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Uganda Christian University Partners

"Thankful for your partnership in the Gospel from the first day until now." Philippians 1:3-5

UCU Science Research: Improving Lives and Livelihoods

FROM THE EXECUTIVE DIRECTOR

Why Support Uganda Christian University When So Many Ugandans Live Near the Poverty Line?

by Mark Bartels

For those of us who are motivated by Biblical themes of justice and care for those in need, supporting Christian higher education can seem like an odd fit. Few Ugandans will graduate from university, so isn't the impact of supporting higher education limited? Of course, I think nothing could be further from the truth.

The importance of having quality science education, quality science faculty members, and quality science graduates living and working in Africa cannot be overstated. Strategic investment in these areas has the potential to decrease poverty and increase quality of life for millions of people.

Uganda Christian University's programs in engineering, technology, agriculture and other sciences are preparing graduates to meet the pressing needs faced by countries across Africa: food production, information about markets, preservation and utilization of natural resources, and building and maintaining of strong physical and technological infrastructure.

Engineering, sciences and information technology continue to be essential for the economic success of the United States. How much more important are these areas for a developing region like East Africa? The programs that Uganda Christian University offers in information technology, engineering and sciences are critical for the development of Uganda and beyond.

Thank you for your role in empowering Uganda Christian University to transform the country and the region.

As Sub-Saharan Africa develops rapidly, it is estimated that the continent will need millions of engineers just to reach a single Millennium Development Goal, that of access to safe water and improved sanitation. However, there is a serious shortage of engineers—and also of scientists, health professionals and technicians—in nearly all of Sub-Saharan Africa's 48 countries . . . Well trained graduates in science and technology–based disciplines can also help their countries find effective, cost-efficient, homegrown solutions to pressing development problems that are related to poverty, food security, climate change, urbanization and health.

(World Bank forum on Higher Education for Science, Technology and Innovation)

WONDER JAM: An Interview with Jean Paul

by Abigail Bartels

Do you mind giving me a little information about what you are studying?

I'm in my final year of my Bachelor of Science in Agricultural Science and Entrepreneurship. I have enjoyed studying food science most; classes like Food Microbiology and field placements in the food industry have allowed me to focus on that specialization.

What inspired you to make and sell tomato jam?

Tomatoes are commonly grown in Uganda, and like many other fruits and vegetables, they are highly perishable. Many farmers incur very heavy postharvest losses, because they do not possess the infrastructure to store their produce. This drives them to accept low prices offered by traders who take advantage of the perishable nature of the produce. Furthermore, there are seasons when tomatoes are in plenty, causing an oversupply in the market which leads to low prices. The markets are not in position to sell all the tomatoes which leads to many getting damaged, and eventually rotting.

Many of the tomato-based products in Uganda are imported from other countries such as Kenya and the United States. These products are mostly in the form of tomato sauces, ketchups and juices. Thus I spotted a niche in the market, for producing tomato jam. According to research carried out by the Harvard School of Public Health, tomatoes have been documented to contain Lycopene, which is an antioxidant with cancer preventing properties. So I sought to find a way to preserve the health benefits of a tomato, but in a form which can be consumed every day in a much sweeter form.

The Department of Agriculture Science invited students to participate in an exhibition organized by the International Labour Organisation at the Uganda Manufacturers Association, where they would showcase any agricultural project. I seized the opportunity and quickly got in touch with a fellow agriculture student called Lorna Orubo, and decided to develop the first "No Sugar Added Tomato Pineapple Jam." At the event we managed to sell quite a number of containers, much to our surprise. This really inspired us, even though at the time we were still quite amateur. The jam wasn't quite where I wanted it to be.

So I went back to the drawing board and spent sleepless nights, using all the time I had on campus to get as much information as possible on how to produce a commercial jam. Then UCU held an exhibition called "Open Day" where students from various departments were called upon to display projects in their respective fields of study. Once again, Lorna and I displayed the new, improved version of our jam, which was an instant success. A visiting professor, Dr. Tricia from John Brown University tasted our jam and told us we ought to have it exported to the U.S as she loved it so much. Our jam sold out on that day, and so we decided to set out to commercialise the product and turn it into a business.

What have been some of the obstacles in making it?

In the beginning we had so much access to information that we weren't sure what was right and what was wrong. We didn't have any mentors to guide us on the safe practices of making the product and which ratios to use. Thus our first jam wasn't really jam, but it didn't stop us from pushing forward. We have had limited access to funding as most people were not comfortable in investing in an idea, but an actual running business. For instance, I raised money for the first jam we made by teaching farmers how to grow hydroponic fodder.

We also had a challenge of maintaining consistency since we initially didn't have specialised equipment to maintain the standards that we wanted.

