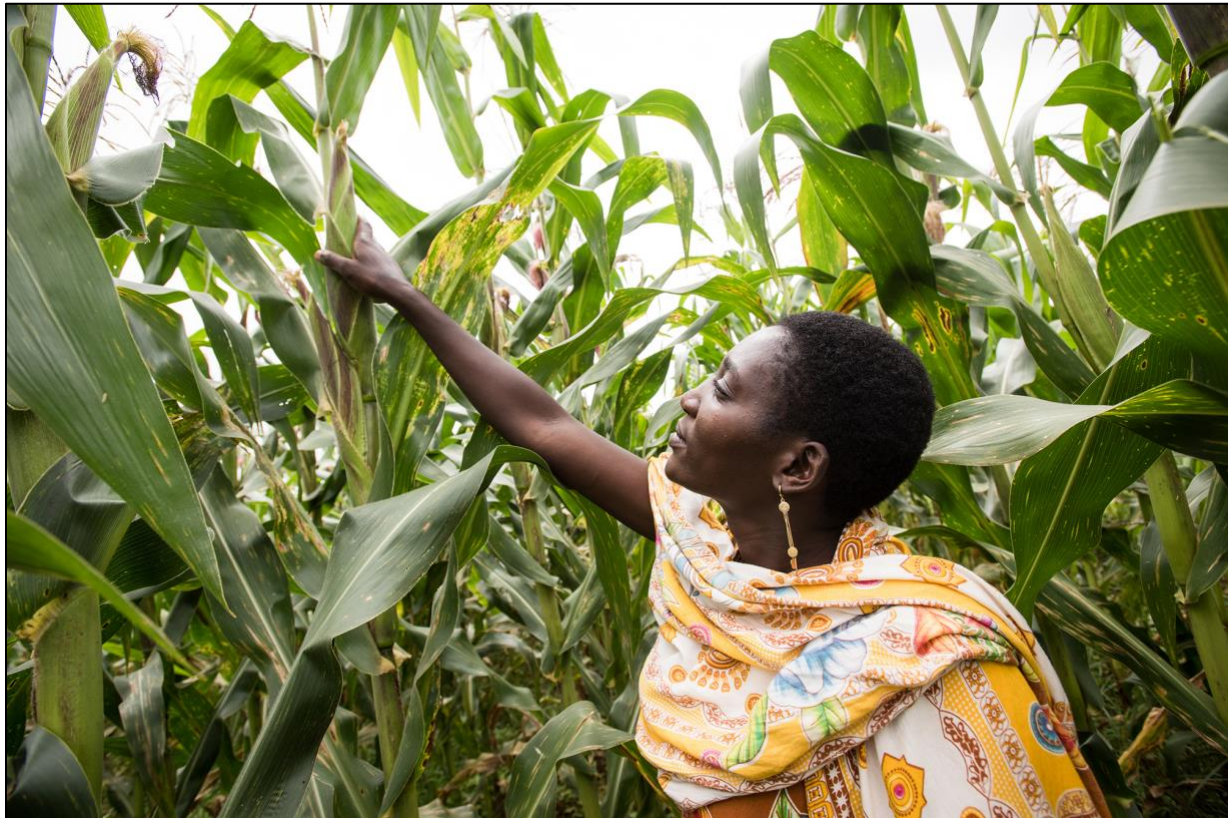


# 2017 Annual Impact: Country Report

April 2018

## *Monitoring & Evaluation Report*










## Summary of Results

**Total Program Impact.** One Acre Fund farmers experienced strong harvests and dollar impacts in 2017, owing to an overall much improved rainfall pattern and continued program improvements, such as greater focus on more one-on-one trainings and encouragement to apply One Acre Fund practices on more land.

The table below presents our impact in terms of “annual impact,” which reflects the additional profit farmers gained in 2017, and “asset impact,” which reflects the lifetime impact of the products, like trees, that farmers adopt. To estimate annual impact, we collected detailed data on farming inputs including labor, plowing, fertilizer, and seed, and subtracted these costs from physically measured and monetized harvests. We compared One Acre Fund farmers’ profits to similar neighbors who are subject to the same agro-ecological conditions, and we statistically controlled for other differences, such as education and wealth. In 2017, we conducted nearly 20,000 physical harvest measurements across six countries and five different crops. To estimate asset impact, we did individual studies on all products, such as trees and solar lights, discounting future benefits and accounting for depreciation. We then multiplied the lifetime impact by the adoption rate.

Across all of our country programs, One Acre Fund farmers made an additional \$107 in annual agricultural profit, compared to similarly situated farmers in their same agro-ecological zones. They also made, on average, another \$64 in profit from our add-on products.<sup>1</sup> Put together, this represents an additional \$171 in profit, and a 65% 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 she invests in our program. A 100 percent ROI means that our clients received \$1 USD of extra profit for every \$1 USD of extra cost invested. In 2016, we far surpassed our goal of 100 percent, achieving an average 249 percent ROI.

