
Toward a New Model for African Agriculture: The Subscription Model of Farming in Uganda

TEDDY RUGE

ABSTRACT

Over 70 percent of Uganda's work force is in agriculture. Yet, that collective workforce represents less than 25 percent of the fertile East African country's GDP. With over 7 million farmers in the country earning less than USD 2 per day and fighting the severe effects of climate change, it is clear that a new model is needed to lift subsistence farmers out of poverty while protecting the environment. After spending over a decade trying to find a solution to this problem, I developed the Secure Income Program (SIP) to address shortcomings in the solutions offered to farmers. In this article, I explore the potential of SIP to not only lift rural communities in Uganda out of poverty, but also to create a supply chain model that could prove beneficial to agriculture companies and the environment. However, as with all ambitious solutions, SIP must overcome numerous challenges on the difficult journey to sustainability.

A BRIEF OVERVIEW OF UGANDA'S AGRICULTURAL SECTOR

For over a decade, I have been trying to find an answer as to why

Teddy Ruge is the founder and CEO of Raintree Farms Limited, a value-added agro-processor of moringa products based in Masindi, Uganda. At Raintree Farms, Teddy spearheaded the launch of the Secure Income Program (SIP), an innovative out-grower supply chain model for delivering social, environmental, and financial impact to farmers in Uganda. Also at Raintree Farms, he founded Qwezi Beauty, a fast-growing, moringa-based, natural-beauty line of products. Separately, Teddy is a cofounder of Hive Colab, Uganda's first tech co-working and incubation hub.

Ugandan farmers are perpetually poor. To understand the problem, we must first look at how agriculture fits into Uganda's economy. The country is known for its rich agricultural heritage thanks to its diverse climate that can support a wide range of crops. In 1908, then-explorer Winston Churchill, amazed at what he saw on a visit to the then-British colony, declared "for magnificence, for variety of form and color, for profusion of brilliant life—bird, insect, reptile, beast—for vast scale—Uganda is truly the Pearl of Africa."¹ So fertile is the country that it has been said that you can throw a seed anywhere in Uganda and it will grow.

The Pearl of Africa's agricultural exports are coffee, tea, bananas, tobacco, and flowers—to name but a few. Over 70 percent of working age adults are employed in the agriculture sector,² yet agriculture makes up less than 25 percent of the country's overall GDP as of 2020/2021 statistics.³

These two statistics signal low productivity in the agricultural sector. Most Ugandan farmers are subsistence farmers, growing only enough to feed their families and trading any limited surplus crops for money. These farmers utilize manual tools with limited access to modern technology to increase yields and often rely solely on labor from their immediate family members: food first, money later—if at all. Due to the informal nature of subsistence farming activity, a large portion of the output from subsistence farming is not captured in Uganda's GDP because most of the output is consumed by the farmers themselves.⁴ The agriculture sector is also dominated by middlemen who can only increase their profits by underpaying farmers for commodity crops. The less they pay farmers, the more they can increase their profits, as it is difficult to raise the price of their goods. The result is a squeeze down on farmers. This uneven relationship results in a perpetually undercapitalized workforce. Climate change, which makes every harvest season unpredictable, also exacerbates the problem. No longer can farmers trust generations of tacit agricultural practices; the timing and severity of rains have become too erratic. The most vulnerable families still lack up-to-date weather predictions and modern agricultural information.

LIMITED MARKET REACH AND RESOURCE CONSTRAINTS

It was against this backdrop that I began to take a personal interest in the plight of Ugandan farmers. In 2011, I joined the World Bank in Washington, DC as a communications consultant for a new project called Connect4Climate, an initiative meant to mobilize youth in the African continent for climate awareness and action. That year, the United Nations Framework Convention for Climate Change (UNFCCC) held the

17th Conference of the Parties (COP 17) in Durban, South Africa. As a communications consultant, I helped amplify stories from youth in the agricultural sector on how they were dealing with the effects of climate change in their communities. This exercise opened me up to knowledge about sustainable, climate-smart agriculture practices, food forests, and large-scale afforestation projects like the Great Green Wall in the Sahel region. The more I learned, the more I became convinced that the African agriculture sector needed new ideas that could accelerate productivity and financial and environmental stability for African farmers.