Jam is commonly packed in glass containers, which are not easy to source in Uganda and thus must be imported from Kenya or abroad at a great cost. This forced us to be innovative and try plastic packaging, which has also proved to be difficult since the grade of plastics we use are not tolerant to high temperature processing, leading to many damaged containers.

Most of the equipment for manufacturing jam on a large scale has to be imported from abroad, since demand for such equipment is low as there are not many jam manufacturers in the country who can cause the prices to drop due to economies of scale.

Marketing the product has been a great challenge since most big buyers require that we have a certification license from the Uganda Bureau of Standards, which is very expensive. This has slowed down our growth considerably, and has limited us to selling within the UCU community.

What do you hope to do when you graduate?

When I graduate I hope to continue running the business

to make it expand to even greater horizons. Uganda's middle class is growing and thus the demand for products such as jam will increase. The market for jam is not overly saturated as compared to other industries such as juice or yogurt and there is room for great innovation.

I would also like to pursue a Masters in Food Processing so that I can improve the standards and quality of manufacturing of our jam such that we can be a world leader. In addition I hope to set up vocational schools that will teach practical skills to underprivileged individuals so that they create jobs for themselves and in turn help their communities.

Name three of the big successes with tomato jam.

Our jam is called Wonder Jam, a name I derived based on the numerous health properties of tomatoes. Three big successes:

1. Giving free samples to over 300 students in Nkoyoyo Hall during Hope Worship Night and Agape Monday as a means of promoting the jam.
2. Tomatoes are abundant and are easy to source unlike many fruits which are seasonal.
3. Selling over 500 containers in our first year within the UCU community.

If you succeed with this product and other agricultural entrepreneurship endeavours, how will you be able to impact your family, community, country?

As the scale of my business increases I hope to employ more people, especially those in poverty stricken areas so that they can

improve the standard and quality of their lives. Many tomato farmers in the country are heavily exploited by traders and thus I also hope to give them a more secure source of income, as even the tomatoes which may not fit market grade may be fit for processing, allowing the farmers to have more stable incomes.

Having a closer connection with farmers will allow us to help them improve on the farming practices that they are using, as well as ensuring that they take their children to school. In regards to the farming practices, we have realized that many farmers are still using banned pesticides, and thus we would be in a good position to sensitize them and have them use more environmentally sustainable farming practices.

When international demand for the product arises we will be in position to bring in foreign exchange for the country as it is well documented that countries such as the United States have a huge demand for Ugandan products.

Civil Engineering in the Classroom and at Work on Campus

One piece of laboratory equipment that is on the Science and Technology wish list is a "Dynamic Cone Penetrometer." This piece of equipment can be used by engineers to test the layers of soil below the surface— one application being for the construction of new roads.

Anyone who has been in Uganda, can imagine the practical benefits of developing strong civil engineering students for the sake of better infrastructure of all sorts. Pictured here, you see the road leading up to UCU's main gate as an example of road quality (the pavement on that road was brand new within the last decade) and you see civil engineering students on campus digging out trenches in preparation for road work.

The Faculty of Science and Technology consists of three departments:

Department of Civil and Environmental Engineering
Department of Agricultural Sciences
Department of Information Technology

MATCHING GRANT:
Double your donation, multiply your impact!

Dr. Tom Gurley, analytical chemist, has served at UCU in different Fulbright capacities. He has helped with Science and Technology programs in various roles— teaching, helping students develop a soil analysis business, assisting with the set up of the laboratory including ordering and maintaining laboratory equipment. Thank You, Tom!

Dr. Masanza (Dean of the Faculty of Science and Technology) working with Ghanaian PhD student and UCU student on gathering data in the green house

Thanks to a generous donor who is committed to the continued development of the Science and Technology Department at Uganda Christian University, your donation to the Science and Technology programs at UCU can be doubled!

Between now and the end of 2016, every dollar that we raise (up to a total of $10,000) for laboratory equipment for UCU Science and Technology programs will be matched by this donor!

100% of your donation and the matching grant will go directly to Uganda Christian University! This is possible becuase we raise our operationg budget separately through the Multiplying Talents Fund. (A special thanks to our Multiplying Talents Fund donors—your support is making this matching grant very effective for UCU!)

Your donation will ensure that we maximize the matching grant and help UCU take a $20,000 step forward in lab equipment that will serve Science & Technology programs at UCU, including agriculture, engineering and others.

Your generosity in this campaign will empower the Science and Technology programs to strengthen UCU's work of transforming East Africa through high quality, on the ground research, as well as preparing and training students to tackle real world problems with locally developed and relevant solutions.

Rural farmers receiving assistance from UCU Research team as they explore rice varieties that will be resistant to damage from a common fly pest.

UCU students in laboratory

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