



BOUNTIFIELD
INTERNATIONAL



Bountifield Kenya Impact Report

October 2020 - March 2023

Bountifield integrated
with IDE in 2024.
This report portrays
Bountifield's experience
prior to the integration.

IDE

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Executive Summary

Bountifield is pleased to present this impact data report for its postharvest technology program in Kenya. It is a cumulative assessment over three years of activity across Kenya to develop micro-entrepreneurs as postharvest service providers that help smallholder farmers in rural communities who are otherwise without access to resources needed to efficiently process and preserve more food.

In the launch of our Kenya program in 2020, we sought to address three key questions:

1. Are farmers willing to pay for postharvest services, such as threshing and drying?
2. Is there a viable business opportunity in investing in equipment and providing these services for a fee?
3. How can Bountifield unlock financing and co-investments for these operators while incentivizing other actors in the relevant value chains?

Over five seasons, our results show that farmers are indeed willing to pay for services, and micro-entrepreneurs can earn enough revenue to sustain their businesses. We have helped entrepreneurs with catalytic financing in the form of a cost-share to help them take out small asset loans, and they have demonstrated the ability to pay these loans back.

Most of the active micro-entrepreneurs who have gone through the process are now using digital marketing to promote their services and are seeing an increase in demand among farmers reflecting the viability of these business opportunities that fill the gap in postharvest services. This is in the face of external challenges such as drought and high fuel prices.

Today, more postharvest equipment is being sold in the Kenya market thanks to Bountifield, due in part from a growing awareness through digital platforms and word of mouth referrals. Some of our entrepreneurs have direct partnerships with buyers for crops such as cassava, green grams, sorghum, and maize. Our records indicate that farmers are planting more staple crops with the knowledge of access for processing equipment and with our entrepreneurs' growing relationships with buyers for commodities.

This report provides overall results from October 2020 – March 2023 among 47 entrepreneurs working in multiple value chains with a portfolio of tools and services for grains, legumes, and roots and tubers. Highlights include:

- \$80,483 in revenue earned by entrepreneurs providing services to farmers;
- 13,769 farmers directly served; 68,845 individuals benefiting (on average, one entrepreneur is able to reach 655 beneficiaries in one season);
- 3,104,498 Kgs of commodities processed;
- \$1,493,269 value of crops processed;
- An estimated 1,083,571 Kgs of food loss averted;
- 114,760 hours of time saved (14,345 days saved) for farmers, primarily for women;

The following pages will provide a brief overview of the pilot program, an analysis of the data collected, and insights on key learnings and potential to scale.



Program Overview

Bountifield International's vision is an Africa free from hunger, poised to feed the world. Originally born out of General Mills in 1981, we have spearheaded numerous small-scale postharvest technology projects in rural communities globally, increasing food security and benefiting more than one million people along the way. Over the last 40 years, we have developed many prototypes for African, Latin American, and Asian markets with the hopes that it would lead to widespread adoption. Like others in our sector, we learned over time that the problem is less about prototyping new equipment designs, but in figuring out how to achieve a robust distribution model. In most cases, small-scale technology solutions already exist and can easily be adapted. However, the challenge is as much about unlocking supply and financing as it is about creating demand. As such, we have been working to make a difference in these areas.

Today, Bountifield is focused on sub-Saharan Africa where we see the greatest need for postharvest solutions. Until 2021, we worked in the pearl millet value chain in Senegal and in the groundnut value chain in Malawi. We currently work in multiple value chains in Kenya.

In 2020, we launched Mavuno Bora (Swahili for "Better Harvest") in Kenya. Funded by the van Lengerich family and the Seeding the Future Foundation, its focus has been to strengthen Bountifield's business model to realize more impact by unlocking access to cost-effective postharvest tools and services for smallholder farmers. In 2021, we launched "She Feeds Africa," with funding from Zinpro Corporation and Anderson Foundation, to focus on developing



women entrepreneurs as postharvest technology service providers, creating new market access for them as drivers for equitable, inclusive markets.

We have since published two white papers on our learnings in Kenya. The [first white paper](#), released in December 2020, laid out our research methodology and theory of change behind the one-to-many approach for Mavuno Bora. It includes a report on preliminary activities for equipping rural micro-enterprises in Kenya with postharvest technology and service packages to help exponentially more smallholder farmers to process, save, and sell more food. It includes a breakdown of our approach based on three pillars of support for micro-entrepreneurs: technology, business services, and financing.

The [second white paper](#), released in November 2021, showcased initial results obtained with a select group of anchor partners and entrepreneurs, providing a summary analysis of the impact and lessons learned from a roll-out of the one-to-many model through January 2021. Both of these white papers can be found on our website, on our [About Us](#) page.

This third impact report tracks progress over five seasons (October 2020-March 2023) in Eastern and Western Kenya including the counties of Kakamega, Bungoma, Kisumu, Busia, Homa Bay, Tharaka Nithi, Meru, Machakos, Kitui, and Makueni.



