OnePlanet FELLOWSHIP

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

Candidate Profile

Mohamed Cissé

2021 One Planet Laureate Candidate

Position

Associate professor

Institution

Centre Universitaire de Banfora, Nazi Boni University, Laboratory of Plant Biology and Ecology, Burkina Faso

Country

Burkina Faso

Education

PhD, Agroforestry and Plant Ecology

Mentor

Dr. Philippe Bayen, Université de Dédougou, Burkina Faso

Research Area

Ecology and forest management, agroforestry land management.

Mohamed Cissé was born into a farming family in Nouna in the Boucle de Mouhoun region of Burkina Faso. Mohamed completed his primary and secondary education in Nouna.

Since early childhood, he has been involved in farming and livestock breeding with his two brothers and four sisters. In secondary school, gardening classes piqued his interest.

He obtained his scientific baccalaureate with a major in natural sciences and mathematics in Dédougou, a town in the Boucle du Mouhoun region.

Mohamed studied at the university in Ouagadougou, the capital and largest city of Burkina Faso. He enrolled in life and earth sciences at the University of Ouagadougou, later becoming Joseph Ki-Zerbo University. After his first-year core course in 2010, he opted for a bachelor's degree in biological sciences 2011.

He recalls that the push to become a research scientist came from a teacher. During a botanical study trip to carry out inventories, Mohamed stood out from his fellow students because of his knowledge of botany in vernacular language. The teacher suggested that he see him after class to work on a species he had highlighted in the field. The desire to specialize in botany and plant biology evolved, and he worked very hard to meet the selection criteria for postgraduate studies. He continued his postgraduate studies in botany and plant ecology.

His second-year master's study area is agroforestry practices for adaptation to climate change. Mohamed explains that his research realized that the recurrent droughts and floods experienced in the village were linked to climate change.

More importantly, by understanding agroforestry practices, it was possible to adapt. Wise use of space, for example, the creation of river basins, can be a resilience practice. He was fascinated by this discovery and decided to continue.

He obtained a grant from the Fonds National de l'Enseignement et de la Recherche [National Funding for Teaching and Research] (FONER) and supported from CORAF for the second year of his master's study.

At the Institute for Environment and Agricultural Research (INERA), during his internship, he learned about participatory research and the fight against climate change and the concept of resilience. He then quickly moved on to the topic of agroforestry practices.

In 2016, he enrolled in a doctoral program at the University of Ouagadougou.

For his thesis, he received financial support from CORAF within the framework of the AmREACCAF project. In addition, he obtained funding from the International Foundation for Science (ISF) to develop innovative agroecological soil fertilization practices. During the thesis, he worked on ecosystem services and agroforestry biodiversity dynamics.

Mohamed is analyzing the potential of neglected plant species for sustainable soil fertility management through the participatory development of innovative biomass management and nutrient cycling technologies that contribute to smallholder resilience to climate constraints.

During his doctoral research, he characterized the socio-economic and ecological performance of agroforestry systems in the Sudanian zone of Burkina Faso. He was able to determine how crop diversification and agroforestry species management contribute to the resilience of family farms to climate risk.

During his thesis, he had the opportunity to be a student representative for his fellow doctoral students at his university. He took this opportunity to learn about laboratory facilitation and seminar organization from his teachers. Mohamed defended his doctoral thesis in January 2021.

Currently a recipient of grants from CORAF, the International Science Foundation (ISF) and the National Fund for Scientific Research and Innovation for Development, he is analyzing the potential of neglected plant species in sustainable soil fertility management through the participatory development of innovative biomass and nutrient cycling technologies in agroecosystems.

In 2021, Mohamed was recruited as an associate professor at the Centre Universitaire de Banfora in Burkina Faso.

His research focuses on biodiversity management in agricultural ecosystems, participatory development of agroforestry innovations, and agroecological transition in the context of climate change.

For Mohamed, the motivation for pursuing a career in this field lies specifically in contributing to documenting the innovations of family farmers and facilitating the adoption of practices that contribute to their resilience in the face of climate constraints.

How can agricultural production and coping with climatic constraints be optimized? The answer is that we need to understand family farming and bring in innovations such as diversification of production and intelligent management of climate risks.

Mohamed believes that in agroecology, livestock and agriculture are intertwined and can even be used judiciously to adapt to climate constraints. He aims to provide new knowledge to help small-scale producers combat food insecurity and improve their income.Mohamed says that his responsiveness is directly related to the most vulnerable populations.

His work aims to directly impact rural communities and help them become the solutions to their own problems. Rural communities are involved in all phases of the project.

Mohamed believes that they need to be involved from the beginning for acceptance and better ownership of the innovations.

He is working with these communities, mainly in the Sissili province in central-western Burkina Faso, to set up an agroecological innovation platform through the innovative use of biomass to fertilize maize fields and the first results look interesting.

Agricultural production was mainly carried out in the rainy season in the past. Now, new knowledge makes it possible to produce in the dry season.

Off-season production helps to improve the income of producers and to fight poverty. As a research scientist, Mohamed's role is to document his knowledge and offer innovations.

This field fascinates him because he is constantly stimulated. For example, the use of biomass from neglected local species for soil fertilization provides an innovative solution of using certain species to fertilize soils instead of burning.

As a teacher, he also aims to strengthen his capacities in pedagogical innovation for the design of training modules adapted to the needs of students and in the scientific animation of academic and pedagogical life.

He aspires to contribute to the emergence of quality higher education and research for development.

He wants to work his way up to the rank of full professor and be among the big names in agroforestry, for example, in an institution like the World Agroforestry Centre (ICRAF).

He aims to contribute to innovations to help rural communities cope with climate change. More precisely, he intends to obtain concrete research results to impact local development, especially in the context of climate change.

Mohamed also intends to develop a large network of researchers and innovators in agroforestry in Africa, which currently does not exist.

Specifically, he wishes to lead research groups involving several nationalities and points of view to develop expertise in the design of multidisciplinary projects involving the adaptation of family farmers to climate change on the issues of agroecology, agroforestry, and carbon sequestration.

He appreciates the networking aspect of the program and is broadening his professional contacts in general and multidisciplinary ones in particular. For him, it is essential to spread this scientific knowledge throughout the world, convinced that it represents a solution to climate change with the help of communities.

Mohamed would like to express his gratitude to the AWARD team highly motivated by this program. At this stage, he feels that the training has already significantly improved his performance in terms of vision and career planning, which allows him to look ahead.

The training will help him achieve his career goals in scientific capacity building. Training in project writing will help him win new national and international projects. He will, of course, continue to undertake research and development with rural communities.

Mohamed Cissé 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.