Total Program Impact		Annual Impact \$/Farmer	Asset Impact \$/Farmer	Total Impact \$/Farmer	Total % Increase in Income	Return on Investment (ROI)
Kenya		\$118	\$103	\$221	55%	299%
Rwanda		\$107	\$33	\$140	145%	259%
Burundi		\$57	\$15	\$72	38%	224%
Tanzania		\$197	\$21	\$218	63%	148%
Uganda		\$59	\$12	\$71	57%	58%
Malawi		\$35	\$33	\$68	71%	62%
Zambia		\$66	\$16	\$82	73%	22%
<b>WHOLE PROGRAM</b>		<b>\$107</b>	<b>\$64</b>	<b>\$171</b>	<b>65%</b>	<b>249%</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 is \$50 \* 20%, or \$10.

## Methodology in Brief

**Agricultural Impact.** To generate our 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 estimate. In the first survey, we collect comprehensive farming input data on everything from fertilizer and seed costs to labor days expended. We also get an estimate of a farmer’s land size dedicated to One Acre Fund inputs and their land size overall. In the second survey, we randomly select two small plots of land and harvest and weigh crops grown within that area. 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 2017, we took over 20,000 harvest weights. We then monetize this harvest, based on prevailing local selling 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, for 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 for several years (as is the case for solar lights), we discount future benefits. In previous years, we only took “partial credit” for the lifetime impact of these products. Specifically, we would take the lifetime impact of the product (e.g. \$100 for trees) and divide it by the lifetime (e.g. 5 years) and claim only a portion (in this example \$20) of the impact of that product each year. This would “smooth out” the lifetime impact of each product. Each year we would continue to claim impact from farmers who had adopted in previous years as well as the current year.

However, we now feel we have enough years and analysis to be more confident in our projections of lifetime product impact. Now, we are shifting to a measurement system that claims the full lifetime value of the product each year, which is a more straightforward way of looking at this impact. To be transparent about the amount of impact coming from annual versus asset impact, we have switched to reporting these out as separate numbers.

We feel it is important to capture and transparently report this longer-term impact because we feel that eradicating poverty is about 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 rise out of poverty entirely.

## Kenya Impact 2017

**Country Context:** The Kenya program, launched in 2006, is One Acre Fund's oldest country of operations. We primarily support farmers in growing maize and beans over one long season, with credit for both improved seed and fertilizer and frequent training. We offer a range of additional add-on products, such as solar lights, trees, vegetable seeds, improved crop storage bags, cook stoves, and sanitary pads. Kenya has a robust innovations laboratory with a large pipeline of trials for new agricultural and other products, such as poultry, new organic soil matter interventions, and maize harvest buy-backs. In 2017, we served over 238,000 farmers<sup>2</sup> in the "long rains" growing season.



**Impact Results and Trends:** We added an additional **\$118** in annual agricultural profit on average over the 2017 season in Kenya. Add-on products added another **\$103** to our average impact. Given high energy expenditures, solar lights are a terrific investment in Kenya, and we had a very high adoption rate of nearly half of all farmers buying a solar lamp. All together, this represents a **55%** improvement in profits relative to a comparison group.

Between 2016 and 2017, dollar impact increased by \$86 per farmer<sup>3</sup>. This was largely due to favorable rains and the increase in harvests overall relative to the prior drought year. In 2017 we also had a campaign to encourage farmers to adopt One Acre Fund practices on more of their non-enrolled land, through training and SMS reminders, and this appears to have had a significant impact on overall yields. In 2017, we allowed farmers the flexibility to sign up for non-maize packages, which could include bundles of solar lamps, sanitary pads, and cook stoves. While we value the ability of farmers to choose a more flexible package, excluding maize (a consistently impactful crop) slightly reduces the overall average impact.

## Rwanda Impact 2017

**Country Context:** Rwanda, launched in 2007, is One Acre Fund's second-oldest country of operation. We serve farmers across a broad swath of the country, providing fertilizer and seed on credit and frequent training over two annual growing seasons. Farmers most 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 the 2017 A season, we delivered inputs to over 172,000 farmers, and added 15,500 new farmers in the B season.

In addition to our core program, we partner with the government to provide high-quality agricultural extension trainings nationwide, supporting farmers in villages across the country and bringing fertilizer to a large network of agro-dealer sellers.

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<sup>2</sup> Scale numbers in this report are based on crop marketing years, instead of calendar years, so they may differ somewhat from figures we've reported elsewhere

<sup>3</sup> We adjusted all 2016 estimates to use the same asset impact calculations in order to make valid comparisons over time.

**Impact Results and Trends:** We added an additional **\$107** in agricultural profit over the two growing seasons from our core program. Add-on products (trees and solar lamps) added another **\$33** to average impact. This represents a large improvement of an additional \$58 in impact relative to the prior year. We saw better performance of One Acre Fund fields compared to non-participating farmers, possibly due to our timely delivery of inputs and more attentive trainings than in prior years. All together, this amount represents a **145%** improvement in profits relative to a comparison group. Rwanda achieves higher percent improvements 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. One Acre Fund also has very high program 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 previously participated in our program, or who have not picked up our recommended practices from neighboring farmers who are enrolled. While this represents a measurement challenge, we view this overall as great news for farmers nationwide.