To view our white paper and other reports, visit <https://bountifield.org/who-we-are/#publications>

Theory of Change

We have seen firsthand how traditional practices for harvesting, processing, and marketing of grains in Kenya lead to high physical and economic losses. Improved access to mechanized labor can significantly decrease these losses and help rural communities to overcome many of the challenges they experience during postharvest. Bountifield's initial theory of change (ToC) stated that:

“Access, affordability, availability, and utilization of robust, functional and safe to operate postharvest technologies and services to reduce manual labor, maintain quality, and decrease losses of food crops will increase the competitiveness, incomes, and food security of smallholder producers. With the right postharvest tools, technologies and business package, micro-, small-, and medium-sized enterprises (MSMEs) can meet the postharvest demands of farmers, and reach their full potential in the African technology and food markets”

Our ToC was based on three key assumptions: quick and tangible benefits for both entrepreneurs and smallholder farmers; labor-saving, especially for women; and resilience for communities. We identified key projected outcomes, including:

1. Increased earnings and profits
2. Decreased postharvest loss
3. Improved access to technology
4. Time and labor saved
5. Job creation
6. Gained business skills and knowledge
7. Improved food quality, increasing market value



In 2021, we conducted a [Social Return on Investment \(SROI\)](#) analysis to better understand our impact for rural communities, including how our work contributes to the 2030 Agenda for Sustainable Development as laid out by the United Nations. We found that our approach directly contributes to several of the UN Sustainable Development Goals (SDGs) including but not limited to: Goal 1 – No Poverty, Goal 2 – Zero Hunger, Goal 5 – Gender Equality, Goal 8, Decent Work and Economic Growth, and Goal 12: Responsible Consumption and Production.

Based on our data results and qualitative analysis, we have been able to prove the concept for this ToC. Since we started in 2020, we have learned that postharvest technology service provision is a viable business opportunity and provides a tangible alternative for enterprising people, including women and youth, in rural areas. It also has a reverberating impact and offers a path for entrepreneurs to sustain themselves.



Data Learnings & Analysis

The following data was collected over the past three years (October 2020 – March 2023), with two harvest seasons each year for a total of five seasons observed. Our program launched in January of 2020 and the first six months of the program were dedicated to identifying and assessing both postharvest processing equipment already existing in the marketplace and the first cohort of 20 entrepreneurs. Once selected, we onboarded entrepreneurs with technical and business training to get their fee-for-service businesses positioned for success. In June of 2021, we onboarded the second cohort of entrepreneurs followed by a third in December of 2021. Across the three cohorts, business data was collected from 47 entrepreneurs.



With this data, we looked at specific impact areas based on our initial Theory of Change including:

- Revenue
- Farmers served
- Productivity
- Time saved
- Food loss averted
- Loan payback
- Digital marketing reach

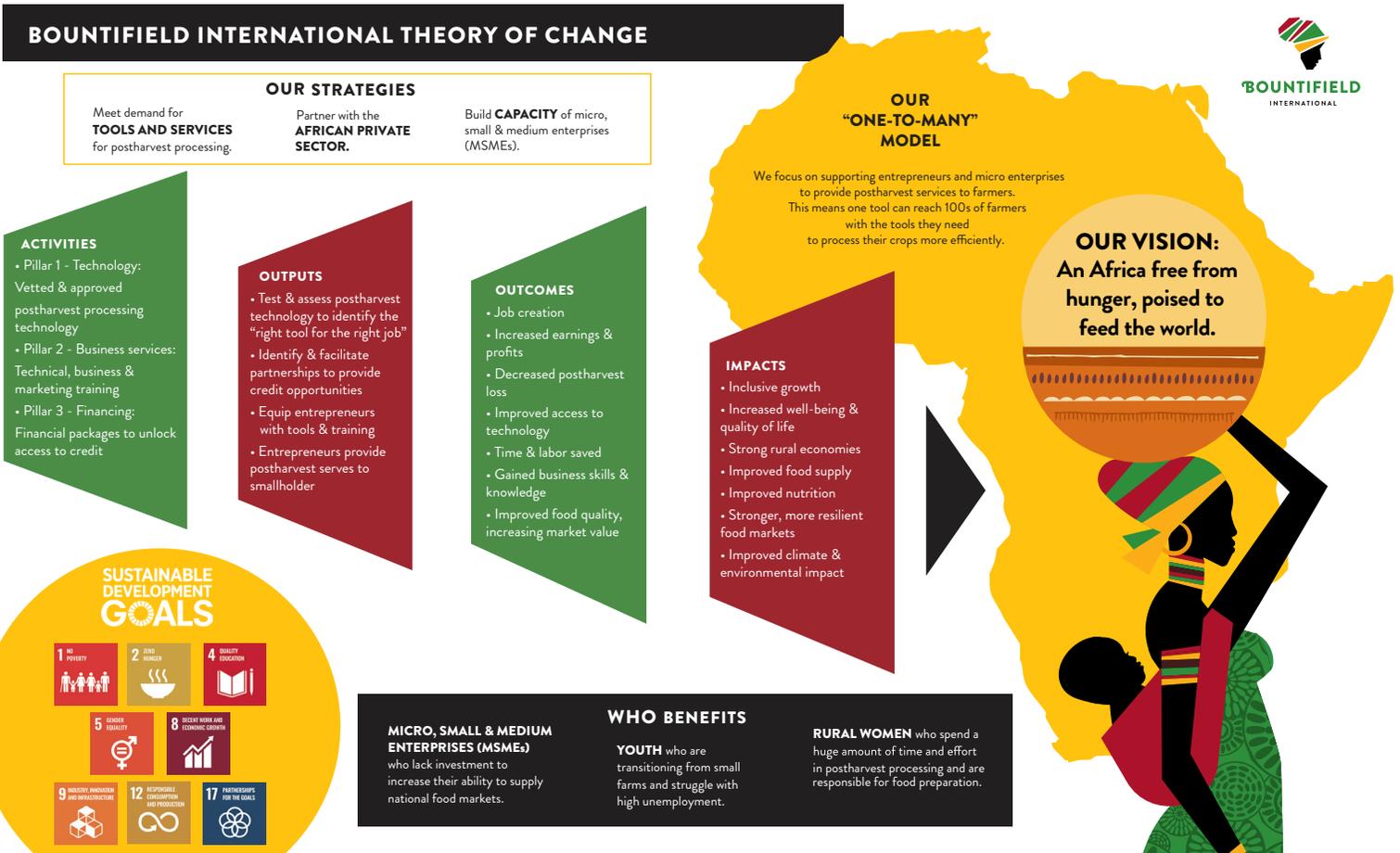


Figure 1: Theory of Change model

Revenue Trends

\$80,463 USD

COMBINED REVENUE EARNED

Over the last five seasons, our entrepreneurs have collectively earned over 9.7 million Ksh, equal to more than \$80,000 USD. While we saw an initial dip in revenue performance from season one to season two, overall there is a clear upward trend of increasing revenues

from season to season as entrepreneurs are strengthening their business offerings and utilizing new marketing skills provided by Bountifield training to expand their reach and community awareness.

