AWARD
African Women in Agricultural Research and Development

Profile

2018 AWARD Fellow
Matilda Ntowa Bissah

Position	Research Scientist
Institution	Plant Genetic Resources Research Institute, Council for Scientific and Industrial Research (CSIR)
Country	Ghana
PhD	Plant Breeding, University of Ghana, 2016
Mentor	Dr. Asante Maxwell, Senior Research Scientist, CSIR Crops Research Institute
Research Area	Breeding superior rice varieties that are tolerant to abiotic stresses such as salt, heat, and cold.

Bissah is conducting research to address the high levels of sub-soil salinity found particularly in rice farming. Increased concentration of salt in the soil interferes with normal crop development, resulting in yield losses. Her research is geared toward improving rice tolerance to salt-stress during the reproductive stage.

Matilda Ntowa Bissah wants to use her training in plant breeding to help solve the challenges that smallholder farmers face. Raised by two teachers in rural Ghana, she was encouraged by her father to take science courses in secondary school. Growing up, she noticed that her extended family members would get fluctuating yields from cocoa farming. "I knew that one day I would pursue studies that would alleviate these challenges," Bissah states.

Bissah has tackled plant material generation, researching how tissue culture could help in multiplying plant material to help pineapple farmers who wanted to switch from a local variety to one preferred in the global market. "I assisted in establishing a lab for this large-scale farmer who benefited by supplying the variety to the West African region," she says. Prior to her intervention, farmers were incurring high costs to import planting materials.

Armed with an MSc in Plant Physiology from the University of Ghana, Bissah joined the CSIR Plant Genetic Resources Research Institute, where she was involved in setting up and managing the in vitro gene bank, focusing on root and tuber crops. "Some plants could not be stored by the orthodox freezing process because they did not produce seed, were recalcitrant, and lost viability when frozen," she explains.

Bissah decided to venture into plant breeding when she noticed that the materials she was helping to conserve were underused. "We were conserving these materials for breeders to use, but I rarely saw breeders coming for them," she recalls. Initially, she had wanted to continue working on root and tuber crops but was advised to explore rice breeding, an area that has few women researchers.

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Bissah is one of a growing number of women agricultural scientists who have won an AWARD Fellowship. AWARD works toward inclusive, agriculture-driven prosperity for the African continent by strengthening the production and dissemination of more gender-responsive agricultural research and innovation. We invest in scientists, research institutions, and agribusinesses to deliver innovative, sustainable, gender-responsive agricultural research and innovation.

The AWARD Fellowship is a career-development program that invests in top women agricultural scientists to ensure that confident, capable, and influential women are available to lead critical advances and innovations in the agricultural sector.

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Armed with three degrees in agricultural sciences, Bissah is currently conducting research to address the high levels of sub-soil salinity found particularly in rice farming. Increased concentration of salt in the soil interferes with normal crop development, resulting in yield losses. Her research is geared toward improving rice tolerance to salt-stress during the reproductive stage.

Bissah is excited about the potential of her research, as rice is a food security crop in the West African region. "It is a widely consumed crop, which stores for long, so a breakthrough would increase yields, improve livelihoods through increased incomes, and ensure that we are food secure," she states. "I aspire to be a director of the Food and Agriculture Organization of the United Nations, making decisions that benefit poor farmers, especially women." Her resolve to work toward solving the problems that poor farmers face was informed by observations she made while conducting research for her doctoral degree. "For my PhD, I interacted with farmers to assess their challenges. Of the 227 farmers I interviewed, 30 percent were women involved in rice production. Of these, fully 80 percent did not have formal education and depended solely on men for decision making," she laments. "We have come up with interventions for women farmers to enable them grow their crops successfully and sustainably." To improve women's appreciation of the new technologies, Bissah wants to involve them in farmer field schools and demonstration farms.

Through the AWARD Fellowship's advanced science training, Bissah hopes to gain skills in haploid technology. Compared to conventional breeding, haploid technology allows scientists to shorten the breeding cycle and deliver improved varieties to farmers more quickly. "The proposal writing skills will help me acquire research grants, while the training in scientific writing will help improve my visibility through publications—in my field, career progression depends mainly on publications," she shares.

"As I advance in my career, the leadership skills training will help me perform better," asserts Bissah, who is currently managing the tissue culture lab. Apart from Bissah, there is only one other female scientist with a doctoral degree at her institution. "Working in a male-dominated area has presented challenges, but I realize I do not have to fight—I am now focusing on my work," says Bissah, explaining that she has changed her approach toward those who were uncomfortable working with a female scientist.

Bissah would like to share what she learns from the AWARD Fellowship with other scientists in her institution. She is also looking forward to mentoring a younger scientist. "I am hoping to have an opportunity to apply my knowledge in a classroom setting," says Bissah, who would like to venture into teaching on a part-time basis.