At the time I was also traveling home almost every year to visit my mom in her rural community in Masindi, Uganda. During one visit, I found my mother growing aloe vera, a crop that looks like a fruitless pineapple plant. The government, she claimed, promoted this plant as commercially viable, but she had been waiting for a buyer for more than two years—along with the rest of the community. Upon further investigation, it turned out that the government was encouraging farmers to grow certain commercial crops such as aloe vera, neem, vanilla, and moringa because of promising global markets. Unfortunately, each one ended up abandoned for a lack of consumers. The government promoted them as in-demand but failed to organize supply chains to connect farmers to lucrative markets once the crops were ready.

This disconnect between available lucrative markets and the inability of farmers to connect to them led me to suspect that resource scarcity greatly contributed to the sector's low productivity. So I dug into the numbers. According to the Uganda National Budget Framework, the entire agriculture sector was allocated UGX 1.45 trillion (about USD 397 million) in Fiscal Year 2022/23.⁵ Using the Uganda Bureau of Statistics estimate of 7 million farmers in Uganda, that amounts to a resource allocation of just under USD 57 per farmer.⁶ Comparatively, according to the White House Office of Management and Budget, the United States in 2021 provided its 2 million farmers with over USD 303 billion in overall funding, covering everything from farmer education to research and climate change mitigation, as well as direct subsidies.⁷ This funding amounts to a staggering USD 151,000 of support per farmer. Admittedly, this comparison is unfair due to the great wealth disparity between the two countries, but it illustrates the severity of resource constraints for Ugandan farmers. The Ugandan government has just enough money to point farmers in the right direction but almost no resources to help develop those markets alongside the private sector.

To implement any positive change in the agriculture sector, help must come directly from the private sector through investment funding.

I started by helping farmers organize themselves around a crop that was easy to grow and had unmet international demand. Moringa, the superfood plant with origins in India, was the perfect candidate: it is versatile, easy to cultivate, and commands a large USD 7 billion global market.⁸ Moringa's uses range from nutritional supplements made from the leaf powder, to beauty products made from the seed oil, to medicinal applications of the bark and roots. Thus, I began registering farmers into a cooperative around the tree. However, this endeavor failed almost immediately. While farmers knew how to farm, they did not have the expertise to create and run their own professional company, let alone to adequately add value to the crop suitable for export. The missing piece was a company to assist the farmers in reaching the market. Enter Raintree Farms.

SECURE INCOME PROGRAM: EXPERIMENTING WITH THE SUBSCRIPTION MODEL OF FARMING

In 2015, I left the World Bank and officially founded Raintree Farms (RTF) with the belief that a well-organized supply chain in Uganda's agriculture sector could deliver a triple bottom line: a profitable enterprise, a direct impact to farmers in that supply chain, and a sustainable climate change mitigation solution. By 2015, RTF had spent three years attempting to deliver much-needed relief to farmers as the guaranteed buyer of their moringa crop. However, the company discovered two opposing commonalities at the last mile shared by all farmers: 1) they had an under-utilized asset in the land they cultivated; and 2) they lacked the capital to commercialize that land, often not even capable of maximizing its use for subsistence farming. RTF offered farmers the opportunity to grow moringa with a guarantee to buy everything farmers planted. However, farmers failed to raise enough capital to cultivate the land beyond what was required for food security. This conundrum made it difficult for RTF to guarantee access to enough raw materials from farmers to deliver our customers' orders.

I took this problem to my first investor, Marsha Wulff, who had originally provided funding to investigate this issue.⁹ It was just after the New Year, in January 2016, in Carmel, California, when I discovered the answer. There is an old African proverb that states: "If you want to go fast, go alone. If you want to go far, go together." African agricultural supply chains could take a page out of this book, I thought. In order to create high-impact, resilient supply chains, companies needed to work *with* small holder farmers, not *against* them.

While excitedly outlining our ethos to Marsha, I argued that a close collaboration with farmers would create environmental, social, and financial benefits for all involved. To guarantee supply for us and monthly income for farmers, it would be better to pay them *while* they were planting and cultivating, instead of after the harvest. That way, we would guarantee the supply, and they would have the much-needed monthly income. She was convinced and encouraged me to build out the strategy.

