

# 2018 Annual Impact: Country Report

April 2019  
*M&E Report*



## Summary of Results








**Total Program Impact.** One Acre Fund farmers experienced lower dollar impacts in 2018, owing largely to a sharp decline in maize prices in several of our countries of operation. While harvest improvements compared to non-participating farmers remained as strong as in the past, the drop in selling price will seriously hurt profitability. To take an example: at 2017 prices, Uganda’s program impact would have been the strongest ever at \$125 per farmer. However, due to a dramatic drop in maize prices, impact reduced to \$23 per farmer.

The table below presents our impact in terms of “annual impact”, which reflects the additional profit farmers gained this year and “asset impact” which reflects the lifetime impact of products, like trees, which accrue benefits over multiple years. To estimate “annual” impact, we collected detailed data on farming inputs including labor, ploughing, and seed then subtract these costs from physically measured and monetized harvests. We compare One Acre Fund farmers’ profits to similar neighbors who are subject to the same agro-ecological conditions and we statistically control for other differences (such as education and wealth). In 2018, we conducted over 25,000 physical harvest measurements across 7 countries and 5 different crops. To estimate “asset” impact we conduct individual studies on all products, such as trees and solar lights, discounting future benefits and accounting for depreciation. We then multiply the lifetime impact by the adoption rate.

Across all of our country programs, One Acre Fund farmers made an additional \$60 in annual agricultural profit compared to similarly situated farmers in their same agro-ecological zones. They also made, on average, another \$31 in profit from our add-on products.<sup>1</sup> Put together, this represents an additional \$91 in profit, and a 42% increase (from those activities), relative to non-One Acre Fund farmers.

We also feel it’s important to understand the farmer’s Return on Investment (ROI), because they invest their hard earned money plus interest in this program. ROI is the extra profit a One Acre Fund farmer makes relative to a comparison farmer for every extra dollar (s)he invests in our program. A 100% ROI means that our clients received \$1 USD of **extra** profit for every \$1 USD of extra cost invested. In 2018, we surpassed our goal of 100%, achieving an average 113% ROI.

**Total Program Impact**

	Total Impact \$/Farmer	Annual Impact \$/Farmer	Asset Impact \$/Farmer	Total % Increase in Income	Return on Investmen t
Kenya 	\$ 90	\$ 47	\$43	32%	102%
Rwanda 	\$ 124	\$ 98	\$ 26	70%	192%
Burundi 	\$ 78	\$ 67	\$ 11	57%	471%
Tanzania 	\$ 17	\$ 0.24	\$ 17	16%	10%
Uganda 	\$ 23	\$ 18	\$ 6	47%	23%
Malawi 	\$ 7	\$ 4	\$ 4	35%	6%
Zambia 	\$ (39)	\$ (40)	\$ 1	-13%	-9%
<b>WHOLE PROGRAM (Weighted Average)</b>	<b>\$91</b>	<b>\$ 60</b>	<b>\$ 31</b>	<b>42%</b>	<b>113%</b>

<sup>1</sup> Asset impact reflects the *average* farmer in our program. If an add-on product adds an estimated \$50 of impact per adopter but only 20% of farmers adopt the product, then the average impact per farmer = \$50 \* 20% = \$10.

## Methodology in Brief

**Agricultural Impact.** To generate our profit impact data, we survey thousands of One Acre Fund farmers and compare that data with similarly situated comparison farmers, who live in the same area, and thus face similar agro-ecological conditions. To minimize differences between program and comparison farmers, we get recommendations from One Acre Fund farmers on their friends and neighbors who are “interested” in joining our program, where possible. We also match comparison farmers and One Acre Fund farmers on characteristics like gender, wealth, household size, and education when we have large enough samples. This allows us to obtain the strongest comparison possible across as wide a geographic sample as possible.

We conduct two surveys to inform our impact estimates. In the first survey, we collect comprehensive farming input data on everything from fertilizer and seed cost to labor days expended. We also get an estimate of a farmer’s land size dedicated to One Acre Fund inputs and their overall land size. In the second survey, we randomly select two small plots of land, then harvest and weigh each crop. For most crops, we take a “wet” weight of freshly harvested crops and then a “dry” weight (after maize is shucked and dried, for example), which is the weight most relevant to both selling and consuming the grain. In 2018, we took over 25,000 harvest measurements. We then monetize this harvest, based on prevailing local market prices, in order to estimate farm revenue. From these two rounds of data collection, we have all the data we need to calculate total farmer profit (revenue minus costs) of One Acre Fund farmers and compare it to similar non-participating farmers.