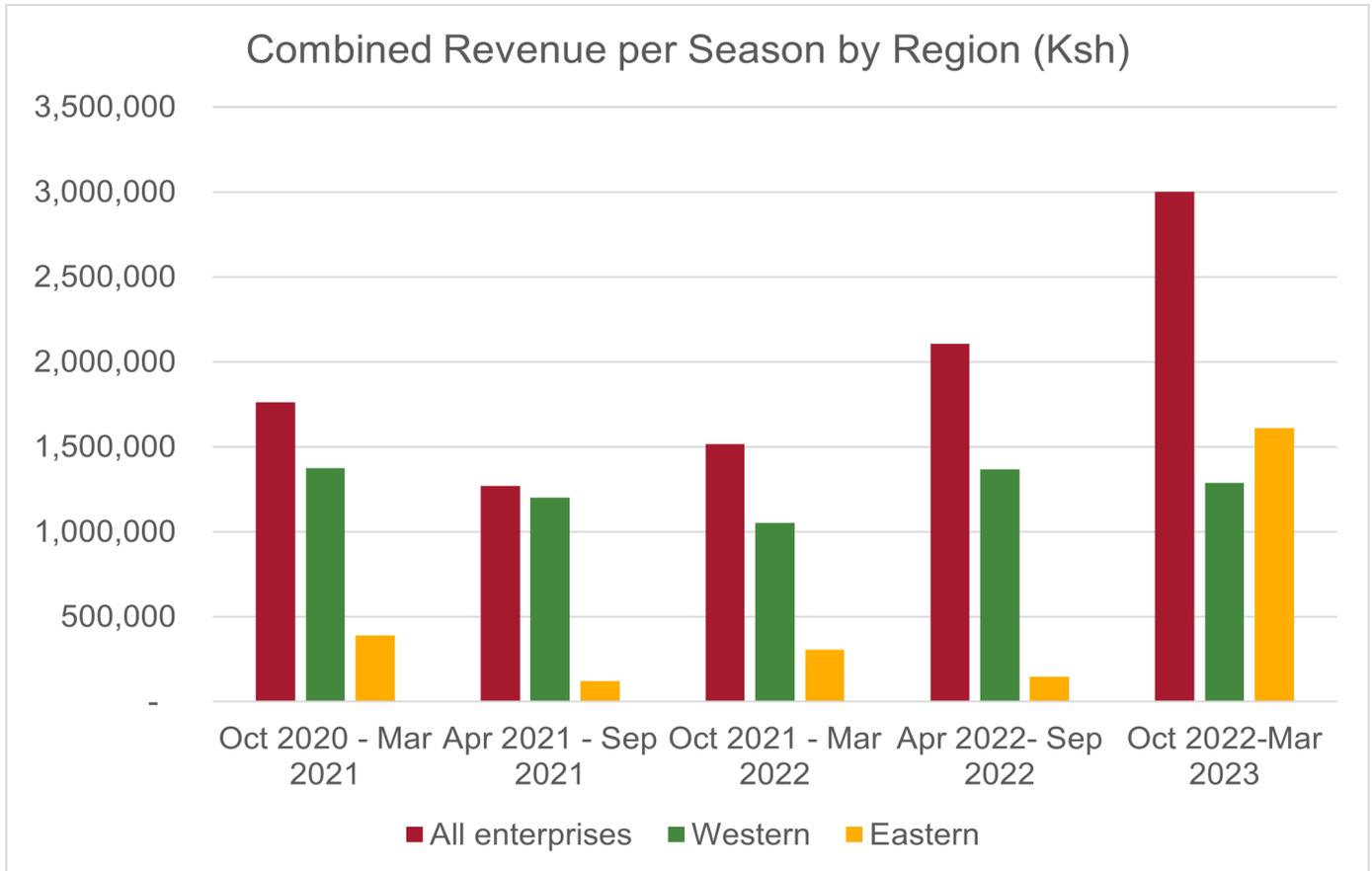


Figure 2: Entrepreneur's earned revenue

Climate Change and Food Supply

In 2021, farmers in Eastern Kenya experienced a severe drought that drastically decreased the amount of viable crops for the harvest seasons through 2022. Entrepreneurs from this region noted that they were mostly unable to provide any shelling or threshing services because farmers' harvests were so low it would cost them more to transport the equipment than they would earn from providing the service. This is reflected in a dip in the revenue data from season one to season two for the Eastern region. In the most recent season, the revenue data shows an increase as this season experienced more rainfall which resulted in more viable crops.

"Currently, the main challenge is climate change with rains being very unreliable, yet most farmers depend on rainfed agriculture to grow their crops," said David, a Bountifield entrepreneur who threshes green grams, millet and sorghum for farmers in Upper Eastern Region.

As climate change continues to impact weather patterns and extreme events, smallholder farmers in Kenya are vulnerable to how this will affect their crops from season to season. Access to processing equipment and appropriate storage practices, will help to strengthen resilience for these communities from these fluctuations.

