



Effects of NAAIAP on Smallholder Production and Incomes

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Outline

- Introduction/motivation
- Highlights on NAAIAP
- Key questions
- Findings
- Policy & programmatic implications

Introduction

- Input intensification becomes critical in the context of
 - Increasing population (increased demand for output)
 - Declining land sizes (pressure to produce more per unit area)
- Use of productivity enhancing inputs is an option to ensure increased output to support a growing population
- However, capacity to intensify is limited among some farmers

Introduction

- Government launched the NAAIAP fertilizer subsidy as a means to improve food security and incomes
 - Focused on maize growers
 - Maize is a major staple crop often equated with food security in Kenya
- Goals of NAAIAP
 - Improve access and affordability of fertilizer and seed
 - Raise productivity and output
 - Increase food security and incomes and reduce poverty

Highlights on NAAIAP

- National program started in 2007/08
- Two components
 - Kilimo Plus: free input packs (**focus of study**)
 - Kilimo Biashara: subsidized credit
- Between 2007/08 and 2011/12, over 500,000 farmers were reached by the program

Highlights on NAAIAP

- NAAIAP (Kilimo Plus) input packs
 - 50 kg each of basal and top dressing fertilizer
 - 10 kg of improved maize seed
 - Free one-time package per household/in one season only
 - Vouchers redeemable at accredited agro-dealer shops

Highlights on NAAIAP

- NAAIAP targeting criteria
 - Farmers unable to afford farm inputs at commercial prices
 - Farmers growing maize and had at least 2.5 acres of land
 - Vulnerable members of society (e.g. female- and child-headed households)
 - Farmers who had not received similar support in the past

Key questions & analysis

- Did the program achieve its goals?
- What are the lessons learned from Kilimo Plus and other ISPs in SSA?
 - For the design and implementation of future input policies and programs
- Focus of analysis
 - Effects of participation in Kilimo Plus on maize output, cultivated area, incomes and poverty
 - Compare the effects of Kilimo Plus to ISPs (Zambia & Malawi)

Data

- Tegemeo panel household survey
 - Using data from 3 waves (03/04, 06/07, and 09/10)
 - 2 years prior to Kilimo plus program
 - 1 year during the program period
 - Sample of 1,064 smallholder maize-growing households
- Review of literature of ISPs in Malawi & Zambia

Estimation methods

- Methods take into account that NAAIAP participants were not randomly selected
- A number of panel data methods and methods related to propensity scores
 - Difference-in-difference (DID); Fixed effects; Propensity score weighting-DID; Propensity score matching-DID
- Constructed poverty indices
 - Poverty incidence, gap & severity
 - Poverty line of USD 1.25/capita/day

Key findings

- NAAIAP considered ‘smarter’ than other ISPs in the region
 - Targeted (in practice) resource-poor farmers
 - NAAIAP recipients had less land, lower asset wealth & were of lower welfare status
 - However, recipients were already using fertilizer
 - Was implemented through vouchers redeemable at private agro-dealers

Key findings: impacts of NAAIAP

Outcome variable	Estimated effect of Kilimo Plus participation (FE)
Maize kg harvested	+361.2
Acres with maize	+0.41
Maize kg/acre	+556.2
Share of maize in total crop value	+0.04
Total acres cultivated	-0.08
Crop income (Ksh)	+9,022
Crop income/acre (Ksh)	+1,512
Total income (Ksh)	+32,809
Total income/capita/day (Ksh)	+7.03
Poverty incidence (poor=1)	-0.06
Poverty gap	-0.10
Poverty severity	-0.11

Key findings: program effects

- Comparison with ISPs in Zambia and Malawi
 - Effects of Kilimo Plus on maize production were larger
 - 361 kg vs about 200 kg of maize for 100 kg increase in subsidized fertilizer
 - Potentially due to effective targeting of farmers using less fertilizer without subsidy
 - May be due to use of vouchers redeemable at agro-dealer shops, resulting in more timely access to inputs

Key findings: program effects

- Comparison with ISPs in Zambia and Malawi
 - Kilimo Plus reduced poverty severity by a larger magnitude than Zambia's ISP
 - Likely due to its more effective targeting of resource-poor farmers

Implications for other programs

1. ISP design and implementation have important implications for program impacts
2. Proper targeting during implementation is important for achieving goals
 - Ensure official & effective (in practice) targeting match
 - Guidelines to focus on farmers not currently using fertilizer
 - May increase impacts & reduce crowding out effects

Implications for other programs

3. Program design should be well guided by program objectives
4. Use of existing private-sector input distribution mechanisms
 - Encourages private sector participation
 - Reduces distortionary effect on private market
 - Improves timeliness in accessing inputs & farming operations
 - Ensures better input access for all farmers

Implications for other programs

5. Have a more holistic approach to improving production & sustainable intensification
 - Consider using vouchers for other crops and inputs
 - May imply increased outputs for other crops
 - Promote diversification
 - Use of other productivity enhancing inputs (e.g. lime)
 - Increase in complementary public/private investments
 - Research, extension, irrigation, infrastructure, information, affordable & appropriate innovations & technology

Thank you