



2014 AWARD Fellow  
**Chapwa Kasoma**

“We need to develop new crop varieties that can survive shifting rain patterns and environmental pressures.”

Position	Research Associate
Institution	Zambia Seed Company (ZAMSEED)
Country	Zambia
MSc	Crop Science, University of Zambia, 2013
Mentor	Dr. Evelyn Nguleka, President, Zambia National Farmers Union
Research Area	Plant breeding and seed systems research.

Chapwa Kasoma was drawn to agriculture and crop sciences through her early interest in biology. Growing up in a city, she had no farming experience, but her focus on genetics and molecular biology as an undergraduate student led her to discover and appreciate the potential of biotechnology.

“Zambia has not been spared from the effects of climate change,” says Kasoma. “We need to develop new crop varieties that can survive shifting rain patterns and environmental pressures.” She notes that the country’s former food-basket region was in the south. But environmental constraints are pushing it northward, leaving many farmers and their food security in its wake.

Kasoma currently works in the research department of ZAMSEED, where she addresses improvements to maize, Zambia’s staple crop, and other crops such as sorghum, wheat, rice, pigeon pea, groundnuts, cowpea, sunflower, and soybeans. She points out the importance of using biotechnology, since it can significantly cut down on the time required to produce crops that are better fortified with nutrients and more suited to changing climatic pressures, such as increased drought and disease.

“It takes 8 to 10 years to produce new varieties using conventional breeding, and even longer for crops such as wheat, which is more genetically complex,” she explains. “You also get more unexpected results with the complex crops, or with those that are self-pollinated, like nuts.”

Some problems, such as wheat rust diseases, defy conventional breeding and are becoming more virulent and widespread due to climate change. In those cases, biotechnology can turn research and development on its head to search for new answers. “With

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**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.**

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biotechnology, we work from the genotype to the phenotype—from form to function—instead of the other way around,” says Kasoma, explaining that they study the underlying genetic mechanisms (form) in order to understand and improve the phenotype (functions), which are the plant’s observable properties (i.e. how it looks, grows, or resists pests and diseases). In contrast, conventional breeding emphasizes phenotypic selection and tries to combine desirable characteristics with the help of statistical tools to produce the best mix of features (genotype).

During her MSc studies at the University of Zambia, Kasoma learned to apply biotechnology to crop science. She focused on identifying the genetic markers for sugar in sweet sorghum, and discovered some of the challenges associated with translating scientific skills into practice. “Zambia has few facilities for agricultural biotechnology, so I had to be creative, borrowing techniques from medical biotechnology and adapting them to the agricultural context,” she says. She also spent time in Nairobi for further training with the International Crops Research Institute for the SemiArid Tropics (ICRISAT), using the biotechnology facilities of Biosciences eastern and central Africa (BeCA).

Much of Kasoma’s work involves close collaboration with women farmers working on plant research trials. “Women do much of the tedious, labor-intensive work of breeding, such as planting of research trials, weeding, pollination, and harvesting, and they become experts in the art because they do it over and over,” she explains. “Men are the supervisors.”

Kasoma notes that women contribute at the ground level of R&D, but do not get to rise to positions where they can see their contributions from a broader perspective or influence development decisions. She believes that greater integration of women at development levels would spur more active and informed problem-solving initiatives and solutions.

Kasoma aims to reach a position of decision-making power within an international organization, so that she can promote more women’s issues and their engagement in agricultural R&D. She wants to sharpen her biotechnology skills through a PhD program, and through greater exposure to other experts in the field. As an AWARD Fellow, she is building a global network and gaining the scientific, leadership, and writing skills that can help advance her career.

“From the broad skill sets to the more pointed ones, such as conflict resolution, AWARD is offering me a huge package to boost not only my professional development, but also my ability to help propel agricultural production and productivity forward,” says Kasoma.