**Asset Impact.** To understand the impact of our asset products, like solar lights and trees, we similarly collect data from One Acre Fund farmers who adopt these products and those who don’t. For solar lights, as an example, we track monthly spending on kerosene, flashlight batteries, cell phone charging, and other related expenditures, to understand the amount of savings a solar lamp provides. As much as possible, we randomize the opportunity to adopt a new product so that we can most rigorously assess the impact (See [this paper on randomized controlled trials](#) for more information). For these long-term products in which the pay-off is years in the future (as is the case for trees) or accrues over several years (as is the case for solar lights), we discount future benefits.

We feel it is important to capture and transparently report on this longer term impact because we feel that eradicating poverty involves both : (1) day-to-day income impact to alleviate the immediate harmful effects of poverty, such as hunger, and (2) long-term asset accumulation that presents more opportunity to actually get out of poverty entirely.



## Kenya Impact 2018

**Country Context:** The Kenya program launched in 2006, and is One Acre Fund's oldest program. We primarily support farmers in growing maize and beans over one long season, with credit for both improved seed and fertilizer supplemented by frequent training. We offer a range of additional add-on products such as solar lights, vegetable seeds, improved crop storage bags, cook stoves, and sanitary pads. Kenya has a robust innovations laboratory with a large pipeline of new agricultural and other products, such as poultry, new organic soil matter interventions, and maize harvest buy-backs. In 2018, we served over 361,000 farmers over the "long rains" growing season.



**Impact Results and Trends:** Participating One Acre Fund farmers added **\$47**, on average, in annual agricultural profit in Kenya. Add-on products (e.g. trees, kale, and solar lamps) added another **\$43** to our average impact. All together, this represents a **32%** improvement in profits relative to the comparison group. Between 2017 and 2018, dollar impact decreased by \$68 per farmer<sup>2</sup>. This was largely due to a decrease in maize prices for all farmers. However, to further drive up impact, the Kenya team is focusing on key behavior change projects to increase planting and intercropping compliance. Additionally, the Kenya Program is investing in several new innovations with large impact potential. These include: locally optimized maize agronomy packages, vegetable packages, an improved poultry product, and commercially-oriented tree products.

## Rwanda Impact 2018

**Country Context:** The Rwanda program, launched in 2007, is One Acre Fund's second-oldest. We serve farmers across a broad swathe of the country, providing fertilizer on credit and frequent training over two growing seasons. Farmers commonly grow maize, climbing beans, bush beans, potatoes, and rice. We offer a range of additional add-on products such as solar lights, cook stoves, and trees. In 2018, in the A season, we delivered inputs to over 275,000 farmers and added 48,000 additional farmers during the B season.



In addition to our core program, we support Rwandan farmers nationwide through government partnerships, which help bring high quality agricultural extension training to every village in Rwanda and supply fertilizer to a large network of agro-dealers. In addition, we are

<sup>2</sup> We adjusted all 2017 estimates to use the same asset impact calculations in order to make valid comparisons over time.

working with the government to develop the seed sector in Rwanda and ensure the best varieties are grown and available locally in the country.

**Impact Results and Trends:** Participating One Acre Fund farmers achieved an extra **\$98** in agricultural profit over the two growing seasons. Add-on products (trees and solar lamps) added an additional **\$26** to our average impact. This represents a slight decline in impact of \$15 per farmer, which we attribute to a combination of factors including, lower overall selling prices and moderately increased fertilizer costs. Altogether, this \$123 of impact represents a **70%** improvement in profits relative to a comparison group. Rwanda achieves higher percent improvements than many other countries because the baseline profit is relatively low.

