

Farmers First

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

Bananas are a primary staple crop in much of East Africa, providing a perennial source of highly nutritious calories to supplement grain production. Bananas are consumed as a sweet fruit, as a starchy staple, and are used for brewing beer. Average consumption of banana in East Africa is between 250 – 400 kilograms (kg) per person. The potential economic impact of banana in the One Acre Fund program is high; measured profitability is up to USD \$13,516 per hectare. In addition, once a mature banana plant has been established, labor requirements and maintenance costs are low.



Kevin Owino/One Acre Fund

\$8,930	Average profit impact per hectare	37%	% One Acre Fund Rwanda farmers who grow banana
20 tonnes (t)	Average yield improvement per hectare	295,000	Hectares under banana production in Rwanda

Context and Trial Rationale

- Banana is the second most widely grown crop in Rwanda. Significant yield gaps exist in banana production in Rwanda due to poor plant quality and low use of best management practices.
- Identifying high-yielding, disease resistant banana cultivars, coupled with appropriate fertilizer use and best management practices, could significantly impact the livelihoods of One Acre Fund farmers in Rwanda, and could springboard entry into other banana-producing countries in East Africa and beyond.

Major Intervention Configurations

- Research: One Acre Fund consulted a range of experts to identify promising, improved banana cultivars and banana fertilizer recommendations. These organizations included the International Institute of Tropical Agriculture (IITA) and the Rwandan Agricultural Board (RAB)
- New Varieties: One Acre Fund trialed four improved banana cultivars at the *Kibogora* research station: Denman, Fhia 17, Fia 25, ICERW, INJAG. These cultivars were compared to a mixed local culture.

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- *Trial Configurations:* Each of these varieties came recommended by IITA and RAB, and was compared against a local variety control.
 - 1) **Control:** Local banana variety
 - 2) **Variety 1:** Fhia 17
 - 3) **Variety 2:** Fhia 25
 - 4) **Variety 3:** ICERW
 - 5) **Variety 4:** INJAG

A. Yield and Profit: The below table summarizes agronomic results.

Trial	Configuration	Location/Date	Yield (t/ha)*	Profit (USD/ha)	Profit Change vs. Trial Control
1. Control: Local variety	Research station	Rwanda, 2012-2014	59	\$6,148	N/A
2. Variety 1: Fhia 17	Research station	Rwanda, 2012-2014	143	\$13,517	No change*
3. Variety 2: Fhia 25	Research station	Rwanda, 2012-2014	103	\$9,481	No change*
4. Variety 3: ICERW	Research station	Rwanda, 2012-2014	78	\$7,462	No change*
5. Variety 4: INJAG	Research station	Rwanda, 2012-2014	79	\$8,044	No change*

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

B. Adoption: *Medium Adoptability*

- Banana is a perennial crop. Data has to be collected over several years in order to objectively evaluate the potential of the new varieties and management tools.
- Ongoing on-farm field trials will assist in evaluating farmer preference and willingness to adopt.
- A relatively new banana disease, Banana Xanthomonas Wilt, is now prevalent in Rwanda. Any identified resistant varieties would have a relatively high adoption rate.

C. Operability at Scale: *Low operability*

- Banana poses several significant challenges for operating at scale. Bananas are propagated by planting living, immature banana plants or rhizomes. These live planting materials need to be maintained throughout the distribution process in order to be viable at planting.
- Banana propagules are bulky and have high water content. This increases the transportation costs of getting the banana propagules to farmers.
- Banana propagules are cut from living plants that take several years to mature, so scaling-up this production process is operationally challenging.

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Next Steps

In the future, One Acre Fund will:

- 1) Continue to evaluate the yield potentials of the improved banana varieties through on-farm field trials conducted over several years.
- 2) Survey farmers to estimate potential adoption rate of the new banana varieties.