OnePlanet FELLOWSHIP

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

Candidate Profile

Toundou Outéndé

2021 One Planet Laureate Candidate

Position

Research fellow

Institution

Senegalese Institute for Agricultural Research (ISRA)

Country

Côte d'Ivoire

Education

PhD, Plant Physiology and Wate, Soil amd Environment, University of Lomé, in collaboration with the University of Limoges, France

Mentor

Dr. Gbénonchi Mawussi, senior lecturer, head of department of soil sciences, Ecole Supérieure d'Agronomie, University of Lomé, Togo

Research Area

Soil management and crop adaptation to climate change.

Toundou Outéndé is a plant physiologist and associate lecturer at the University of Lomé in Togo.

His research focuses on improving crop resistance to abiotic stresses and the functioning of agricultural soils in the current context of climate change. He is currently studying appropriate fertilization techniques to improve agricultural soils' structural and biological stability and water potential through clay-organic complexes for effective adaptation of crops vulnerable to climate change in disadvantaged rural areas in Togo and other sub-Saharan African countries.

His research activities are not limited to the laboratory: they also take place in the field, where farmers in vulnerable areas use the results and essential innovations. To do this, he works in partnership with 24 women's and youth agricultural groups spread across southern Togo's maritime and plateau regions.

His enthusiasm and high standards when leading scientific activities and his remarkable investment rewarded his research work in 2016 and 2018 at both the national and international levels.

He won the first Quarry Life Award in 2016 and 2018 in Togo. In 2018, he was also the winner of the Scientific Poster Competition organized during the International Scientific Days in Lomé. He has received three scientific awards and published 12 scientific publications in international peer-reviewed journals and several scientific publications.

In the course of his activities, Toundou has had the opportunity to work on an exciting subject, namely soil restoration and vegetation cover in a degraded mining area in Togo.

Mining activity leads to, among other things, soil impoverishment and the erosion of biodiversity in the area. As a result, over the years, the soil can no longer meet the population's needs for food and wood.

To address this, he has implemented an innovative strategy by developing a geo-ecological map that traces the chemical properties of the soil, their fertilizing potential, and the food and forest plants that can best grow on each type of soil to boost the area's vegetation cover and food production.

Ultimately, he aims to contribute to the effective adaptation of crops vulnerable to climate change (water and heat stress) in disadvantaged areas of West Africa by developing clay-organic complexes based on organic matter from composts and local geomaterials.

Toundou was born in 1983 in Baja in the maritime region of southern Togo on the Atlantic Ocean.

He spent the first part of his childhood (primary school) with his mother, a shopkeeper, and grandfather.

The youngest in a large blended family, he was the only child of both his parents.

After primary school, he joined his father as a medical assistant and lived in turn in several regions of Togo, namely the Kara, Savanes, and Gulf regions.

After his middle school exam, his father enrolled him in a denominational high school in Dapaong, a commercial town in the north of Togo, where he obtained a scientific baccalaureate, choosing the mathematics and natural sciences option.

Toundou works on the structural and biological stabilization and improvement of the water potential of agricultural soils by clay-organic complexes for an effective adaptation of crops to climate change in vulnerable rural areas of West Africa.

Toundou completed his first three years of higher education at the Faculty of Sciences at the University of Lomé, in the Togolese capital.

He achieved a bachelor's degree in natural sciences in 2006 and a master's degree in plant physiology in 2007.

At this stage, he was beginning to take an interest in scientific research, including introducing agricultural innovations to support poor farmers. He, therefore, saw climate change as a challenge.

It was natural for him to direct his research topics toward this emerging interest, namely the consideration of the climate dimension.

The aim was to improve the resistance of our crops to the adverse effects of climate change, particularly to water and heat stress, by using local materials that are accessible to all social classes.

He continued by enrolling in a master's in environmental management at the University of Lomé in 2008. He worked on recovering waste composts and an invasive plant in agriculture (soil fertilization and maize production on degraded tropical soil).

Since 2012, he has been carrying out tutorials and practical work in plant physiology in the botany department of the University of Lomé.

While preparing his thesis registration, he submitted a first project funded by the International Foundation for Science (IFS).

Once enrolled in the PhD program, another part of his thesis project was submitted to the Service of Cooperation and Cultural Action (SCAC) of the French Embassy. He was awarded another scholarship to do a PhD in collaboration with the University of Limoges.

His thesis focused on the effects of various waste composts on the chemical properties of degraded soil, physiology, and yield of maize (Zea mays L. Var. Ikenne) and tomato (Lycopersicum esculentum L. Var. Tropimech) under two water regimes in Togo.

In March 2016, he obtained a PhD from the University of Lomé, collaborating with the University of Limoges, specializing in plant physiology and water, soil, and environment.

For this plant physiologist, the observation is as follows: today, there are serious health problems among people in Africa.

According to various scientific studies, the causes, often at the origin of most diseases, are malnutrition, therefore, food insecurity.

More specifically, according to Toundou , one of the causes of food insecurity is land degradation and climate change (specifically, extreme droughts and heat), which reduce food availability in quality and quantity.

Given the recurring problems, he thought it would be interesting to contribute effectively to agricultural production to participate in food security.

A friend, a researcher at the University of Lomé, informed him about the One Planet Fellowship.

Pursuing his career in plant physiology and production, specifically soil fertilization in the context of climate change, he wishes to contribute to Africa's economic development through his career as an associate professor.

He intends to develop as a researcher. In the short term, with the help of this Fellowship, he hopes to start a promising career, as he is still working temporarily.

He is also aiming for a position within his institution or a research institution. In the future, he wants to be an expert in the adaptation of vulnerable crops to climate change in West Africa.

He believes the One Planet Fellowship will help him acquire new scientific skills through training and advanced internships, and skills in personal development, which he hopes to use to conduct cutting-edge research. Further, he is aware of the importance of networking and developing scientific partnerships with fellow researchers in other countries to see potential collaborations.

He laments the lack of African researchers specializing in climate change.

The Fellowship will prepare him to conduct cutting-edge research. Becoming an expert in this field will benefit both his institution and West Africa.

In addition, poor rural communities will benefit from the training he receives. He, therefore, intends to help those rural communities with whom he is already working in terms of new technologies for adapting crops to climate change to improve agricultural yields.

His first challenge is professional integration. Since 2016, he has been an associate (temporarily) at the University of Lomé. He wants to be recruited to a permanent position to enhance his skills. Far from being discouraged, he is constantly seeking to improve his performance while waiting for an opportunity in the future.

In the course of his research, he faces technical challenges. In the absence of adequate technical means, he shows ingenuity, finding alternatives, for example, by writing projects that will benefit from small-scale funding. In this doubly constrained context, he is proud to have written and piloted five projects, for which he managed to obtain funding.

Toundou Outéndé 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.