## Burundi Impact 2017

**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 annual growing seasons, with credit for fertilizer and training. The government subsidizes fertilizer costs, so many farmers use fertilizer for core crops, 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 2017, we served around 48,000 clients in the A season and around 9,400 clients in the B season.



**Impact Results and Trends:** We added on average **\$55** in agricultural profit over the two seasons, very much on par with the results we saw in 2015. Add-on products (trees and solar lamps) added another **\$15** per farmer, on average. Still, together this represents a **38%** improvement in profits relative to a comparison group. Impact in Burundi was down relative to 2016 by \$41. We are still trying to understand the specific causes of this decline, but one hypothesis is that we expanded into areas in which farmers have smaller land sizes, and so their dollar impact improvement is more limited. While this is bad news from an impact estimate perspective, we feel that it is good news in terms of reaching even poorer farmers.

## Tanzania Impact 2017

**Country Context:** One Acre Fund's 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. The average farm size in Tanzania is greater than in other countries where we operate, and oxen are more commonly used for fieldwork, which forces us to think more creatively about our planting training. In 2017, we served 24,000 clients.

**Impact Results and Trends:** We added **\$197** in annual agricultural profit on average over the 2017 season in Tanzania. Asset products (e.g. solar lamps) added another **\$21** to our average impact. Solar lights have a relatively high per-adopter impact because energy costs in Tanzania, and therefore savings, are higher. Overall, our impact data showed significant improvement relative to the prior year, increasing by \$118 and reaching the highest level to date in Tanzania. Tanzania has a high potential for dollar impact, given the relatively large land sizes and larger One Acre Fund package sizes. Favorable weather conditions, as well as continued focus on applying best practices, drove impact this year. Altogether, this represents a **63%** improvement in profits relative to a comparison group.

## Uganda Impact 2017

**Country Context:** Our Ugandan program officially launched in 2016 and served 6,200 farmers in 2017. Farmers are offered a package of maize, which includes seed and fertilizer, as well as add-on products including solar lights, Malathion dust to prevent damage from pests, and PICS bags to safely store maize. The program covers one annual growing season.

**Impact Results and Trends:** In 2017, we added **\$59** in agricultural profit for participating farmers. Asset products added another **\$12** to average impact, mainly from solar lights and PICS bags. While this was an improvement of \$8 relative to the year before, impact continued to be affected by a parasitic weed known as striga, as well as drought in some areas. Our innovations team is continuing to experiment with distributing striga-resistant seed, and we are looking to expand to areas where we have greater impact potential. Despite the modest dollar impact, One Acre Fund farmers had **59%** more profit relative to a comparison group.



## Malawi Impact 2017

**Country Context:** Our Malawi program was officially launched in 2016 and served 7,200 farmers in 2017. Farmers are offered a package of maize, which includes seed and fertilizer, as well as the option to purchase solar lights. The Innovations team is also trialing sorghum, pigeon peas, and groundnuts, and we will be offering these products in subsequent seasons. In addition to our regular program, One Acre Fund, has been partnering with the Malawian government to enhance agricultural extension program in several districts, reaching 41,000 farmers in 2017.



**Impact Results and Trends:** In 2017, harvest impact was quite strong, and as farmers' harvests more than doubled. After a few years of droughts and floods, this was a welcome change. However, 2017 also saw a marked decline in maize selling prices, so this strong impact in harvests did not translate to as strong of an impact in profits. Annual agricultural profit was **\$35**. Add-on products added another **\$33** to our average impact, mainly from high adoption of solar lights. Despite the modest dollar impact, One Acre Fund farmers had 71% more profit relative to a comparison group.

## Zambia Impact 2017

**Country Context:** Zambia is our newest program and remains a large-scale pilot, having not yet been officially launched. In 2017, we served 1,700 farmers. Zambia is unique among our countries of operation in that population density is quite low, and so individual farmers cultivate much larger plots of land. Instead of purchasing inputs for  $\frac{1}{2}$  or 1 acre, as most One Acre Fund farmers do, Zambian farmers take out inputs for an average of 3.5 acres. The impact potential is therefore quite large, as is the potential for One Acre Fund financial sustainability. In 2017, farmers were offered packages of maize seed and fertilizer, as well as the option to purchase solar lights.



**Impact Results and Trends:** Despite the large impact potential, in 2017, we added a modest **\$66** in agricultural profit for participating farmers. Asset products added another **\$17** to our average impact. Similar to in Malawi, the plummeting selling price of maize drastically reduced the dollar impact potential. If selling prices had remained similar to the prior year, per farmer impact could have been over \$350 per farmer. Despite the modest dollar impact, One Acre Fund farmers had **73%** more profit relative to a comparison group, who also did quite poorly in the tough 2017 market conditions.