



**2013 AWARD Fellow**  
**Marème Niang Belko**

<b>Position</b>	Agronomist
<b>Institution</b>	Centre d'étude regional pour l'amélioration de l'adaptation à la secheresse, Institut sénégalais de recherche agricole (ISRA)
<b>Country</b>	Senegal
<b>MSc</b>	Agronomy, Ecole Nationale Supérieure d'Agriculture de Thiès (ENSA), 2006
<b>Mentor</b>	Dr. Samba Thiaw, Director of Research, ISRA, Bambey

*Research area: Studying agro-physiological traits of crops, including pearl millet and sesame, to improve tolerance to drought under the West African Agricultural Productivity Program.*

Marème Niang Belko knows first-hand the challenge of producing crops in arid Senegal, where only 20 percent of the land is arable, according to a 2010 Work Bank report, and less than 700 mm of precipitation is recorded annually. As a farmer's daughter from St. Louis, northern Senegal, she cultivated tomatoes, potatoes, and rice right alongside her father and her six siblings in the family's sandy, coastal fields, where daily temperatures can reach up to 45 degrees Celsius.

"When I decided to study agriculture, my father strongly supported me because he wanted an advisor in the family," laughs Belko, who graduated with a BSc in agricultural engineering from ENSA in 2004--one of only four women in her class of 28 students. "I wanted to help him, and other Senegalese farmers, especially the women. They are so strong in spirit and work very hard, and yet remain so poor." She later obtained an MSc in Agronomy.

Belko believes that farmers could benefit from drought-tolerant and biofortified pearl millet varieties that have potential to increase crop yields and thereby improve livelihoods Senegal.

"Senegalese prefer the taste of Asian rice over locally grown varieties and over millet," says Belko, noting that Senegal, which imports more than half of the food required to feed its 13 million people annually, is the world's tenth largest rice importer. Although people are beginning to consume local rice because it is cheaper, Belko wants to change people's dependency on imports by promoting local crops, especially pearl millet.

Pearl millet is one of the principal cereal crops grown in Senegal's semi-arid agroecosystem. It is well adapted to growing areas characterized by drought, low soil fertility, and high temperatures, and performs well in soils with high salinity or low pH. Because of its tolerance to difficult growing conditions, it can thrive where other cereal crops, such as maize or wheat, would not survive. Pearl millet is affordable, but it must be pounded into flour for consumption so women prefer rice or maize, which are more expensive but less labor-intensive.

“In my research at ISRA, I’m testing pearl millet production in two contrasting zones of rainfall to see the difference in yields and what mechanisms they use to adapt to drought,” says Belko, a talented researcher, who is completing her PhD in Applied Biological Sciences at Ghent University in Belgium. “We are seeing the effects of climate change here in Senegal—too much rain, too early—and farmers don’t know when to sow anymore. They are experiencing reduced yields and crop failure, but they don’t understand what is happening.”

Crop diversification is one way to improve livelihoods and Belko is conducting seed multiplication of high-yielding mutants of sesame to be used in greenhouses, field stations, and farm-field trials. “Sesame is not yet popular as a food in Senegal, but it is a viable cash crop,” she says. “There has been a lot of research done on sesame, but the information is not making it out to the farmers because of distance and funding constraints. We need to produce good varieties, give farmers access to them, and train them how to multiply the seeds themselves”

As part of her PhD research, Belko is also studying germination and drought-resistance of baobabs, the “upside-down” trees that are indigenous and prolific in Senegal. “Baobab trees are difficult to grow because their seeds are very hard and they don’t germinate easily,” explains Belko. “However, the trees have so many uses. The leaves are pounded into couscous or added to soup, and can be used as a traditional treatment for dysentery, and also to make soap.” The fruit’s pulp makes tasty jam and nutritious juice that is served in most Senegalese homes. Belko would like to see women farmers maximize the trees’ produce to increase their incomes.

“I want to share my scientific knowledge with farmers and help them find adaptations that will enable them to cope better and produce more,” says Belko, who hopes to complete her PhD research this year, once she has published two scientific articles in peer-reviewed journals, as part of the graduation criteria.

Belko is one of five African women who won a fellowship in the AWARD Francophone Pilot Program, in partnership with CORAF/WECARD and Agropolis Fondation. “I am so happy to have won this fellowship,” says Belko proudly. “It is a great opportunity that will strengthen and motivate me in my work. I know it is going to inspire me to think about new projects and build my leadership capacity so that I can help farmers even more.” She also wants to hone her writing and science skills through courses offered by AWARD.

Meeting fellow women scientists from across Africa through AWARD is encouraging, says Belko. “Women bring a lot to science because of our motivation to help others. AWARD is going to enable us to advance so we can help women farmers further, and be good examples for our younger sisters who are following us.”

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*Belko is one of a growing number of African women agricultural scientists who have won an AWARD Fellowship. 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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