships, and learning about leadership and teamwork," Liliane said about completing her studies in the Family, Youth and Community Sciences Department of UF's College of Agricultural and Life Sciences. "I was aware of how the dynamic among team members matters and the benefit of different perspectives when it comes to figuring best practices. Thanks to my chair (Marilyn Swisher), I was able to build a definite plan of study that was appropriate for both my thesis and my career plan. I feel ready for a better future!" In returning to Haiti, Liliane said, "I plan to work as a researcher in fields related to youth and community development, with a focus on women's issues. I want to work for youth and women's empowerment for many reasons, mainly to improve their access to education and to support entrepreneurship."

**M.S.**, Family, Youth and Community Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Rural nongovernmental organizations in Haiti: gender dynamics, power and perceived benefits of membership

Adviser/thesis committee chair: Marilyn E. Swisher, Ph.D.

Other committee members: Suzanna D. Smith, Ph.D., Boaz Anglade, Ph.D.



Josué investigated how various climate conditions impact the yield of beans, which are among Haiti's most critical crops, providing a substantial source of protein in the daily diet of Haitians.

"I used a crop model to simulate the yield of dry beans and create a pattern that will explain the variability of the yield due to a specific ENSO phase," he said. El Niño southern oscillation, or ENSO, is a climate phenomenon that influences temperatures and precipitation across the globe, and it is marked by phases that can cause drought and high temperatures or erratic rainfall patterns and flooding.

When he returns to Haiti, Josué said he may seek a job at Haiti's Ministry of Agriculture, where he could help educate professionals and farmers to better manage the growing threat of climate variability. Haiti will need to adopt smart public policies and improve extension services to help its farmers transition to new methods, he said. While providing farmers with incentives and subsidizing improvements are likely to prove costly, he said an alternative may be as simple as convincing farmers to change their planting dates to lessen the risk of losing crops to storms – perhaps, based on a forecast from his climatic model. "With my forecasts in the crop model, agronomists can suggest to them to delay the planting date," Josué said. "I know this field and the topic are quite innovative and might undergo some resistance from farmers. But with a good plan we can make it work."

M.S., Agricultural and Biological Engineering, Aug. 10, 2019

**Thesis:** Evaluation of dry bean yield response to El Niño southern oscillation (ENSO) in Haiti

Adviser/thesis committee chair: Clyde W. Fraisse, Ph.D.

Other committee members: Caroline Staub, Ph.D., Senthold Asseng, Ph.D., Lincoln Zotarelli, Ph.D.



Carina's research project evaluated the use of rapid-cooling – hydrocooling and slush icing – on the quality of broccoli, which is a vegetable that can have a short shelf-life because of its sensitivity to warm weather. Her research looked at the effect of the new cooling methods on a promising breeding line and cultivars of broccoli in simulated commercial storage conditions.

"When I return to Haiti I hope I can contribute in the improvement of the postharvest quality of fruit and vegetables in the market in Haiti," Carina said. "Also, I want to help growers reduce losses by using appropriate and adaptable technology for storage." M.S., Horticultural Sciences, University of Florida, Aug. 10, 2019

**Thesis:** Increasing fresh-market broccoli production: effect of cooling methods on new breeding lines in Florida and on local varieties grown in Haiti

Adviser/thesis committee chair: Steven A. Sargent, Ph.D.

**Other committee members:** Jeffrey K. Brecht, Ph.D., and Lincoln Zotarelli, Ph.D.



#### **December 2020 GRADUATES**

In early 2019, five additional master's students from Haiti began studies at the University of Florida with the support of the Feed the Future AREA project. They are (left to right): **Jose Minerve Cayo, Larousse Dorissant, Sainfort Vital, Vicnie Léandre** and **Jean Solon Rosulme** (inset). In the first half of the year, they worked to complete various admissions requirements before beginning their master's work in five separate departments at UF's College of Agricultural and Life Sciences: Agronomy; Entomology; Soil and Water Sciences; Food and Resource Economics; and Food Science and Human Nutrition.

# **About the AREA project**

The University of Florida's Institute of Food and Agricultural Sciences leads a consortium of U.S. universities to support its Feed the Future initiative in Haiti. The consortium's mission is to help Haiti develop and strengthen its system for agricultural innovation, and to increase production, household income and food security. The project is funded by the U.S. Agency for International Development as part of Feed the Future, the U.S. Government's global food and security initiative. For more information, visit https://area.ifas.ufl.edu.



#### **About Feed the Future**

Feed the Future is the U.S. Government's global hunger and food security initiative. With a focus on smallholder farmers, particularly women, Feed the Future supports partner countries in developing their agriculture sectors to spur economic growth and trade that increase incomes and reduce hunger, poverty and undernutrition. For more information, visit www.feedthefuture.org.



