

2016 Annual Impact: Country Report

April 2017







M&E Report



Summary of Results

Total Program Impact. As reported widely in the news media, farmers all across East Africa struggled to realize strong harvests in 2016 due to droughts in the region. Maize was particularly hard hit, and both One Acre Fund and neighboring farmers saw an average reduction of 20%-30% in maize harvests (comparing 2016 to 2015) in the maize-predominant countries of Kenya and Tanzania. Therefore, farm profits were reduced overall, and One Acre Fund dollar impact was lower than we had expected.

The table below shows the total impact per farmer of our core agricultural program as well as “add-on products” such as solar lights and trees. Across all of our country programs, One Acre Fund farmers made an additional \$66.50 in agricultural profit compared to similarly situated farmers in their same agro-ecological zones. They also made, on average, another \$35.70 in profit from our add-on products.¹ Put together, this represents an additional \$102 in profit, or a 52% increase (from those activities), relative to non-One Acre Fund farmers. The overall dollar impact was low, which is what we might expect in a year in which all farmers in the region saw their agricultural profit decline. However the percent improvement relative to non-participating farmers remained strong and similar to other years.







| | | Ag Impact \$/Farmer | Add-ons \$/Farmer | Total Impact \$/Farmer | Total % Increase in Income |
|----------------------|---|------------------------|----------------------|---------------------------|-------------------------------|
| Kenya |  | \$66 | \$59 | \$125 | 51% |
| Rwanda |  | \$58 | \$15 | \$73 | 53% |
| Burundi |  | \$96 | \$4 | \$100 | 73% |
| Tanzania |  | \$68 | \$18 | \$86 | 26% |
| Uganda |  | \$48 | \$10 | \$58 | 96% |
| Malawi |  | \$66 | \$11 | \$77 | 65% |
| WHOLE PROGRAM | | \$67 | \$36 | \$102 | 52% |

Agricultural Program. Looking in more detail at our agricultural program, we see that the extra \$102 translates into a 30% increase in agricultural profit for a typical One Acre Fund farmer across all countries. This “impact per farmer” metric looks at *all* the land One Acre Fund farmers plant for the crops we focus on, including the land on which they do not use One Acre Fund inputs, and compares this to a similar non-program farmer (selected in a way that minimizes selection bias).

Return on Investment (ROI) puts us in the farmer’s shoes. This 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 surpassed our goal of 100 percent, achieving a 137 percent ROI. This varies widely by country, however, as some countries (like Rwanda) have relatively less expensive programs and therefore a higher relative return.

¹ Add-on 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.

Impact of Core Agricultural Program

| | | Ag Impact \$/Farmer | % Increase per Farmer | ROI per Farmer |
|----------------------|---|------------------------|--------------------------|-------------------|
| Kenya |  | \$66 | 26% | 101% |
| Rwanda |  | \$58 | 32% | 314% |
| Burundi |  | \$96 | 49% | NA ² |
| Tanzania |  | \$68 | 18% | 76% |
| Uganda |  | \$48 | 74% | 72% |
| Malawi |  | \$66 | 50% | 69% |
| WHOLE PROGRAM | | \$66.54 | 30% | 137% |

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 cost 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 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 2016, we took over 16,000 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 our farmers and compare it to similar farmers.

Add-on Impact. To understand the impact of our add-on products, like solar lights and trees, we similarly collect data from One Acre Fund farmers and neighbors to estimate the change in impact. 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 long-term products, like trees, in which the pay-off is years in the future, we discount future benefits. We then divide the net present benefit over the lifetime of the product to smooth out impact in a way that better approximates a farmers’ experience of impact.

² The total program costs relative to non-participating were actually negative in Burundi due to the savings participating farmers achieve due to more efficient input use. Therefore it does not make sense to calculate an ROI for Burundi.

Kenya Impact 2016

Country Context: The Kenya program, launched in 2006, 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 and 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 2016, we served over 190,000 farmers over the "long rains" growing season.



Impact Results and Trends: We added an additional **\$66** in agricultural profit on average over the season we worked with farmers in Kenya. Add-on products (e.g. trees, kale, and solar lamps) added another **\$59** 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 our farmers buying a solar lamp. Impact from these add-on products proved especially important in a drought year, in which farmers saw less overall impact from their maize and beans investments. All together, this represents a **51%** improvement in profits relative to a comparison group.

