OnePlanet FELLOWSHIP

Building a robust pipeline of scientists leading climate change research in Africa

Candidate Profile

Mai Koné Koumba

2020 One Planet Laureate Candidate

Position

Postdoctoral Researcher

Institution

Nangui Abrogoua University (UNA)

Country

Côte d'Ivoire

Education

PhD, Food Science and Technology

Mentor

Prof. Théodore Djeni, Laboratory of Biotechnology and Food Microbiology, Nangui Abrogoua University (UNA)

Research Area

Optimization of cocoa fermentation technology, selection of yeasts of aromatic interest, development of microbial ferments that can be transferred and reused by cocoa farmers in the field to optimize bean fermentation (reduction in process time and improved production of appealing aroma compounds).

Mai Koné Koumba was born in 1983 in Bondoukou, a town in the northeast of Côte d'Ivoire, and she is the eldest of four children.

She completed her primary and secondary school education in Bouaké, where she obtained her high school diploma (Maths and Sciences stream) in 2002 at the Lycée Moderne des Jeunes Filles.

Despite excelling in science, at the time, Mai wanted to study economics. However, after some careers advice, she enrolled for a General Studies Diploma (DEUG) in Natural Sciences (NS) at Jean Lorougnon Guédé University in Daloa.

Her family encouraged her to follow in her father's footsteps, a former high school teacher of life and earth sciences and an educational adviser for secondary school education.

In 2005, Mai left the region for Abidjan, where she obtained a Bachelor's degree in Food Science and Technology at Nangui Abrogoua University (UNA) in 2006.

Between 2007 and 2010, after being awarded a state scholarship by the Ivorian government, she successively obtained her Master's degree in Food Science and Technology and a Postgraduate Diploma of Advanced Studies (DEA) in Food Science and Technology.

Following the socio-political crisis in Côte d'Ivoire in 2010, the university was closed for two years. Upon reopening, she enrolled in a Ph.D. program in 2013.

Thanks to a scholarship from the French Embassy (SCAC), she completed her thesis as part of a work-study program. For her Ph.D., she completed three internships of five months each at the French Agricultural Research Centre for International Development (CIRAD) in Montpellier, France, where she could perform specific analyses.

Today, she is a Postdoctoral Researcher at Nangui Abrogoua University (UNA). Her research focuses on improving the quality of Ivorian cocoa. Specifically, the study optimizes cocoa fermentation technology, selecting yeasts of aromatic interest and developing microbial ferments that can be transferred and reused in plantations by producers to obtain cocoa of improved aromatic quality.

She has determined the biotic and abiotic factors responsible for forming a high concentration of free fatty acids in cocoa through her research.

Although Mai does not come from one of the cocoa-producing regions, she chose this field since cocoa produced in her country is often of poor aromatic quality.

Mai is working on improving the quality of Ivorian cocoa by optimizing cocoa fermentation technology, selecting yeasts of aromatic interest and developing microbial ferments that can be transferred and reused in plantations by producers to obtain cocoa of improved aromatic quality.

This stems from poor agricultural practices, including the fermentation process, essential to forming chocolate aromas and flavors.

Today, with forests being destroyed to make way for cocoa production and the effects on the climate, agroforestry could potentially offer a solution to strengthen the resilience of cocoa trees and improve the aromatic quality of cocoa. This will also require the natural recovery of the yeast microbiota found in the environment, which could enhance the formation of the aroma precursor compounds in cocoa for the long term.

She wasted no time applying for the One Planet Fellowship after receiving an email from the Director of the Food Science and Technology Training and Research Unit (UFR-STA) at the Nangui Abrogoua University in Abidjan. In her opinion, the mentoring through the One Planet Fellowship will help her achieve her career goals and enable her to progress. She has a clear objective: to be one of the finalists who receive funding for their research. "I'm very optimistic that I'll succeed," she says with conviction. Meeting other researchers in the field through the fellowship and collaborating with climate change experts will advance her research. Mai plans to share her research findings with students and colleagues at the university, cocoa farmers in cooperatives, and significant players in the cocoa industry. The leadership aspect of the fellowship program is crucial for this shy scientist.

Mai hopes to find a position as an Associate Professor at a local university and aims to create interdisciplinary networks with cocoa partners to develop her knowledge of product processing further and address the challenges and issues faced by the cocoa sector in Côte d'Ivoire. Additionally, she would like to pursue a professional career in research and development within an international non-governmental organization or in the chocolate industry to apply her research to help smallholder cocoa-farming families.

As a mother, Mai acknowledges that she has managed to strike the right balance between her social life and her profession – which requires sacrifices – because of her husband's support, an Associate Professor.

your expectations to obtain funding. Kante highlights the increased security risk in Mali due to the current socio-political situation as a challenge to his research. Fortunately, the restrictions placed on working in the field can be partially compensated by various forms of technology, including smartphones.

The social aspect of research, which can be overlooked despite its importance, often significantly affects working practice. Rural communities are known for their conservatism. Consequently, farmers are initially reluctant to adopt new agricultural practices recommended by researchers. To overcome these barriers and develop a closer relationship with smallholders, Kante offers an alternative approach using empirical and traditional knowledge.

Mai Koné Koumba 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.