Farmers Served

One of the key motivating factors in developing our program in Kenya was to address the question of how to reach more smallholder farmers with affordable access to postharvest support. This is the basis of our one-to-many model in which rural micro-entrepreneurs bring technology and services to smallholders that they would otherwise be unable to afford on their own. Over five seasons, our entrepreneurs have collectively served 13,769 farmers.

There is an exponential increase of impact on farmers with every entrepreneur that we onboard with tools, training, and business support. This current data demonstrates a 1:131 entrepreneur to farmer ratio per season. We know that each farmer is benefiting from time, labor and cost savings, plus increased food supply for both the household and for market, stimulating increased incomes for farmers. These benefits are enjoyed not just by each farmer but also by their entire household. With an average Kenyan household size of five people, this increases the 13,769 farmers served to 68,845 beneficiaries over five seasons. Taking this into account, we can therefore extend the 1:131 entrepreneur to farmer ratio to 1:655 entrepreneur to beneficiary ratio per season, demonstrating even greater impact for rural communities.

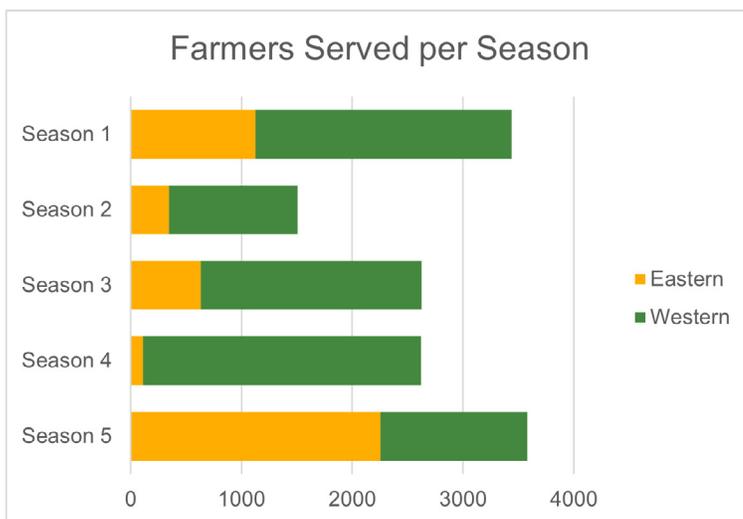


Figure 3: Number of farmers served

13,769 FARMERS SERVED

68,845 PEOPLE BENEFITED

Increasing Demand for Postharvest Technology

An important component for our micro-entrepreneurs to be successful is the demand for the equipment that is used to provide the service. With any innovation introduced into a particular market, there are varying levels of interest from potential customers. Ideally, awareness of the benefits from using the tool will spread, leading to an ultimate tipping point for demand.

Since Bountifield introduced and promoted quality equipment, our Kenya team has reported to having regular inquiries about how one can get access to a particular machine, either through one of our entrepreneurs or to purchase one of their own. In addition, the local supplier that we use in Kenya has stated that orders have greatly increased, and he is now importing postharvest equipment in greater quantities than prior to working with Bountifield. While we have not tracked his increase in sales, the feedback we are receiving is a positive indication that we are in fact sparking a demand for mechanization that is promising, and lends itself for Bountifield and others to provide post-sales and training support as a key service.

“Since 2020, our collaboration with Bountifield has grown our business beyond the Rift Valley where we conventionally operated. We now have business in Eastern, Western and the Coast of Kenya. Thanks to Bountifield International for expanding our market for the machines and service parts, and helping us provide better after-sales services to our clients.”

Mosek Farm Machinery - Bountifield partner equipment supplier

Productivity Trends

Over five seasons, our entrepreneurs have supported farmers by processing 3,123,157 Kgs of commodities ranging from maize, sorghum, green gram, cassava and more. The value of this is estimated at \$1,519,457 USD, reflecting a significant increase in revenue opportunity for smallholder farmers.

Maize is by far the leading crop whereas sorghum is the fastest growing commodity among cereals showing a 257% increase in season five over season four. This is significant as sorghum is highly nutritious, it is a staple in African diets, and it is a heat and drought tolerant crop. However it is difficult and time consuming to process. Since the start of our program, entrepreneurs have reported that their farmers are interested in increasing their acreage of crops such as maize and sorghum since they now have access to tools that drastically improve the postharvest processing of these crops.

257% INCREASE IN SORGHUM PRODUCTION FROM SEASON 4 TO SEASON 5

Supplying the Market with Crop Aggregation

At the beginning of the program, a few of our entrepreneurs also worked as aggregators serving as a bridge between farmers and buyers. But with limited access to the means to efficiently process their harvests, they had limited quality supply. Now having introduced mechanization to their farmer customers, these same entrepreneurs are experiencing large increases in their aggregation business. This shows that through the access to postharvest equipment, farmers are able to greatly increase the quantity and quality of local food supply for the Kenyan market. As this output increases, we are seeing other Bountifield entrepreneurs venture into aggregation as well.