Between 2015 and 2016, dollar impact decreased by \$86 per farmer, due largely to drought conditions. In addition, in 2016, 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) limits the total average impact. Despite an overall reduction in dollar profit, One Acre Fund farmers continued to outperform similarly situated non-participating farmer at the same levels as prior seasons with a 51% profit improvement.

Rwanda Impact 2016

Country Context: The Rwanda program, launched in 2007, is One Acre Fund's second-oldest program. We serve farmers across a broad swath of the country, providing fertilizer on credit and frequent training over two 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 2016, we served over 110,000 households. In the A season, we delivered inputs to over 95,000 farmers and added 15,500 new farmers in the B season.



In addition to our core program, we support Rwandan farmers nation-wide through government partnerships, which help to bring agricultural extension training to every village in Rwanda and bring fertilizer to a large network of agro-dealer sellers.

Impact Results and Trends: We added an additional **\$58** in agricultural profit over the two growing seasons from our core program. Add-on products (trees and solar lamps) added another **\$15** to our average impact. Impact from these products is not as high as in Kenya, given the relatively lower energy costs (therefore smaller energy savings from solar lights), and the fact that fewer trees were distributed. All together, even this modest amount represents a **53%** improvement in profits relative to a comparison group.

It is increasingly difficult for us to achieve high-dollar impacts for One Acre Fund farmers relative to comparison farmers in Rwanda because 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 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 been in the program, and those who have not might have picked up farming practices from nearby participating farmers. While all of this represents a measurement challenge, we view this overall as great news for farmers nationwide.

Burundi Impact 2016

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 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 2016, we served around 40,000 clients in the A seasons and around 43,000 clients in the B season.



Impact Results and Trends: We added on average **\$96** 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 **\$4** per farmers on average. Impacts from add-on products are relatively small, as Burundians spend less on energy than other countries, so it takes them longer to realize the returns from investing in a solar lamp, and adoption of these products is relatively low. Still, together this represents a **73%** improvement in profits relative to a comparison group.

Tanzania Impact 2016

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. Average farm size in Tanzania is greater than in other countries where we operate, and oxen use is more common, which forces us to think more creatively about our planting training. In 2016, we served 17,500 clients, nearly doubling our size from the year before.

Impact Results and Trends: We added another **\$68** in agricultural profit on average over the season we worked with farmers in Tanzania. Add-on products (e.g. solar lamps) added another **\$18** to our average impact. Solar lights have a relatively high per-adopter impact because energy costs, and therefore savings, are higher. The Tanzania program sustained similar profit gains compared to 2015. This was largely due to a program push to apply One Acre Fund practices on all maize land and helped to counteract the negative impacts of the drought. All together, this represents a

26% improvement in profits relative to a comparison group. The percent increase is relatively lower than in our other countries, as our Tanzanian farmers cultivate much more land, so the proportion of One Acre Fund program land on their whole farm is smaller.

Uganda Impact 2016

Country Context: Our Ugandan program was officially launched in 2016 and served 3,700 farmers across two districts, tripling in size from the pilot the year before. 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 typically covers the long rains growing season.



Impact Results and Trends: In 2016, we added **\$48** in agricultural profit for participating farmers. Add-on products (e.g. solar lamps) added another **\$10** to our average impact, mainly from solar lights and Malathion dust. This was a difficult year for Uganda, which dealt with a triple threat of drought, a parasitic weed known as striga, and poor seed germination. Farmers were compensated for poor seed germination and supplied with additional seeds for the short rains season, so it is possible that the overall dollar profit could increase when we calculate the full profit from both seasons. Despite the modest dollar impact, One Acre Fund farmers had **96%** more profit relative to a comparison group, who also did quite poorly in the tough 2016 conditions.

Malawi Impact 2016

Country Context: Our Malawi program was officially launched in 2016 and served 2,600 farmers across three districts. 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 2016.



Impact Results and Trends: In 2016, despite seeing floods in some areas and drought in others, we added **\$66** in agricultural profit for participating farmers. This profit increase was aided by insurance payouts provided to between 10% and 27% of our clients, depending on location. Add-on products add another **\$11** to our average impact, mainly from solar lights. Despite the modest dollar impact, One Acre Fund farmers had **65%** more profit relative to a comparison group, who also did quite poorly in the tough 2016 conditions.