



**Position**

Research Associate

**Institution**

Africa Rice Center

**Country**

Benin

**Education**

Msc, Natural Resource Management (AGRN), University of Abomey-Calavi (UAC), Benin

**Mentor**

Brice Sinsin, associate professor, full professor, UAC, Benin

**Research Area**

Agronomy - soil and water resources management.

## Jean-Martial Johnson Yackoley

2021 One Planet Laureate Candidate

Jean-Martial Johnson Yackoley is a research associate at AfricaRice in Bouaké, Côte d'Ivoire.

His research, which focuses on rice agronomy and soil and water resources management, is based on evaluating a water-saving technology called Alternate Wetting and Drying (AWD) on rice fields in sub-Saharan Africa.

The study involves testing this technology in regions where water scarcity is a major problem to adapt it to local conditions and assess its potential for widespread adoption in West Africa. This technological innovation has been successfully tested in several Asian countries but is little known in Africa.

Specifically, this agricultural engineer is conducting participatory trials with rice farmers in Burkina Faso in the Sudanian zones (Hauts-Bassins and Cascades regions) and the Sudano-Sahelian zones (Central Plateau and Boucle du Mouhoun regions).

The final objective of this evaluation is to adapt the AWD technology to local conditions and assess its potential for widespread adoption.

Concerned about the worsening water shortage in rice fields, the researcher has asked several questions. What local and existing technologies are rice farmers using to cope with water scarcity? Does AWD's water-saving technology, effective in South Asia, work equally well in sub-Saharan Africa, particularly in semi-arid and arid areas? Does the water-saving achieve lead to a significant reduction inefficiency?

Are there trade-offs in terms of increased greenhouse gas emissions (CH<sub>4</sub> and N<sub>2</sub>O) and reduced efficiency of the use of certain nutrients? What are the long-term effects of this technology on soil fertility? These questions are the motivation for his research work.

Born in 1983 in Adjamé-Abidjan in Côte d'Ivoire, Jean-Martial has origins in several West African countries (Ghana, Togo, Benin, and Côte d'Ivoire).

He spent the first part of his childhood in the Ivorian economic capital with his older sister and younger brother. His father was a teacher. His mother is a seamstress and shopkeeper. A brilliant pupil in primary school, he obtained a scholarship to continue his studies in a high school in Côte d'Ivoire. However, his father decided to move the family to Benin.

Jean-Martial completed his secondary education in Cotonou, the economic capital, where he obtained his scientific baccalaureate specializing in natural sciences in 2002. He then took entrance exams to Benin's top-ranking universities and professional colleges.

His dream was to study medicine. Unfortunately, he failed the competitive exams, including entering medical school.

In light of this, his best choice was to enroll in the first year of chemistry, biology, and geology in the Faculty of Science and Technology at UAC. The following year, he tried to enter a top university for the last time.

He passed the competitive examinations in Animal Engineering at the Polytechnic and Agronomy. Now on a Beninese government scholarship, young Jean-Martial opted for the Faculty of Agronomic Sciences. At the end of four years of the core course, he achieved a general agronomy diploma.

In his fifth year, he took a plant production sciences and techniques course and conducted research for his final dissertation on microbial fungi associated with cowpeas (*Vigna unguiculata*).

He obtained a small grant from the Beninese Center for Scientific and Technical Research (CBRST) when writing his dissertation. This was a very stressful and difficult period as the study required surveying all the agro-ecological zones of Benin.

Moreover, there was little expertise in this field of research at that time. In December 2008, Jean-Martial defended his engineering degree, achieving the highest grade in his faculty (distinction, with congratulations from the examiners).

Highly satisfied with his results, the director of his laboratory and supervisor offered him a scholarship to continue the research he had begun: exploring various aspects of molecular biology.

Passionate about research, Jean-Martial accepted this offer that enabled him to acquire the prerequisites for the role of researcher. In 2009, he started a research master's degree in Natural Resource Management (AGRN) at UAC.

At that time, his laboratory had neither the facilities nor the equipment for genetic identification of mycorrhizal fungi. What could he do?

Supported by his supervisor and a partner researcher at the National Institute for Agricultural Research (INRA) in Dijon, Jean-Martial applied for a mobility grant from the University Agency for Francophonie (AUF).

Happily, he was awarded the scholarship. Thanks to this opportunity, he spent five months at the Plante Microbe Environnement (Plant Microbe Environment) joint research unit learning molecular biology techniques. In Benin, Jean-Martial defended his master's degree (research specialization) in 2010.

Jean-Martial's research focuses on rice agronomy and the extension of a water-saving technology called Alternate Wetting and Drying (AWD) to rice fields where water scarcity is high, in order to adapt it to local conditions and assess its potential for widespread adoption.

After graduation, Jean-Martial spent more than five years working as a research assistant in agronomy and head of the Soil Fertility Laboratory in AfricaRice's Sustainable Productivity Improvement Program.

This post enabled him to actively participate in the planning, implementation, and monitoring of various multidisciplinary projects involving almost 20 African countries.

He is pleased to have contributed to conducting key continental studies such as the yield gap survey, calibration, evaluation, and the roll-out of a decision support tool called RiceAdvice that provides African rice farmers with specific crop management and fertilization guidelines.

Jean-Martial loves teaching. The transmission of knowledge, know-how, and interpersonal skills to young people is fundamental. His goal is to be a teacher.

"The person who understands natural phenomena is better able to explain them and therefore to teach them," he says.

He also aspires to be a senior researcher in agriculture and climate change.

He wants to work hard to acquire solid skills to conduct research projects and publish his results.

Jean-Martial discovered the One Planet Fellowship through his networks.

First of all, he says, it is a privilege and an honor to represent his institution as a successful candidate.

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The acquisition of technical and interpersonal skills will enable him to be more effective, a better manager, and progress. This will provide his institution with more qualified staff.

In addition, this fellowship has the advantage of establishing professional relationships with young African researchers specializing in various domains. Johnson considers it an advantage to know them and to be able to learn from them.

Some of the training provided will help him achieve his career goals and improve his research work. In addition, he hopes to strengthen his skills in monitoring and analyzing agro-climatic parameters and managing large databases.

For Johnson, building skills through the One Planet program will enable him to write improved research proposals whose implementation will improve the living conditions of rural communities and reduce poverty and hunger.

Johnson does have to overcome some weaknesses and difficulties. He admits that he is not fluent in English.

This is a challenge that he has not yet been able to surmount and the reason that he has always wanted to continue his studies in an English-speaking environment.

The agricultural engineer also recognizes that he has shortcomings in statistics and using statistical software. He is gradually learning it himself to resolve the issue.

As a result, he has improved to the point where he is more or less independent. But he recognizes that he still has gaps to fill.

**Jean-Martial Johnson Yackoley** is one of the growing number of candidates selected to participate in the One Planet Fellowship. The One Planet Fellowship is a career development initiative that is building a robust pipeline of highly connected, inter-generational scientists equipped to use a gender lens to help Africa's smallholder farmers cope with climate change. The One Planet Fellowship is funded by the Bill & Melinda Gates Foundation, the BNP Paribas Foundation, the European Union and Canada's International Development Research Centre (IDRC). African Women in Agricultural Research and Development (AWARD) and Agropolis Fondation are jointly implementing the Fellowship.

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