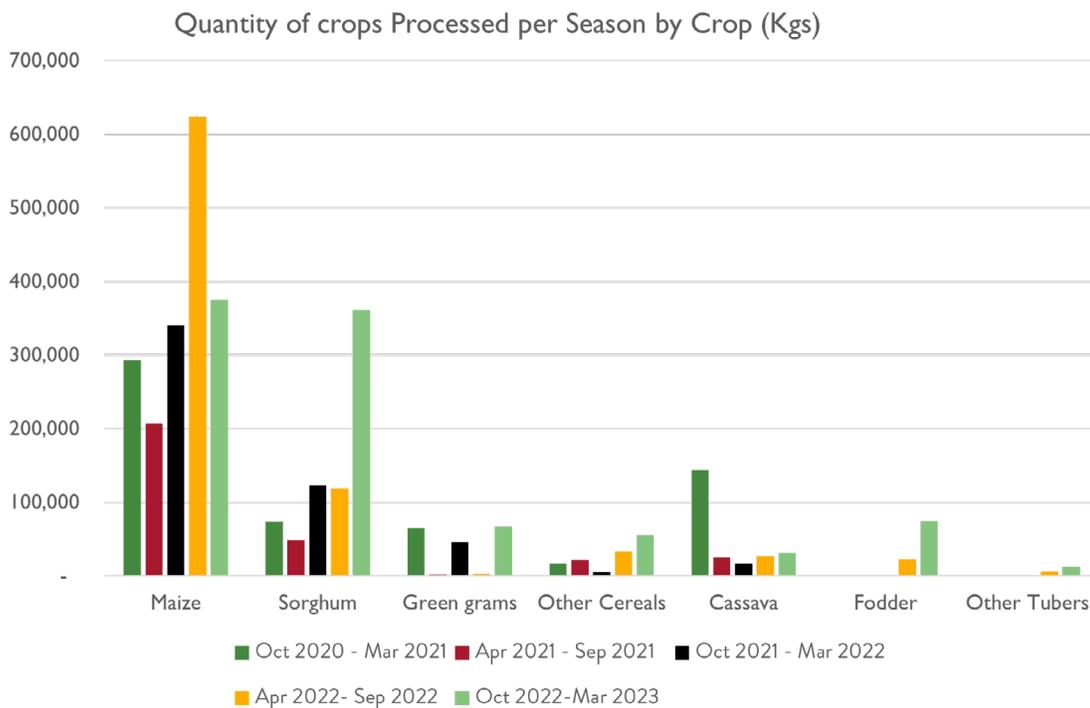


Figure 4: Amount of crops processed

3,123,157 Kgs
CROPS PROCESSED

\$1,519,457 USD
VALUE OF CROPS PROCESSED

Time Saved

114,760

HOURS SAVED

A key benefit of mechanizing the postharvest process with access to equipment is the amount of time that can be saved as compared to manual threshing and winnowing. Between October 2020 and March 2023, Bountifield entrepreneurs helped farmers, 70% women, collectively save 114,760 hours of time that otherwise would have been required to process their crops. This translates to an impressive 14,345 days worth of manual labor saved.

Many of the women we have spoken with said that this valuable time has allowed them to focus on other activities on the farm and within the household. They report having more time to rest and also to take up new revenue-generating opportunities with value-addition.

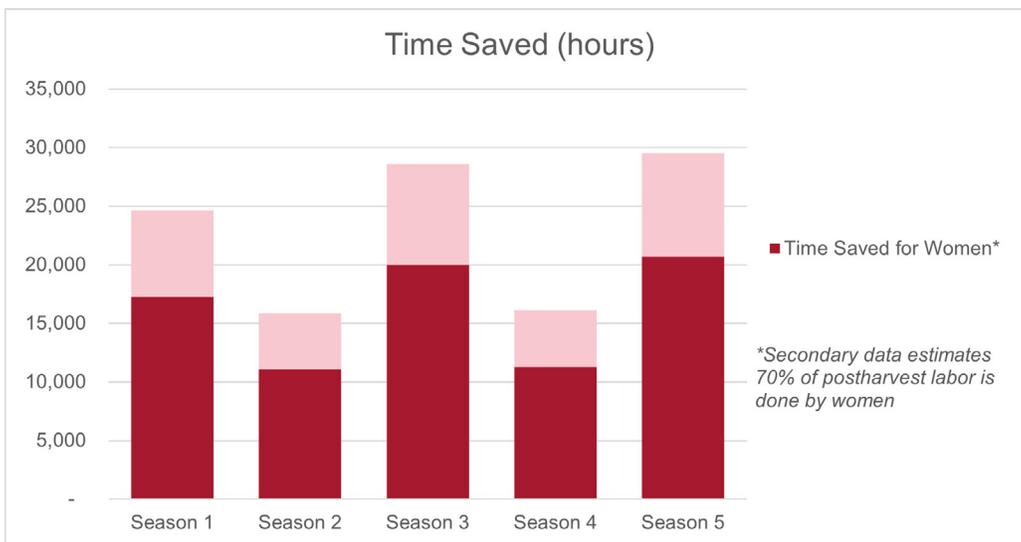


Figure 5: Hours saved per season

"I have seen for myself how the thresher works. To me, using the thresher is much better than using manual labor because it takes less time. Here we have taken less than 2 hours, a task that would have otherwise taken two or three days to process manually."

