Impact Evaluation of the National Agricultural Advisory Services (NAADS)

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What is NAADS impact?

What's Behind NAADS Sign Post?

The measurement of NAADS impact is not by the signposts, which only serve to guide and inform the public about the presence of NAADS Technology Development Sites (TDS) or demonstration sites within the vicinity...

NAADS impact is actually measured by [examples]:

- Increase in farmers' awareness of new technologies and practices
- Availability of improved seeds/breeds to farmers
- Utilization of technologies by farmers
- Increase in farmers' incomes
- …
NAADS program: goals and objectives

➢ **Goal:** increasing market-oriented production by empowering farmers to demand and control agricultural advisory and information services

➢ **Objectives**

  » Increasing effectiveness, efficiency and sustainability of the extension delivery service

  » Increasing farmers’ access to and sustaining knowledge, information and communication to the farmers

  » Increasing access to and sustaining effective and efficient productivity-enhancing technologies to farmers

  » Creating and strengthening linkages and co-ordination within the overall extension services

  » Aligning extension to government policy, particularly privatization, liberalization, decentralization and democratization
Objectives of impact evaluation study

- Assess the incidence of rural public services among farming households
- Estimate the impacts of the program on various indicators associated with the objectives of the program, including:
  - Empowerment to organize and demand and manage advisory services;
  - Perception of the availability and delivery of advisory services;
  - Awareness and incidence and intensity of adoption of improved technologies and practices;
  - Agricultural productivity;
  - Market participation; and
  - Income, assets, food and nutrition security, and welfare
- Analyze and quantify the contribution of other factors that influence participation in the program and realization of the outcomes
- Assess the return on investments made so far in the program
Outline of remainder of presentation

- Key NAADS program principles and design features
- Conceptual framework for assessing NAADS impacts
- Methods, data, analysis
- Results
- Summary of key findings and implications
Key NAADS principles and design features

- Demand and control of agricultural technologies and extension advice ➔ economically active poor farmers through farmer groups

- Service provision ➔ private sector via technology demonstration sites (TDS) and trained community based facilitators (CBFs)

- Phased roll out ➔ allow for capacity building and lesson learning
Feed-back effect / dynamic perspective

NAADS Impact Pathways (Hypotheses)

Influencing Factors

Policy and national level (P)
Service providers (S)
Community level (C)
Group level (G)
Household level (H)
Farm level (F)

NAADS

Farmers empowered to organize, demand and manage advisory services

Increased awareness of improved or profitable production, NRM, post-harvest, and marketing information, technologies and practices

Increased market participation

Increased productivity

Improved NRM

Increased income and assets

Increased food and nutrition security

Impact pathway
Influencing factors
Feed-back effect / dynamic perspective
Main challenge in impact evaluation

- Attributing change in the outcome indicator of interest to the program or intervention

- Notion is to establish a reliable control group for the participants of the program (or treatment group) and then compare changes in the value of the indicator associated with the two groups

- Let $\mathbf{y}$ represent the set of outcome indicators of interest, then the impact of the NAADS program can be measured by … Average Treatment effect of the Treated:

$$\text{ATT}_j = E[y_{1j} | NAADS_j = 1] - E[y_{0j} | NAADS_j = 1]$$
Data: stratified panel data

Conducted household (HH) surveys in 2004 and 2007 (719 panel HHs). Categorized NAADS presence into three cohorts according to year NAADS program introduced into sub-county.

<table>
<thead>
<tr>
<th>Cohort (sub-county)</th>
<th>Year joined NAADS</th>
<th>Sample size (HHs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2004</td>
</tr>
<tr>
<td>Early NAADS</td>
<td>2001/02</td>
<td>402</td>
</tr>
<tr>
<td>Intermediate NAADS</td>
<td>2002/03</td>
<td>300</td>
</tr>
<tr>
<td>Late NAADS</td>
<td>2005/06</td>
<td>0</td>
</tr>
<tr>
<td>Non-NAADS</td>
<td></td>
<td>200</td>
</tr>
</tbody>
</table>
Who is a NAADS participant?