An important piece of context is that non-participating farmers have improved access to training through farmer promoters and inputs through agro-dealers. The One Acre Fund program also has very high penetration in most areas, and farmers typically cycle in and out of the program. There are some areas in which it is very difficult to find comparison farmers who have not yet been in the program, and those who have not might have picked up farming practices from participating farmers nearby. While all of this represents a measurement challenge, we view the overall as great news for farmers nationwide.

### Burundi Impact 2018

**Country Context:** Burundi, launched in 2011, is One Acre Fund’s third country program. We support farmers in growing maize, beans, and potatoes over two seasons, with credit for fertilizer and training. The government subsidizes fertilizer costs, so many farmers use fertilizer for maize, beans, potatoes, coffee, and tea. Our primary programmatic advantage is therefore our intensive training, which helps farmers gain better yields without spending much more on inputs than their neighbors (sometimes they even spend less due to efficient application). We also offer solar lights, trees, and hybrid maize seed. In 2018, we served over 93,000 clients, but had some difficulties in negotiating with the government which forced us to shut down the program part way through the A season, which meant that not all clients received the full course of training. In B season, as negotiations with the government continued, we were able to distribute fertilizer to over 73,000 farmers but were unable to offer training. Therefore, our impact estimates for Burundi are based on prior annual data and the assumption of a reduced training impact.



**Impact Results and Trends:** We estimate that we likely added average **\$67** in agricultural profit over the two seasons for our Burundian clients. We further estimate that add-on products such as trees and solar lamps likely added an additional **\$11** per farmer, on average. Moving forward, adding to growing impact via new seeds and products, we are working to increase adoption of our existing practices, and collaborating with the government to connect farmers to buyers and markets where they can receive a higher price for their harvest.

### Tanzania Impact 2018

**Country Context:** The One Acre Fund Tanzania program launched in 2013. We support farmers in growing maize over one long season, with credit for both improved seed and fertilizer and frequent training. We provide optional add-on products to improve farmer impact beyond maize, such as solar lights and improved harvest storage (PICS) bags. This year, we also began offering non-maize fertilizer and training for common crops, such as beans, potatoes and coffee. The average farm size in Tanzania is greater than in the other

countries where we operate, and oxen use is quite common, which urged us to think more creatively about our planting training. In 2018, we served 39,000 clients.

**Impact Results and Trends:** Tanzania had a difficult year in terms of generating maize impact mainly due to a massive decline in maize prices. Harvests yield improvements were decent, and we improved on maize by 17% compared to controls. However, selling prices plummeted to half of 2017 levels, which meant that maize profitability was greatly hit for all farmers. Due to the expense of the program, this year clients made almost no additional profit on their maize crops. As a comparison, at last year's prices, One Acre Fund farmers would have had \$88 in agricultural impact. However, overall per farmer impact was helped by our asset-building add-on products which added **\$17** of impact and our insurance payouts added another \$9.

We are taking the reduction in maize prices seriously. While maize continues to be our clients' most important crop, in the current 2018/2019 agricultural season we are encouraging and empowering farmers to invest in crop diversification to improve their resilience. Tanzanian clients are also offered targeted fertilizer options and training on nine additional common crops. This reduces vulnerability to price fluctuations on any one crop while also allowing for improved farmer nutrition, reduced pest and disease load, and increased soil health.

### Uganda Impact 2018

**Country Context:** Our Ugandan program officially launched in 2017. Farmers are offered a package of maize, which includes seed and fertilizer, as well as add-on products that include solar lights, Malathion dust to prevent damage from pests, drying sheets to dry and maintain produce-quality post-harvest, and PICS bags to safely store maize. The program typically covers the long rains growing season. In 2018, we served close to 11,000 farmers.



**Impact Results and Trends:** Similar to Tanzania, Uganda was particularly hit hard by dramatically low maize prices, nationally, which hurt profitability for all farmers. Nevertheless, in 2018, we were able to observe **\$23** in agricultural profit for participating farmers. However, this obscures the massive improvement in harvest yields (over 150% compared to non-participating farmers), which was our greatest yield improvement in Uganda to date. At 2017 maize prices, this would have translated into \$128 in impact. Add-on products added another **\$18** to our average impact, mainly from solar lights and PICS bags. Despite the modest dollar impact, One Acre Fund farmers had **47%** more profit relative to a comparison group, who also did quite poorly in tough 2018 market conditions. To further improve dollar impact for the coming season, we are diversifying our product portfolio to include bananas, coffee, and maize-bean intercropping across the entire program. Through this, we hope to help farmers diversify their income sources and build a deeper level of financial resilience in years were one crop is not as successful as another.



