



GLOBAL KNOWLEDGE INITIATIVE

CHALLENGE: FEEDING FEMALE FARMERS AND THEIR FAMILIES

CHALLENGER: DR. SAMUEL OKELLO

**PROGRAM: Learning and Innovation
Network for Knowledge and Solutions (LINK)**

ROUND 1: EAST AFRICA PILOT



LOCATE. ENABLE. CONNECT. SOLVE.



Challenger: Dr. Samuel Okello
Title: Senior Lecturer, Head of Department of Physiological Sciences
Host Institution: Makerere University, Faculty of Veterinary Medicine
Location: Kampala, Uganda
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Introducing Dr. Samuel Okello:

Samuel is dedicated to helping improve the lives of Uganda's urban farmers, many of whom are poor women raising animals on the periphery of cities. A veterinarian by training, Samuel has worked at Makerere University since 1990 specializing in ruminant physiology: the study of the rumen, the organ in cows that helps them digest grass. His work has shown that natural farm by-products can supplement dairy-cattle meals for more efficient milk production. Samuel discovered intrinsic physiological attributes in indigenous Ankole cattle that help them survive difficult environmental conditions. Beyond research, Samuel spends much of his time training and supervising graduate students in animal health, nutrition, and physiology. He believes that international collaboration can greatly add to his students' educational experience, and to his and their ability to solve the challenges of peri-urban agriculture.

My Challenge:

East Africa is witnessing a massive migration from rural farmland to rapidly growing cities, which greatly increases the need for food production accessible to these areas. Through my research, I want to expand agriculture and livestock production and quality on the edges of these burgeoning cities, enabling peri-urban residents to better feed growing populations and increase their own incomes. Unfortunately, along the chain from crop to livestock to market, there are many places where production, quality, and safety go awry. The urban population becomes susceptible to animal-to-human transmissible diseases such as the H1N1 virus and Mad Cow Disease. More immediately pressing, the price of quality food soars higher than it should will supplies become more scarce. Thus far, research has failed to address the complex challenges of urban food chains. Research tends to focus on small parts of the chain rather than the chain as a whole. I believe the application of appropriate biotechnology for the production, storage, and transport of food involved in the crop-livestock-human nutrition value chain can prevent these major problems. Solving this challenge will meaningfully improve the lives of two large segments of society. First, the quickly growing urban poor population will see an increase in the quantity and quality of their food. Second, solving this challenge will increase the income of peri-urban farmers, mostly poor women and widows who are among the most vulnerable members of society.

Why I am seeking partners:

Partnerships with developed country collaborators will improve our ability to solve this challenge through the exchange of experiences, knowledge, facilities, technology, students, and supervisors. Because of the breadth of this challenge, my solution involves collaborators from multiple sectors: scientists bringing their expertise to bear on the human food value chain and increasing training for my staff; engineers developing technologies for decontamination of waste; farmers identifying problems and testing innovations; and entrepreneurs piloting the commercialization of feed production and post-harvest conservation technologies.

My vision for solving this challenge:

Through partnerships with scientists, engineers, farmers, and entrepreneurs, we can develop and apply biotechnology in the crop-livestock-human nutrition value chain to increase the value and efficiency of peri-urban agriculture.

We can:

- Increase milk and meat productivity while increasing food security and improving the health and well-being of peri-urban East Africans
- Encourage job creation and income from livestock production
- Support environmental health and sanitation
- Improve genetic and natural resource conservation



Photo: International Livestock Research Institute

Samuel identifies an unmet challenge

Samuel secures resources to tackle it

Samuel seeks specific resources to get him across the finish line

Through partnership, Samuel solves a challenge!

Resources Samuel has available:

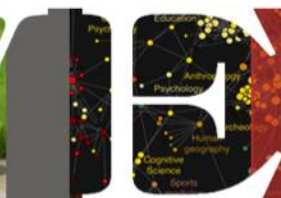
- Physical infrastructure: office space, furniture, running water, and electricity
- Some laboratory equipment shared with other public or private organizations
- Nutrition laboratory equipped with basic analytic facilities
- Computers with internet connection and printers
- Skilled researchers in animal physiology and nutrition; experts in livestock development
- Technical and support staff available to assist in laboratory and general duties
- Current working relationships with peri-urban farmers
- Database on peri-urban livestock farming

Resources Samuel needs:

- Additional laboratory and electronic data capture equipment and technical expertise (e.g., automated nutritional analytic equipment, Near Infrared Spectroscopy, microclimate meters)
- Trained experts in livestock nutrition, biotechnology, Intellectual property, and microbiology
- Modern methods of feed analysis and nutritional evaluation
- Access to international databases in animal physiology, biotechnology, and livestock nutrition
- Support to attend and present scientific papers at symposia, conferences, workshops, etc.
- Co-supervision of graduate researchers
- Website for research dissemination

Samuel's commitment to solving the challenge:

Samuel knows this challenge is complex and demanding, but the benefits of solving it are too promising to shy away. He has a wealth of experience, committed colleagues, and close relationships with farmers. He is eager to train the next generation of Ugandan scientists toward a revolution in peri-urban farming.



Magnify
your power
to solve
the world's
toughest
challenges