- **Direct participant** (72 HHs) if farmer:
  - member of a NAADS-participating farmer group

- **Indirect participant** (354 HHs) if:
  - *not* a member of a NAADS-participating farmer group, but
  - received visit from a NAADS service provider
  or
  - received visit from a community based facilitator

- **Non-participant** otherwise (293 HHs)
Analytical methods and estimation procedure

- Panel data of 719 households

\[ E_j [y_{2007,j} - y_{2004,j} \mid NAADS_j = 1] - E_i [y_{2007,i} - y_{2004,i} \mid NAADS_i = 0] \]

- Direct and indirect effects estimated by combining matching and regression methods
  - Propensity Scores (probability of participation) used to match participants and non-participants
  - Simple double-difference (DD) based on matched sample
  - Two-stage weighted regression (2SWR) using based on matched sample and using propensity scores as weights
Selected Results
Adoption of improved technologies

- Positive effect of NAADS on adoption of improved technologies and practices
- Direct participants caught up with indirect participants in 2007
Crop and livestock productivity

- Positive and significant impact on crop and livestock productivity
- Greater direct effect on livestock productivity, but greater indirect effect on crop productivity
- Relatively smaller total effect on livestock productivity is unclear
Commercialization (sales of outputs)

- Small positive impact on commercialization of agriculture
- Positive direct impact on sale of crop and livestock output
- Negative but insignificant indirect impact on sale of livestock output

![Bar chart showing direct, indirect, and total effects of commercialization on crop and livestock output.](chart.png)
Gross agricultural income

- Significant positive impact on overall agricultural income
- Direct effect is about 40% greater increase in the per capita agricultural income of participants compared to non-participants

![Bar chart showing direct, indirect, and total effect](chart.png)
Perception of change in welfare

- More participants than non-participants perceived that their standard of living had improved between 2000-07
- More non-participants than participants perceived that their situation had not changed or it had worsened between 2000-07

![Graph showing changes in perceptions of welfare](image-url)
Several factors have enhanced the program’s effects. For example, the program has been more effective among men, the younger generation, those with primary education, the asset poor, and those living in the Eastern and Northern Regions.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Education</th>
<th>Assets</th>
<th>Dist to mkt</th>
<th>Region</th>
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</thead>
<tbody>
<tr>
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<td>40</td>
<td>none</td>
<td>prim</td>
<td>post-prin</td>
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<tr>
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<td>prim</td>
<td>post-prin</td>
<td>Rich</td>
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<td></td>
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<td>Poor</td>
<td>Middle</td>
<td>&lt;5km</td>
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<td>North</td>
<td>West</td>
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Returns to Investments
NAADDS Expenditures

- **National total:** about UGX 110 billion (2000 value) spent between 2001/02-2006/07

- **In surveyed sub-counties:** about UGX 7 billion spent, shifted over time from farmer institutional development to Advisory/Information services to TDS (figure)
Returns to NAADS Investment

- **Cost adjustments**
  - Imputed cost district governments and opportunity cost of time of CBFs
  - Cost of related farm inputs and operations: 35% of gross income
  - Cost of raising public funds: 0.125% interest on loan

**Estimated benefit-cost ratio is 1.6-3.5**
Summary of key findings and implications (1)

- NAADS program has had a positive impact on overall welfare between 2000 and 2007
  - More NAADS participants than non-participants perceived that their standard of living had improved
  - More non-participants than participants perceived that their situation had not changed or it had worsened

- Positive impact on crop and livestock productivity and overall agricultural income
  - 30-40% greater increase in the per capita agricultural income of participants compared to non-participants
  - The program has been more effective among men, the younger generation, the asset poor, and in the worse-off regions
Summary of key findings and implications (2)

- Participation in program increased the capacity of farmers to demand production and post-production advisory services

- Higher physical capital endowment and level of education are major factors associated with higher demand for advisory services
  
  » Efforts to build capacity of farmers to demand advisory services should be directed more to resource-poorer farmers
  
  » Building capacity of farmers should be supported by other programs that help farmers to acquire productive assets and improve their education
Thank you