## Malawi Impact 2018

**Country Context:** Our Malawi program officially launched in 2017. Farmers are offered a package of maize, that includes seed and fertilizer, as well as the option to purchase, an add-on, solar lights. The Product Innovations team is also trialing sorghum, pigeon peas, as well as groundnuts, and we will be offering these products in subsequent seasons. In 2018, we served nearly 13,000 farmers.



In addition to our regular program, One Acre Fund, has partnered with the Malawian government to enhance an agricultural extension program in several districts. This program will shift towards tree distribution in coming seasons.

**Impact Results and Trends:** Malawi struggles with periodic drought and rain, which makes agricultural impact generation a challenge. But it's a challenge that we feel is worth the effort. In 2018, we improved maize harvests by a strong 70% compared to non-participating farmers. However, harvests overall were incredibly low in 2018 (80% below the preceding year), and some farmers experienced total crop failure. Therefore, agricultural profit was difficult for all farmers. Still, One Acre Fund farmers added **\$7** of profit per farmer, and were paid out **\$24** in insurance payouts. We estimated that add-on products contributed an additional **\$4** in profit, after we revised our solar light impact estimates downwards, acknowledging an increased availability of lights in the region. While these numbers may appear low, this still represents an increase in 35% profit (for One Acre Fund supported activities) given the overall low profits in the region in 2018. In the coming year, we are focused on addressing some of these challenges through various initiatives including introducing a more diverse crop offering to our package and prioritizing agroforestry work to enhance farmer resilience and to promote asset-building.

## Zambia Impact 2018

**Country Context:** Our Zambia program is still a pilot country having not officially "launched" yet. In 2018 we served just over 7,000 farmers. Zambia is unique among our countries of operation in that it is more sparsely populated and farmers cultivate larger tracts of land. Instead of purchasing credit for ½ - 1 acre of inputs, as do most One Acre Fund farmers, Zambian farmers take out an average of 3.5 acres of inputs. The impact potential is therefore relatively large, as is the potential for One Acre Fund's financial sustainability in this market. In 2018, farmers were offered a core package of maize, inclusive of seed and fertilizer, as well as the option to purchase solar lights as an add-on.



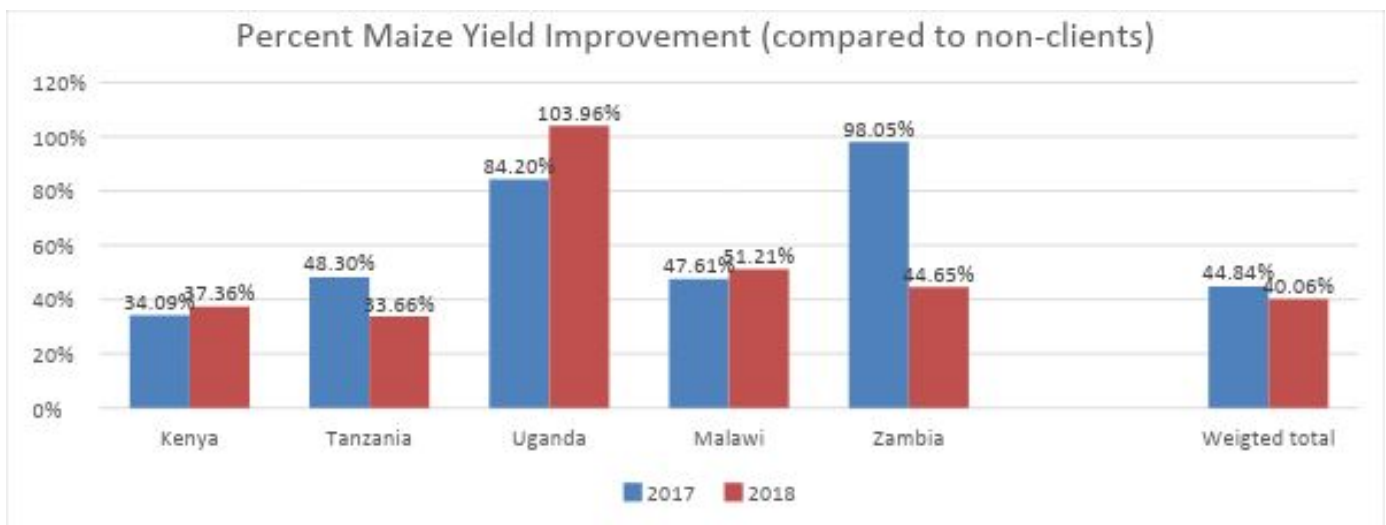
**Impact Results and Trends:** As our newest country, we have struggled to realize the same depth of profit impact that we've observed in other countries. Despite some promising years, One Acre Fund farmers still struggled to realize any profit impact in 2018, even with an improvement in maize harvest yields of 26%. This was due to multiple factors, including low maize selling prices and lower overall harvests. However, One Acre

