

Growing Resilient Farmers in Uganda

Smallholder farming is a central part of life for many households in Sub-Saharan African countries like Uganda. Globally, smallholder farmers who almost entirely depend on rain-fed agriculture especially in regions like Sub-Saharan Africa have been among the most adversely affected by climate change. Further, Africa's rapid population growth accompanied by an increased demand for food is exacerbating the situation with food deficits posing the risk of triggering economic and political crises. Crop failure means entire rural family livelihoods are threatened. As crop production systems stagnate, it means an already vulnerable group is at risk of further marginalization owing to significant loss of regular income, assets and capital; yet smallholder farmers contribute about 80% of the food production in Africa. In the past from their childhood, smallholder farmers knew rains always came at a certain time. Based on this, they in turn established predictable growing cycles, but not anymore. The weather is now more unpredictable and extreme. Farmers must now contend with frequently occurring severe droughts, floods, severe storms, heat waves, frosts and migration of pests and diseases to new areas which destroy many crops and reduce harvests. In the long-term, global temperatures are expected to rise in coming decades and building resilience of this class of farmers to cope with the effects of climate change is critical. Smallholder farmers in Uganda are the engine of the economy with agriculture employing 72% of the population, contributing 22.2% of GDP and generating 42% of the export earnings.

Beyond the new challenges and complexity arising from climate change, other factors like sub-optimal nutrient application, limited mechanization, farmer knowledge gaps, post-harvest losses and poorly organized market structures are just some of the challenges that must be overcome. It has been estimated that Africa needs to double or triple the food production in order to cope with future demand for food. Yet, rising poverty and inequality levels continue to present a huge risk to attaining food security in Uganda. In Sub-Saharan Africa countries like Uganda, rural poverty has risen in the last decade with the rate of extreme poverty in rural areas being the highest at 62% according to International Fund for Agricultural Development (IFAD). Smallholders farmers make a huge bulk of the rural poor living on less than \$2 a day. Therefore, improvement or substantial increase in rural household income is a basis for triggering more broad-based economic growth and structural transformation. As much, the suggestion is not that smallholders can farm their way out of poverty but that improvement in production technologies is a key catalyst especially if accompanied by investments and reforms off the farm.

Grainpulse is working to improve the well-being of smallholder farmers in Uganda by becoming a one-stop-shop, providing access to customized fertilizer blends, agronomic advice and a ready market for their produce. Grainpulse buys coffee and grain crops such as Maize, Barley and Sorghum from local farmers providing them with a much-needed formal market for their produce while safeguarding against post-harvest losses through collection, storage and processing activities. Through value addition, Grainpulse is involved in maize milling, food fortification and soon animal feed processing. We are consolidating the agri-food value chains by working to improve yield and incomes of smallholder farmers from the farm to the table. Our plant in Mukono is Uganda's first fertilizer blending and bagging producing crop-specific that are tailored to the nutritional requirements of each crop and in future we plan to launch soil-specific fertilizer blends suited to different agricultural regions. Uganda farmers have wide variety to choose from with different fertilizer blends available for different crops such as Coffee, Maize, Beans, Bananas, Tomatoes, Sorghum, Barley, Irish Potatoes, Sweet potatoes and Sunflower. The

fertilizer blends are available in accessible and affordable packaging of 10kg, 25kg and 50kg. The use of these fertilizer blends which are based on the crop nutrient requirement coupled with training on soil fertility management, soil testing and other sustainable farming methods has seen Ugandan farmers increase their crop yields and family incomes. This is unlike in the past when farmers could buy only one type of fertilizer and use on different crops sometimes witnessing no improvement in yield. Most of our [farmer experiences](#) have been very positive. Secure harvests and ability to earn extra income for rural farmers means they can be food secure and ability to further invest in other critical areas like education and healthcare for their families and income generating businesses. This is a big step in a country which despite low soil fertility has the lowest recorded fertilizer use at 2-3kgs/ha according to Alliance for a Green Revolution in Africa (2019). A research by McKinsey & Company (2017) indicated that to actualize Sub-Saharan Africa Agricultural potential the fertilizer application rates would need to increase by about 8-fold (8X) on average for main nutrients. Due to increased efforts through partnerships with other stakeholders like Alliance for a Green Revolution in Africa (AGRA), Ministry of Agriculture, National Agriculture Research Organization (NARO) and agro-input dealers, great progress is being made. Ugandan farmers are now increasingly more aware that the same fertilizer type they use for example to grow maize is not suited to grow beans or bananas and it is pays to invest in the right type of fertilizer from a genuine source and carry out regular soil testing.

Improving agricultural Water Use Efficiency (WUE) is another key strategy for climate change mitigation and adaptation in vulnerable countries like Uganda where agricultural production systems are largely rain-fed. One of our farmers, Kisimbira Wilberforce Buwembo, a [commercial banana farmer](#), plans to install solar powered irrigation systems on all his farms as his confidence was boosted after substantially improving his yield and income with Grainpulse Banana fertilizer blend. This is precisely the ripple effect that we envision for our farmers where improvement in one area spurs incremental investment in their crop production systems. In the future, our aim to promote the use of water-soluble fertilizers and accompanying technology that can be used in micro-irrigation systems by farmers. Drip irrigation, a common micro-irrigation technique, can increase the yields of crops by 1-7X when compared to predominantly rain-fed yields. The use of fertigation systems (supply of water through drip irrigation coupled with an accurate rate of fertilizer application), thereby simultaneously improving crop nutrient uptake and WUE has the potential to tremendously increase farmers cash flows. The investment in irrigation technology especially can pay off faster for cash crops but still makes a strong business case for most water intensive crops.

