AWARD
African Women in Agricultural Research and Development

Profile

Juliet Akello
2015 AWARD Fellow

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Position	Post-doctoral Fellow
Institution	International Institute of Tropical Agriculture (IITA)
Country	Uganda
PhD	Agricultural Sciences, University of Bonn, 2012
Mentor	Dr. Pheneas Ntawuruhunga, Plant Breeder, Cassava Breeding, IITA - Zambia
Research Area	Mitigating aflatoxin in maize and groundnut value chains using biological control and other management practices for improved public health, increased trade and smallholder incomes, and enhanced food security in Zambia.

Juliet Akello was born and raised in Uganda. After completing secondary school, she attended Makerere University first for a BSc in Biomedical Sciences, and then for an MSc in Crop Science/Crop Protection. One of her uncles was a research scientist who raised seedlings for sale. "He taught me how to plant seeds in potting soil and took me to the lab to see his work," she recalls.

Now a post-doctoral fellow at IITA in Zambia, Akello's research involves developing a product to use in sub-Saharan Africa to mitigate the problem of aflatoxin. "Aflatoxin is a poison produced by moldy fungus Aspergillus flavus," she explains. "It is particularly prevalent in tropical climates, and has a serious impact on the health of both humans and livestock. In the case of humans, the fetus can be exposed through the placenta and once borne, through breast milk if the mothers consume infected foods."

The result of aflatoxin is stunted growth in children, suppressed immune systems, and increased susceptibility to other diseases such as hepatitis B. "This is especially problematic when individuals already have other diseases such as HIV," she notes. "In addition, when people eat foods contaminated with aflatoxin—even small quantities—it keeps building in their systems, and this chronic exposure can cause cancer and liver rot."

Akello and her team have begun to develop technologies that can reduce the level of toxins in food crops. "Our objective is to protect smallholder farmers and others vulnerable to health and income loss from aflatoxin," she continues. "We are looking at staples that people eat, such as maize and peanut/groundnuts. We began with baseline surveys to determine the levels of aflatoxin in foods that people are taking in, and we have zeroed in to develop a bio-control product known as Aflasafe." This solution is currently being field tested, and is a joint innovation between IITA, national partners (ZARI and NISIR) and USAD-ARS. The innovation is built upon research undertaken in the United States to produce similar products known as Af36 and Aflaguard.

"If we are successful in fighting this problem, it will result in increased incomes for smallholder farmers so they can educate their children," Akello says. "Because the problem of aflatoxin affects the entire continent, we are developing individual products per country. In Zambia, we have just begun, and I am encouraged. We want every field of maize and groundnut to be treated." One of the issues she is facing is the need to sensitize farmers to the problem. "A recent survey showed that more than 70 percent have no idea about aflatoxin," she reveals. "Because it's invisible, it's often hard to convince farmers that it's there."

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In the case of groundnuts, farmers in Zambia tend to add water before shelling, but Akello says this soaking increases the level of aflatoxin. "Together with ICRISAT, we are promoting the use of shellers, which eases their workload and keeps the nuts dry," she explains. "While a few farmers are skeptical, 99 percent are happy with the technical help we've provided."

Akello feels she needs advanced science training in order to assess whether the fungus she is studying can mutate. "Molecular research is needed," she asserts. "In Zambia, we need to go to the Zambia Environmental Management Agency to register the biopesticide for use in Zambia. Whether chemical or natural, you need to convince them that there is no danger, and that is why additional molecular data is needed."

Akello is excited about the opportunities that await her as an AWARD Fellow. "I hope to increase my leadership and communications skills," she says. "In order to get promoted from my current position at IITA, I'll need more publications. I plan to take advantage of the proposal writing course and additional training that is available. Plus, you need good communications skills to convince farmers." She also looks forward to collaborating with other AWARD Fellows who are engaged in the same type of research.

In her current position, Akello is being groomed as a leader. "I will be expected to write policy briefs and give talks at conferences," she says. "I am excited at what I'll learn as an AWARD Fellow, and how IITA will benefit as a result." She credits an IITA colleague as her role model. "This Ugandan woman is brilliant, talented, and outspoken. I aspire to be a scientist like her."

Akello has faced some difficulty as a woman scientist in part because people in her culture tend to value what men say rather than what women say. "Plus, I'm very young—but I know my strengths, and I know what I'm talking about." She is committed to her goal of reducing aflatoxin levels, and is delighted when her solutions work.

AWARD is a career-development program that equips top women agricultural scientists across sub-Saharan Africa to accelerate agricultural gains by strengthening their research and leadership skills through tailored fellowships. AWARD is a catalyst for innovations with high potential to contribute to the prosperity and well-being of African smallholder farmers, most of whom are women.

AWARD is generously supported by the Bill & Melinda Gates Foundation, the United States Agency for International Development and the Alliance for a Green Revolution in Africa. For more information, visit www.awardfellowships.org