Fund did offer insurance which provided a payout of \$64 per client farmer. In order to improve impact in the unique Zambian context, we are currently researching a more diverse set of crops to offer farmers. We are also considering altering fertilizer recommendations to make our package more economical, encouraging greater cultivation of fallow land.

## Other Impacts

**Harvest Impact.** One Acre Fund is primarily concerned with profit impact because farmers make a financial investment in the program and it is important to value their returns. However, it is also important to consider the impact of the program on harvests directly. This is because, in many countries, farmers consume most of what they grow, and an improved harvest can help reduce hunger. In that sense, even in an environment in which profits are in decline due to a reduction in selling price, a strong harvest is still vital to a farmer in a way that the measured dollar impact does not capture.

2018 harvest impacts (One Acre Fund farmer vs. comparisons) remained very strong with an over 40% improvement in maize yields per farmer in One Acre Fund’s maize-dominant countries. While there was some variation across counties, the weighted average in maize yield impact was similarly high in 2017 and 2018, despite a decline in dollar impact from \$140 to \$91. This is further evidence of the fact that the decline in impact in 2018 was largely driven by declining maize prices.



**Additional Impact.** One Acre Fund not only measures harvest and profit impacts, but we also measure improvements to farmer client lives, holistically. These secondary impacts are often harder to measure and take longer to take effect. However, we have several ongoing studies that attempt to measure quality of life effects of the program. In 2017, we conducted [a large-scale study](#) looking at program impact on farmer resilience. Also, we are currently finalizing a [longitudinal study](#) on a wide range of quality of life impacts and, each year, we compare newly enrolled farmers who have yet to experience program impact with veteran farmers who have been in the program for at least one year on a number of quality of life measurements. The table below summarizes selected findings from these studies. Consistently we observe impacts on hunger and, in some years and countries, we find improvements in education, assets and dietary diversity. We will continue to monitor these additional impacts and design program improvements to attempt to address impacts which help improve farmers’ quality of life and resilience.



	Hunger (% hungry because not enough food)		Dietary Diversity (0-12; higher = more diversified)		Crop Diversity (Simpson Index)		Education (% children attending school)	
	Veteran	New	Veteran	New	Veteran	New	Veteran	New
<b>Kenya</b>	<b>8%</b>	<b>10%</b>	<b>7.4</b>	<b>7.3</b>	<b>0.27</b>	<b>0.24</b>	<b>93%</b>	<b>94%</b>
<b>Rwanda</b>	<b>46%</b>	<b>55%</b>	<b>5.11</b>	<b>4.8</b>	<b>0.52</b>	<b>0.49</b>	<b>69%</b>	<b>59%</b>
<b>Burundi</b>	30%	26%	5.3	5.5	<b>0.71</b>	<b>0.68</b>	65%	66%
<b>Tanzania</b>	<b>2%</b>	<b>7%</b>	5.2	5.1	0.2	0.18	79%	77%
<b>Uganda</b>	19%	23%	<b>6.3</b>	<b>5.9</b>			88%	87%
<b>Malawi</b>	<b>18%</b>	<b>24%</b>	5	5.3	0.91	0.9	94%	94%

Bolded data represent statistically significant differences at  $p < .05$