

# Maize Storage Loan — Long Rain Season, Kenya (2015)

Farmers First

PHASE:	Research Station	50 – 500 farmers	<b>1,000 – 20,000 farmers</b>	Full Scale
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## Introduction

Maize market prices are subject to seasonal cycles of production and consumption. In western Kenya, the majority of maize is harvested at the end of the long rain season (August). During this time, the market is flooded with maize and prices are at their yearly lowest. Six months later (February), the region is in the middle of the dry season and maize prices peak. For the past two years, One Acre Fund has invested in post-harvest storage products to overcome the biophysical barriers to farmers storing grain, allowing them to take advantage of these seasonal price fluctuations. With the introduction of plastic drying sheets, low-cost hermetic storage bags, and insecticidal dust, we believe that farmers now have access to the physical tools needed to effectively store grain. However, farmers still have financial burdens at harvest. These financial burdens are a barrier for farmers accessing higher grain prices through home storage. In 2014 and 2015, One Acre Fund trialed a home storage loan program to test various methods to overcome these financial burdens.



Hailey Tucker/One Acre Fund

<b>25%</b>	<b>Average increase in grain storage with farmers who received the loan</b>	<b>50%</b>	<b>Average increase in profit from farmers who received the loan</b>
<b>23%</b>	<b>Percentage of farmers in participating districts who requested the storage loan</b>	<b>\$27<sup>1</sup></b>	<b>Average amount of profit from farmers who received the loan (USD/farmer)</b>

## Context and Trial Rationale

- Financial burdens at harvest may prevent farmers from engaging in home storage, despite the availability of home storage tools.
- A home storage loan may be an effective tool to overcome these seasonal financial burdens. However, timing of the loan affects adoption and impact is unknown.

<sup>1</sup> The 2013 maize storage loan study found an impact of \$27 USD per client per year. However, in light of year-to-year maize price fluctuations, this result may vary. We have run this trial for four straight years, with results varying significantly, from \$6 USD to \$50 USD in impact per client, due in part to loan design and maize prices. When we have final data from additional years of research (forthcoming), we look forward to updating this impact number.

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## Major Intervention Trials

**Research:** One Acre Fund worked with economists from the University of California, Berkeley, and Stanford University to design and assess the impact of a post-harvest loan program.

**Hypotheses:** The post-harvest loan program was designed to test three hypotheses:

1. Receiving a storage loan will allow farmers to store more for longer periods of time, access better prices at market, and earn more profit.
2. Loans will have different effects in villages in which many farmers take the loan, versus villages in which few farmers take the loan. Namely, loans in villages with high population-densities will see maize taken off the market following harvest, leading to higher prices. In low-density villages, prices will follow a more traditional seasonal price curve.
3. Credit delivered at time of harvest will allow farmers to fully delay the sale of their grain. Credit delivered several months after harvest will be less effective in maximizing returns on stored grain.

**Trial design:** A randomized control trial was initiated in western Kenya in 2013. Farmers were stratified along two major categories, with total randomization within each category: regional loan client density and loan delivery timing.

**A. Results:** The below table summarizes the results

Trial	Configuration	Location / Date	Profit Change vs. Trial Control
<b>1. Control:</b> Did not receive storage loan	635 farmers	Western Kenya, LR 2013	N/A
<b>2. Early loan delivery:</b> Received storage loan in October	474 farmers	Western Kenya, LR 2013	\$27
<b>3. Late loan delivery:</b> Received storage loan in January	478 farmers	Western Kenya, LR 2013	No change*

\*Measured differences were insignificant at the  $p=0.1$  level.

**B. Adoption: Medium**

- **Cost:** Farmers receiving the loan were required to pay interest at a rate comparable to the standard interest rate for One Acre Fund loans. While interest does increase the cost of receiving credit, farmers were given 9 months to repay the loan, longer than our standard repayment period. This reduced repayment pressure.
- **Preference:** For the LR 2015 season (long rains 2015 season), 23% of farmers in Kimilili district (2,248 farmers) requested to receive the loan. One Acre Fund is currently experimenting with strategies to ensure adherence to the loan's stipulation that the farmers store their maize until March of the year. These strategies may affect farmer preference for the loan and increase operational complexity, but are necessary to ensure the expected impact.

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### C. Operability at Scale: *Medium*

- Timing: An important output from this study is that loan timing matters – farmers benefit more from loans that are delivered immediately after the harvest. This timing is operationally beneficial for One Acre Fund, as January, the alternative loan delivery period, is busy with pre-payment and logistics preparations.
- Training Complexity: Again, thanks to the similarity between the storage loan and the One Acre Fund core program loan, field staff did not face significant obstacles in training farmers. Focus groups conducted at the time of the study confirmed that participating farmers understood that receiving the loan would allow them to delay selling their grain and access higher market prices later.<sup>i</sup>

### Next Steps

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In 2016, One Acre Fund will:

- Evaluate storage pledge compliance strategies to help farmers keep to their goal of storing three bags of maize for three months.
- Depending on the results of this follow-up study, One Acre Fund aims to roll this product out at full-scale.

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<sup>i</sup> Selling Low and Buying High: An Arbitrage Puzzle in Kenyan Villages, Marshall Burke, March 20, 2014, unpublished.