The challenges smallholder farmers in Africa face are not limited to improving crop production. Experience and research have demonstrated that for African smallholder farmers to fully realize the return from extra investment in agricultural inputs, there must be an accompanying output channel that offers them fair and guaranteed market for their produce. This is before factoring other bottlenecks that limit agricultural productivity like poor infrastructure, low farmer technical skill or competence, inadequate government policies among others. In some cases, for example in remote rural areas where output prices are too low, use of agricultural inputs would not be profitable under any market condition. Grainpulse is thus investing in an all-inclusive [digital solution](#) that will streamline processes in the agricultural value chains and improve market access for farmers. Using their mobile phones, farmers can access a wide variety of services high quality genuine inputs along with customized training and extension services to improve their technical skill and competence in modern farming technologies. Smallholder farmers often must travel long distances to access farm inputs and the associated costs in time and money

further reduces or even eliminates the marginal returns from using agricultural inputs. When the farmers have inputs delivered within a walking distance or at their farms and worry less about market for their produce they can focus better on their farms and achieve greater output. Farmers will also receive up-to-date pricing information and link to potential buyers ensuring they can get the best price for their produce. Weather forecasting updates will help the farmers plan and better prepare to deal with erratic weather patterns. Users of the platform will in addition benefit from digitalization as it creates financial track records which can improve their likelihood of accessing credit and crop insurance. With nearly 90% of Ugandans depending on small-scale food and cash crop agriculture for their income and food, it is expected that sustainable improvement in the agricultural productivity, market access and farmers' incomes will support economic growth.

Over 60% of all employed women in Sub-Saharan Africa work in agriculture, yet they bear disproportionate burden on the farm with Oxfarm estimating women carry out up to 80% of food production activities. All factors held constant, female farmers often attain meagre harvests just because of their gender which predisposes them to policies, laws, programs and customs that put them at a huge disadvantage. As a one of the strategic measures to alleviate this situation, Grainpulse is making conscious efforts to ensure Ugandan female farmers are empowered and included in accessing better agricultural opportunities. This is done by specifically targeting and offering them access to agronomic training, inputs, climate-smart agricultural practices, markets and market information to enhance their productive participation and earning potential. When female farmers progress, everyone benefits from their families, communities and economies to which they contribute. The Bill & Melinda Gates Foundation (Goalkeepers report, 2019) highlights that when women have resources under their control, they invest them in meeting their children's needs (food and education) at a higher rate than men.

We hope that our integrated approach to improving the farming ecosystem in Uganda makes a critical contribution in sustainably meeting rising demand for food in the youngest and fastest growing continent while alleviating the impacts of climate change, increase rural incomes and promote gender and income equality. Emerging technologies present a great possibility to transform agriculture in Africa and especially if they optimize opportunities for rural women and young people to maximize their entry and participation in on-farm activities.

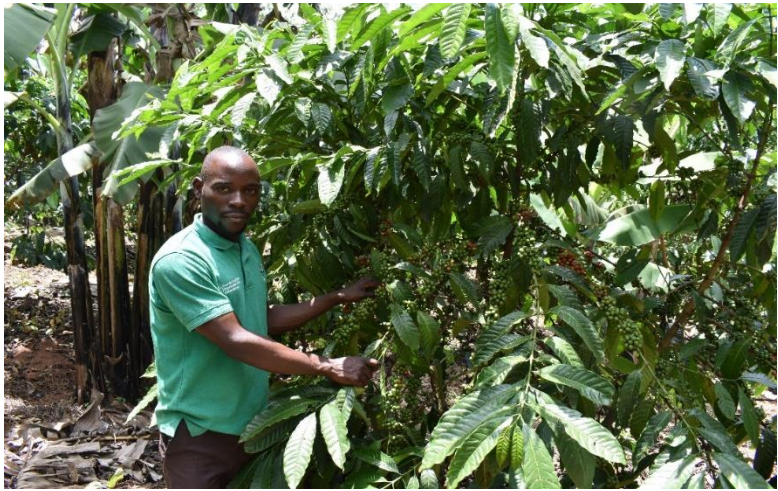


Figure 1 & 2: Meet our Grainpulse farmer, 30-year-old Edward Kizito from Makota village in Buikwe district of Uganda. Edward invested extra income from his Bean farming into his previously neglected coffee plantation after Grainpulse Beans fertilizer blend increased his Beans harvest from a meagre 5 bags per acre to 13 bags per acre. On the left, Edward showing his rehabilitated coffee tree with Grainpulse Coffee fertilizer blend and on the right is his rehabilitated coffee tree without fertilizer.

By Growing Resilient Farmers in Uganda, we are contributing to the **UN Sustainable Development Goals (SDGs)**, which aim to achieve a better and sustainable future for all. Addressing key global challenges including those related to poverty, inequality, climate change and environmental degradation among others will ensure a sustainable planet that can support an equitable and prosperous global society. Through our work with farmers in Uganda we are helping deliver on the UN Sustainable Development Goals (SDGs). Here is how:

Increasing rural incomes

1.4: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

8.2: Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.



Improving market access

2.8: Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information.

8.10: Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all.



Promoting gender & economic equality

5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

10.2: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.



Promoting sustainable agriculture

13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

13.5: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries.

8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation.



Growing Resilient Farmers

Improving agricultural productivity

2.3: By 2030, double the agricultural productivity and incomes of small-scale food producers.

2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices.



Optimizing agricultural water use efficiency

6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals.



Learn more about UN Sustainable Development Goals [here](#).

