AWARD
African Women in Agricultural Research and Development

Progress Story

AWARD Fellow
Sheila Okoth

Position	Associate professor
Institution	University of Nairobi
Country	Kenya
PhD	Botany (Mycology), University of Nairobi, 1997
Mentor	Professor Mary Abukutsa-Onyango Jomo Kenyatta University of Agriculture and Technology

Research area: Food safety and sustainable management of below-ground biodiversity in a farmer-participatory project.

Professor Sheila Okoth is a woman with a mission: this associate professor at the University of Nairobi is researching solutions to combat the aflatoxin contamination of farm produce in Kenya.

"Poverty is one of the major causes of aflatoxin poisoning due to poor storage conditions that promote fungal growth, and people's unwillingness to dispose of contaminated maize due to their lack of food," explains Okoth. "I am determined to help solve this problem that makes poor farmers even poorer."

Aflatoxin is a naturally occurring carcinogenic by-product of fungi that colonize certain crops, including maize, the main dietary staple of Kenyans. Contamination starts in the field and is exacerbated when crops are damaged by drought or insect infestation, or when produce comes into contact with soil and is not properly dried. Contamination is often unavoidable, and many African countries, including Kenya, do not regularly test maize for aflatoxins, leading to the sale and consumption of contaminated and suspect grain, according to the International Food Policy Research Institute (IFPRI).

Acute exposure to high levels of aflatoxins can result in liver failure and rapid death. Chronic exposure, in both humans and animals, exacerbates infectious diseases and can lead to cancer, liver cirrhosis, weakened immune systems, and stunted growth in children. The Centre for Disease Control estimates that 4.2 million people in developing countries are chronically exposed to aflatoxins in their diets.

Okoth had been studying aflatoxin contamination for several years, however, her university lab was not equipped to allow her to perform certain important tests and develop the technical expertise she needed to advance further. "In order to solve aflatoxin contamination of farm produce and train farmers on how to handle their produce, one needs to know the biology of the causative fungi and the infection pathway," explains Okoth. "I needed to develop skills in molecular identification of the toxigenic fungi and their infection pathway. There is no fungal culture collection centre in East Africa. I also needed to develop skills in maintaining such cultures for further study."

Okoth knew what she wanted: to conduct research in a well-equipped lab where she could learn new skills and pass them on to students and colleagues back at her own university. Finding the funding for such research was challenging.

Fortunately, in 2008 Okoth had won a fellowship from African Women in Agricultural Research and Development (AWARD), competing with almost 800 women from 10 countries for one of just 60 coveted places. Funded by the Bill & Melinda Gates Foundation and USAID, AWARD is addressing the gender gap in agricultural research in Africa: only one in four agricultural researchers in Africa is female. AWARD strengthens the research and leadership skills of African women in agricultural science, empowering them to contribute more effectively to poverty alleviation and food security in sub-Saharan Africa. AWARD fellows benefit from a two-year fellowship program that focuses on mentoring, science skills, and leadership capacity.

As an AWARD Fellow, Okoth was eligible to compete with other women in the program for advanced science training at an international research institution. In 2010, she won a three-month research attachment, funded by USAID, at the University of Stellenbosch's Department of Plant Pathology.

Working with scientists there, she learned to apply molecular techniques in identification of toxigenic genes and quantification of toxins—skills critical to her future research.

"I feel quite privileged to have had this great opportunity," says Okoth, now back in her university lab in Nairobi. "With my newly acquired skills, I will be able to contribute effectively to solving aflatoxin issues in Kenya through my research work and by training students. Before, I had to supervise my postgraduate students with someone else who knew molecular techniques. Now, I can guide my students in their research personally."

Okoth is gaining international recognition for her groundbreaking work. She was recently elected as a fellow in the prestigious, London-based Society of Biology, an international organization with 80,000 members worldwide. She is also a member of the International Society for Mycotoxicology and is now head of the Mycology Section at the University of Nairobi, where she is leading fungal research with the Safe Food, Safe Dairy Project, which is funded by the Government of Finland. She is also the contact person for fungal research for Stellenbosch University at the University of Nairobi.

Following her time in Stellenbosch, Okoth didn't see why her students shouldn't have their own well-equipped laboratory facilities. "I fundraised and equipped a lab right here at the University of Nairobi, where together with my students, I can now do similar research to what I did in Stellenbosch, and also hold training courses for other scientists," says Okoth proudly.

Sheila Okoth is one of a growing number of African woman scientists who have won an AWARD Fellowship. AWARD is a professional development program that strengthens the research and leadership skills of African women in agricultural science, empowering them to contribute more effectively to poverty alleviation and food security in sub-Saharan Africa. AWARD is generously supported by the Bill & Melinda Gates Foundation and the United States Agency for International Development. For more information, visit www.awardfellowships.org