Linah – a green gram farmer served by a Bountifield entrepreneur

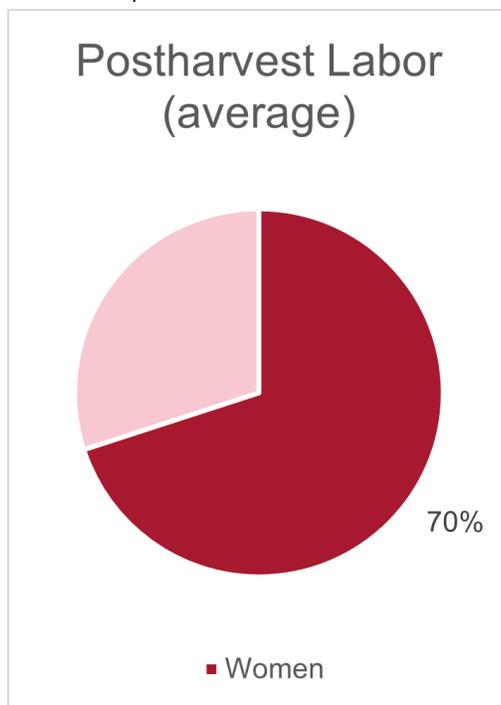


Figure 6: Division of postharvest labor



Food Loss Averted

1,083,571 Kgs

FOOD LOSS AVERTED

Over the past five seasons, we estimate that entrepreneurs have collectively helped farmers to avoid an estimated 1,083,571 Kgs of food loss. This means more food is available at both the household level and available for

farmers to sell to markets. Farmers have shared how much quicker they can process their crops with access to mechanization, and how this has led to a reduction in food loss from previous years.

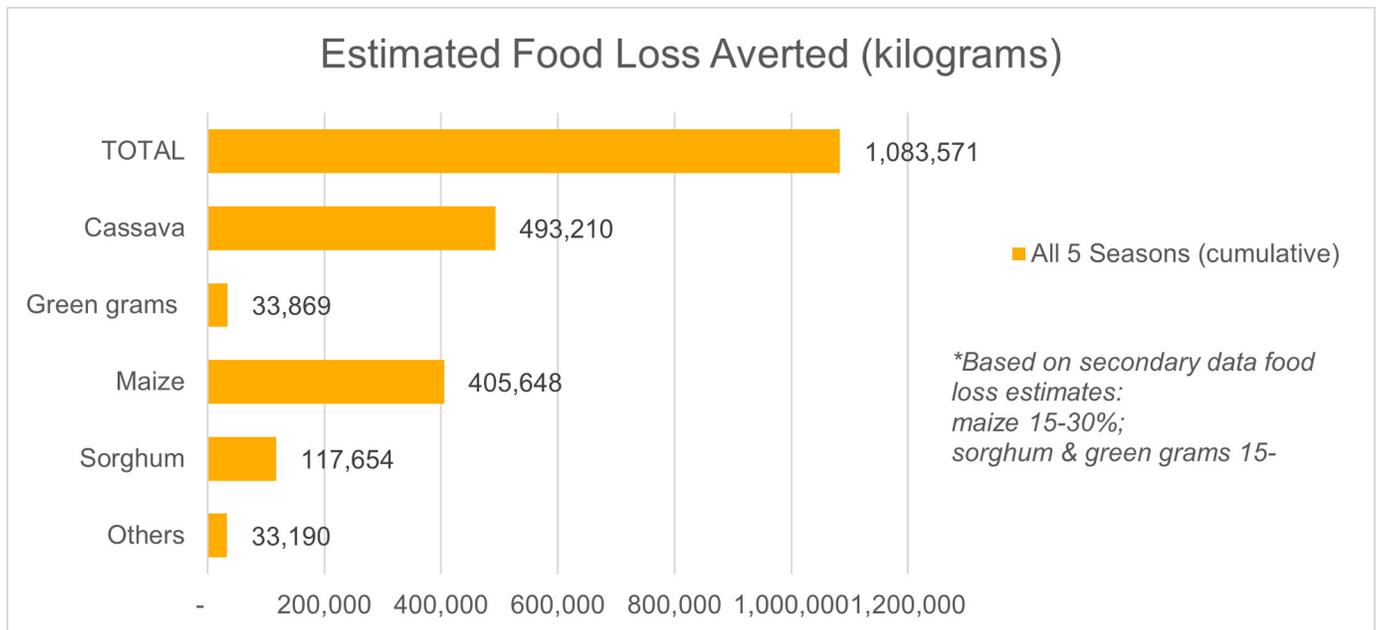


Figure 7: Food loss averted cumulative across all five seasons

Postharvest Food Loss

While the exact amounts vary depending on the crop, the Food and Agriculture Organization of the United Nations (FAO) estimates that 30-40% of food is lost postharvest. This loss can occur at various stages of the value chain but for smallholder farmers, much of this loss occurs because they are unable to process their crops before spoiling or contamination occurs due to the significant amount of time and labor that is required for manual processing. This is where we see postharvest solutions as critical for strengthening food security for rural communities and entire nations. Smallholder farmers have benefited from investment in improvements for production that increase their yields, however, if they cannot efficiently process, it results in food loss.

Reducing food loss is critical for rural communities who are struggling with more extreme weather patterns and poor soil quality, and as a result, have less yields and uneven seasons. Investing in postharvest processing solutions for smallholders improves food security and supports a climate adaptation agenda.



Equipment Payback

One of the key questions we had in launching the program was whether or not the entrepreneurs would be able to earn enough through their fee-for-service businesses to payback their loans. Overall, active entrepreneurs have repaid 75% of their loans and are on track or have agreed to finalize the remaining balance by the end of the year. Youth entrepreneurs, in general, outperformed others by achieving a repayment rate of 80%.

There was no significant difference seen between the repayment rate from entrepreneurs from Eastern or Western Kenya, despite the impacts of the drought decreasing revenue for the Eastern region in seasons two and three. However, we did see a higher repayment rate from women in Eastern as compared to men in this region. This signifies that the entrepreneurs also have diverse incomes that can help them pay back their equipment in seasons of poor harvest and are committed to making payments on their loans.

Overall, our data shows that entrepreneurs are able to payback their loans on the equipment procured.