Essentially, RTF's plan was to create a "subscription model" supply chain: instead of asking farmers to grow crops and promising to buy them, we would pay the farmers a guaranteed monthly fee to grow raw materials for us. This "guarantee" underpinned the name of the strategy—the Secure Income Program (SIP). Under this program, we would enter into a contract with smallholder farmers, providing them with farm inputs (seeds, fertilizer, etc.), training, organic certification, and support to produce a combination of crops for the company. In exchange for their labor to grow the raw materials, RTF would guarantee farmers a monthly income for the duration of the contract. The program's aims were both to provide a reliable source of income for smallholder farmers and to promote the adoption of modern farming practices. It also helped to ensure a steady supply of high-quality moringa leaf powder, a raw material which could be used to create value-added products for sale to local and international markets in Europe and North America.

INITIAL SUCCESSES OF THE SECURE INCOME PROGRAM WITH MORINGA

SIP's impact was immediate, with farmers doubling their monthly income from an average of USD 60 to approximately USD 125 per month, lifting them well above the global poverty line of USD 2 per day.¹⁰ Before SIP, farmers were only paid every three to six months post-harvest, or not at all if the season was bad. The immediate impact of the program attracted interest from investors keen on high-impact delivery business models at the last mile of development. Between 2016 and 2019, SIP had enrolled about 150 farmers in its out-grower system (a system in which farmers grow commercial crops on behalf of a company). Due to the delicate nature of moringa leaves, the farmers were recruited from within a twenty-mile radius of the factory in Masindi District to allow for quick delivery and processing before the leaves wilted.

Moringa proved to be an excellent crop to anchor this model: as a perennial plant that lasts between seven and ten years, it can be harvested

every year, and across five annual harvests. Because of the high conversion rate of 10 kilograms of fresh leaf to 1 kilogram of dried leaf powder, the crop necessitated a lot of land, and ergo, more farmers. The purchase price for the raw materials was benchmarked against other seasonal commercial crops, like maize. RTF established a price greater than the average price per kilogram for other comparable products: the price of fresh leaves at UGX 500 (USD 0.14) per kilogram was greater than the average price of maize at UGX 300 (USD 0.08).¹¹ After establishing annual yields from one hectare of moringa, we then divided harvest payments into twelve equal monthly installments, starting with the first month that the farmers plant the crop after signing a contract. Instead of waiting for the farmers to solve their own capital shortfall, SIP solved it for them.

The distributed payments granted farmers the choice on how to invest the capital. They could choose to use the monthly income to “pay” themselves to do the labor, or they could pay others to cultivate their commercial gardens. Apart from additional labor, there were no other costs associated with being a SIP farmer. RTF provided inputs, training, and organic certification for free. The farmers’ only responsibility was to maintain the crop in sufficient condition to pass monthly inspections before payments were distributed. RTF even sent its own workers to harvest the fresh leaves.

CHALLENGES MET BY SIP

SIP did not unfold without challenges. It is cashflow intensive in an economy where access to cashflow is difficult for many businesses. Prior to raising a round of impact investment, RTF walked to all the banks in Kampala looking for operating capital to service a USD 1 million contract it had attracted because of the impact that SIP had promised to farmers. Nutraceutical companies seeking high impact moringa suppliers heard about the SIP model and wanted to engage with the program due to its positive impact, but not a single bank would advance operating capital. In order for SIP to succeed, it needed available cashflow to pay the farmers every month. This is because once the farmers got used to the payments, they rarely did anything to jeopardize the secured income. They redesigned their lives around the availability of that money. When payments were inconsistent, so too were the farmers’ effort and motivation, and before long, the whole program would become unsustainable.

We managed to raise USD 1 million in seed investment from the Yield Fund, a joint agriculture impact investment fund between the European Union and Uganda’s National Social Security Fund.¹² Barely a year after

we started to deploy the capital in 2019, *force majeure* struck in the form of COVID-19, and the whole meticulously planned house of cards came tumbling down. Without consumers in Europe and North America, there was no revenue. Without revenue, we could not pay the farmers. Since SIP had just launched its first significant year, it lacked time to mature and build resilience before disaster struck.

A program like SIP can only survive if the company administering it is financially sound and able to pay the monthly dues to farmers. During the three years since COVID-19 first emerged, RTF struggled to survive, buoyed only by a late strategy to venture into direct-to-consumer products. This strategy was meant to diversify our revenue streams by moving away from a sole reliance on export income. Retail assured us—at least at the beginning—of a daily trickle of income from sales, rather than waiting months for an exported container to reach our client before we got paid. With a prolonged global lock down hampering exports, retail sales kept some money flowing in as we waited for the world to reopen so we could export again.