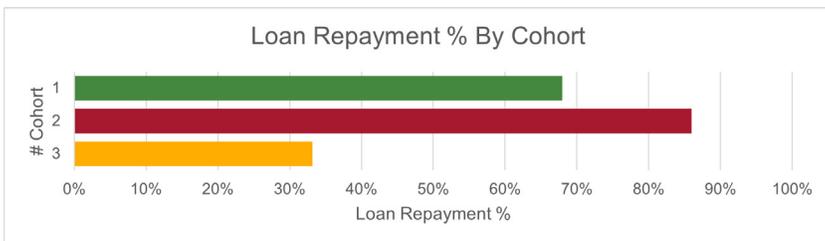
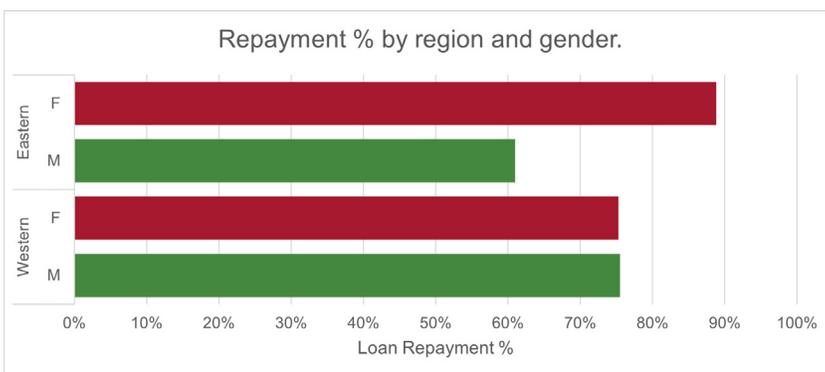


Figure 8: Entrepreneur loan repayment based on onboarding date



12 Figure 9: Entrepreneur loan repayment by region and gender

Creating Opportunities for Women and Youth

As recently reported by FAO, 66 percent of women’s employment in sub-Saharan Africa is in agriculture illustrating that “agrifood systems are a key source of employment for women, especially those aged 15-24¹.” In addition, the youth demographic is booming with youth under the age of 30 accounting for 70% of the population of sub-Saharan Africa, making it the youngest region of the world². Increased investment in opportunities for these two groups represent a significant potential and key strategy to strengthen local food systems of rural communities.

At Bountifield, we work to level the playing field by improving access to postharvest support that historically has been lacking for micro-enterprises, and women and youth, in particular. While we work with entrepreneurs of all genders and ages, we have seen great successes from the women and youth with whom we partner in various aspects of their businesses, with a passion for growing and expanding their postharvest ventures. We’ve also seen a boost in confidence, particularly from women, in their business potential and technical capabilities.

“At first, I did not know that I could operate a machine because I had the perception that it was too dangerous for a woman. But with training from Bountifield, not only can I operate the machine, but I also have a motorbike, I can shell maize with the thresher, and I also have a machine to make cattle feed.”

Winfred – Bountifield Entrepreneur and owner of Belldev Farm Solutions



1. Food and Agriculture Organization of the United Nations, “The Status of Women in Agrifood Systems.”
2. United Nations, “Young People’s Potential, the Key to Africa’s Sustainable Development.”

Digital Marketing

In 2022, we launched a digital marketing component to our business support with the intention of helping entrepreneurs increase their reach of potential farmer customers. Our initial training included 11 of our entrepreneurs, followed by an additional group of 22. All 33 of these entrepreneurs were provided consultation on formalizing their enterprise with business names and branding, official registration through appropriate government channels, and setting up digital marketing and social media platforms.

After our training, the entrepreneurs used their digital accounts to market their services and products. Those using digital marketing tools saw a 42% increase in volumes processed, resulting in 36% more income, on average. Several of them reported increased sales for other business lines such as agricultural inputs, ploughing services, aggregation services, crop, and animal protection services, among others. The ability to use digital media to promote all their products and services makes this a very attractive proposition to the entrepreneurs and helps them build successful businesses year-round.

42% INCREASE IN VOLUMES PROCESSED

36% INCREASE IN REVENUE

Embracing Digital Marketing for Agribusiness Growth

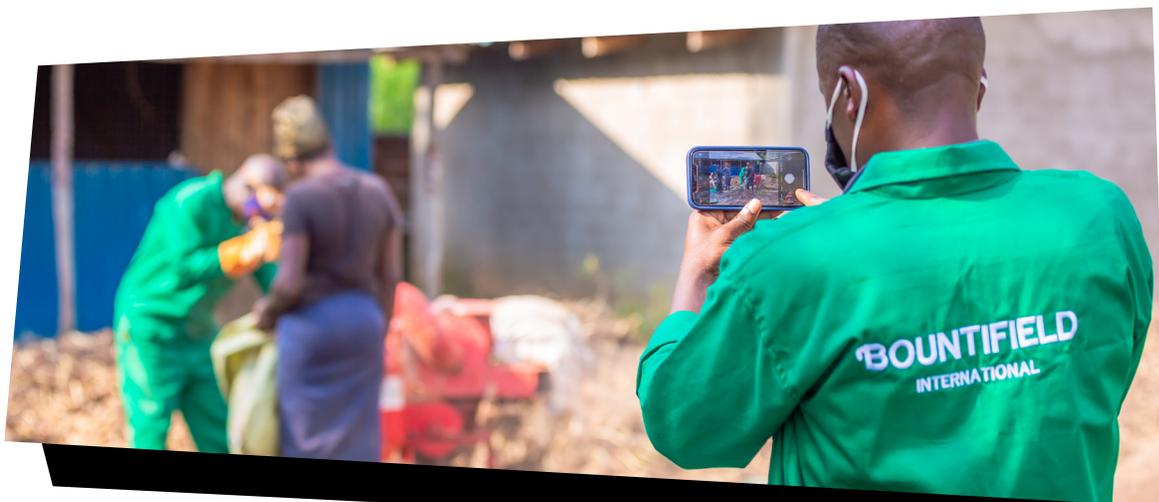
After participating in training on digital marketing, Marlone took the initiative very seriously and embarked on establishing and growing his business on multiple digital channels including Facebook, Whatsapp, and LinkedIn. He is actively promoting his postharvest business and last season he managed to expand his reach through the use of his various digital marketing channels which translated to more customers.

“Digital marketing has helped me to grow my customer base as well as expand my business to neighboring villages. Through Facebook and Whatsapp I managed to connect with farmers who today I help with managing their farms at a fee as well as thresh their crops during harvesting season. Digital marketing has also enabled me to easily maintain my customers. I am now able to keep in touch with them throughout the season and they know where they can find me any day, any time.”

Marlone – Bountifield Entrepreneur and owner of Bukiri Farmers Service Center



Bukiri Farmers
Service Centre



Key Learnings

Overall, that data shows a strong proof of concept for our program model of developing micro-entrepreneurs as postharvest service providers for smallholder farmers. Over the course of five seasons, we feel confident that we have adequately addressed our initial questions set forth during the development of the program.

Not only are farmers showing a willingness to pay through the growing numbers of farmers served, but we are also learning that farmers are saving money by paying for mechanized processing as compared to what it cost to pay individuals for their manual labor. Farmers are recognizing not only the time and cost saving component, but also an improved quality of crops from the decreased breakages normally caused by manual labor, greatly increasing their overall ROI for postharvest processing.

The entrepreneurs have not only shown that they can earn a revenue from their business, but they have expressed they find value in combining their processing services to other lines of products and services they have available for farmers. We have even seen many entrepreneurs already purchase additional pieces of equipment and several others express interest in acquiring more with the desire to grow their business offerings further.

Entrepreneurs have **improved their results over time**. Despite conditions such as drought or high fuel prices, they have shown their resilience and their drive to grow their business. For example, some of the entrepreneurs within Bountifield's network have listed multiple business lines that have benefited from digital marketing support they have received that has greatly increased their customer base during the postharvest season. This has spilled out into other activities and into the next season,



effectively increasing their overall reach to a broader range of customers.

The impact on farmers is undeniable. Positive changes include time and arduous labor saved, primarily for women; increases in production and therefore, food availability; improved crop quality leading to higher prices for those who sell their surpluses; enhanced animal nutrition resulting in more milk for the household; decreased losses from manual processing, which is food and money. There is a significant increase in volumes of crops processed and revenue generated in a relatively short time span. For women and young people, there is new capacity and income generation. There are both nutritional and health benefits. And, since most households in Kenya are net food buyers on an annual basis, they benefit from cost savings and improved food security when market prices rise.

Financing proved to be most difficult. While commercial banks are an obvious lending partner, small asset loans represent an administrative cost that has made it a challenge. This, coupled with entrepreneurs' reluctance to take on formal debt, limits the potential to scale this activity through conventional loan products. Micro-finance institutions and SACCOs are more geared toward the provision of smaller loans for rural entrepreneurs.

"I want to expand my business by saving and acquiring up to five postharvest pieces of equipment. With the chopper shredder on the way, my farmers will improve the quality of poultry and other livestock. My poultry chicks supply business will benefit from this initiative."

Regina – Bountifield Entrepreneur and owner of Regipaul Enterprises

Way Forward

Bountifield sees an opportunity to introduce more financial stability and more scaling potential into this model that could even include some franchising components. One way to do this is to onboard MSMEs with slightly larger businesses and multiple business lines in the food and agricultural sector as well as micro-entrepreneurs.

Our analysis shows that MSMEs have more links to markets and a larger customer reach, but have yet to solve the challenge of stable quality supply. By working with them to provide postharvest technology and service packages, we can deepen the potential to scale impact. Bountifield is keen to deepen a social enterprise model with more investment potential. For example, a model like the Franchise Impact Solutions Facility (FISF), uses a blended financing solution to help small enterprises access affordable loans with low interest rates. The FISF is being spearheaded by Total Impact Capital (<https://www.totalimpactcapital.com/about>)



Such a model would include a technology fund and local financial partners to service the loans. Bountifield's services (and perhaps others) could be included in the cost of the technology/service packages provided. The technology fund itself would be replenished when impact investors buy the package of loans. A postharvest technology fund could be revolving to help future borrowers access affordable financing.

This has the potential to unlock capital and finally tackle the postharvest challenge within Kenya. Bountifield has already shown it can work on a smaller scale. The impact data and testimony included in this report indicate that there is an appetite from farmers and entrepreneurs to expand this program across multiple markets, creating stronger, more resilient food systems across Africa.

The Importance of Local Partners

When we first started working with our “anchor partners” in Kenya, they were already working with numerous micro-entrepreneurs on agricultural inputs and capacity building. They have been strategic in helping Bountifield to both identify potential entrepreneurs for our program but also to the finance component of supplying and collecting repayments on loans for the equipment. In many cases, postharvest mechanization has added value to their existing work. Partnerships are essential to achieve a strong ecosystem of supply, demand, and ongoing support.

For example, our work with Cereal Growers Association (CGA) has also contributed to their network of farmer service centers (FSCs), which are already working with entrepreneurs to offer tractor services, inputs, and services to smallholders in Kenya. Similarly, partnership with FIPS Africa has improved opportunities for Village-Based Agricultural Advisors within their network to help smallholders. We hope to see more partnerships, including African buyers and finance institutions as this work expands over time.





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Bountifield International is a 501(c)(3) nonprofit.