Despite the early challenges, SIP remains a viable supply chain strategy. In the few months that we witnessed the strategy in action in 2019, our 150 farmers saw a glimpse of a future that was more participatory and equitable. In the village, one could see the fleeting beginnings of money starting to circulate in the local economy. According to our estimate, for every farmer we signed, six to seven people benefited directly. This was calculated by the average size of a farmer's family plus one or two hired workers or extended family members. They also had some money left to spend on their other needs. Farmers used the incomes to build more permanent homes, purchase motorcycles, regularly pay tuition, and some invested in other non-agriculture businesses like shops. Money was actively circulating, and the village trading center was buzzing with activity. Seeing our impact on the community was undeniably thrilling.

But when COVID-19 hit, the money dried up. The shops that had sprung up now sat empty. The newfound economic enthusiasm gave way to the despair of returning to subsistence for survival. It was truly heart-breaking to meet members of the community and not have any assurances for them.

CURRENT STATUS AND LOOKING AHEAD

Currently, RTF is preparing to relaunch SIP as a larger pilot program with 250 farmers in Masindi District in partnership with the United States

Agency for International Development (USAID) over the next two years. With the worst of the pandemic behind us and the global economy on the rebound, I am even more optimistic that RTF will have time to mature and prove its efficacy. 250 farmers are but a tiny drop of the 7 million farmers in the country, but what if the 1,500 to 2,000 people who would directly benefit for the next two years prove the program's ability to lift farming communities out of poverty?

According to preliminary calculations, coupled with a bit of artificial intelligence, if properly executed, it would take roughly 300,000 to 400,000 farmers contracted under SIP, earning approximately USD 150 per month to move Uganda's GDP by 1 percent. This calculation is based on the *minimum* value generated annually by each farmer (roughly USD 3,750) to the company, multiplied by the number of farmers needed to equal 1 percent of Uganda's 2021 GDP (USD 40.5 billion)¹³. But as the adage goes, it takes money to make money. The required financial obligation would be more than USD 540 million annually to sustain a program of that size. But let us imagine the deep, downwind transformational impact that SIP (even at the minimum end of the scale) could deliver to 2.1 million people if adequate funding were available. For SIP to succeed, companies need to have funding secured to start the program, then revenues from export/sale to sustain it. If revenues dry up, the program dries up as well.

PROJECTED ENVIRONMENTAL WINS UNDER THE REVAMPED SIP

SIP is not solely a social and financial victory; it is also designed to deliver environmental benefits. SIP farmers can actively participate in reducing their carbon footprint by deploying climate-smart agriculture practices like intercropping. Intercropping—the practice of cultivating different crops on the same piece of land simultaneously—also results in a “food forest” of sorts, which can help reduce soil erosion, increase biodiversity, and improve soil fertility, among other benefits.¹⁴

For example, by intercropping beans, Hass avocados, macadamia nuts, moringa, and coffee trees, farmers can achieve a more diverse and climate-resilient agricultural system, which is especially important for small-holder farmers who are often vulnerable to the effects of climate change. If these trees are successfully established and maintained, they could potentially add significant tree cover to Uganda's ecosystem, currently teetering at less than 12 percent of forest cover of the total land area as of 2020.¹⁵ It is reasonable to assume that, at scale, SIP farmers planting millions of trees

would have a positive impact on the environment, including benefits such as increased biodiversity and improved soil health. For RTF, these specific tree species open additional revenue verticals while maintaining the promised environmental impact. The carbon sequestration from the trees could also earn farmers additional income from carbon credits traded to companies and governments in need of offsetting their emissions.¹⁶

CONCLUSION

SIP has the potential to transform Uganda's agricultural sector by increasing agricultural production, reducing carbon emissions, and improving the livelihoods of farmers. By combining modern agricultural practices with traditional knowledge, SIP enables farmers to increase their yields and generate more income while also contributing to environmental sustainability. However, the success of SIP depends on the participation of key partners, including increased government spending for the sector, access to finance for private sector value-adding entities, and the availability of healthy markets for increased production. To go far, the ecosystem requires a concerted effort from all stakeholders to overcome the challenges and ensure the program's success. *f*

ENDNOTES

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