Fertilizer in Rwanda

Addressing the Challenges of Organizing and Assigning Responsibility for Fertilizer Promotion and Input Sector Support Programs

by

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Overview of roundtable

- Review changes in fertilizer sector and support programs since early 1990s and assess impacts
- Describe recent experience with fertilizer demonstration plots to stimulate demand
- Discuss ways of improving demo programs
- Discuss ways of better organizing agriculture sector support programs (research, policy analysis, monitoring and evaluation)
Recent Fertilizer Sector Developments

- End of EU fertilizer program in 1998
- Fertilizer profitability updated in 1999
- Policy reforms initiated in 2000
- ARMDP 3-yr. test project begins 2000
- Demonstration programs 2001-2002
- World Bank funding for Rural Sector Support Project began in 2002
- USAID-funded support programs ending

Assessing the Impacts of Research, Policy Reform, and Demonstrations

- Identification of more profitable fertilizer recommendations.
- Relatively smooth transition from a fertilizer supply dominated by government and donors to one dominated by private importers and distributors.
- Improved price stability indicating that supply is meeting effective demand.
- Increased imports and consumption of fertilizer on non-beverage food crops.
FSRP/FAO Traffic Light Guide to Fertilizer Mapping

Red indicates that promotion of fertilizer is NOT RECOMMENDED

Yellow indicates that a targeted fertilizer promotion program is recommended with monitoring

Green indicates that a STRONG FERTILIZER PROMOTION program is recommended

Sorghum: Recommendations
Relative profitability: DAP + urea versus NPK

Example of Irish Potatoes
Zone 5c of Ruhengeri or Gisenyi

<table>
<thead>
<tr>
<th>Dose (kg/ha)</th>
<th>NPK=300</th>
<th>DAP=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response (kg/ha)</td>
<td>8220</td>
<td>11750</td>
</tr>
<tr>
<td>V/C (1999 prices)</td>
<td>3,1</td>
<td>12,7</td>
</tr>
</tbody>
</table>

Stabilization of Fertilizer Prices
Fertilizer Import Trends for Non-Beverage Crops

<table>
<thead>
<tr>
<th>Year</th>
<th>Imports (tons)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>3780</td>
<td>Last year of EU program</td>
</tr>
<tr>
<td>1999</td>
<td>731</td>
<td>Pre-reforms</td>
</tr>
<tr>
<td>2000</td>
<td>2094</td>
<td>Early post-reform period</td>
</tr>
<tr>
<td>2001</td>
<td>6126</td>
<td>Moving ahead</td>
</tr>
<tr>
<td>2002 (end Sep)</td>
<td>2701</td>
<td>Slowing down</td>
</tr>
</tbody>
</table>

Implications of recent downturn

- Continued efforts to stimulate fertilizer demand are needed.
- This means learning from recent demonstration programs and improving on them.
Highlights of MINAGRI demo program design

- Targeted most profitable zones/crops
- Minimum standards had to be met by participating farmers
- Implemented by DVC with assistance from FSRP in monitoring/evaluation

Location of MINAGRI Demos: 2001B
Highlights of MINAGRI Implementation

- Staff/resources over-extended
- District agronomists and farmers poorly supervised
- Some evidence of positive results

MINAGRI Demo results (means)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Yield (Kg/Are)</th>
<th>V/C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irish potatoes</td>
<td>33</td>
<td>4.3</td>
</tr>
<tr>
<td>Climbing beans</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Maize</td>
<td>12</td>
<td>1.8</td>
</tr>
<tr>
<td>Sorghum</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>Soybeans</td>
<td>3</td>
<td>1.6</td>
</tr>
</tbody>
</table>
ARMDP Demonstration Design

- Fertilizer promotion and profitability not focus
  - Training lead farmers and rural associations had a higher priority than fertilizer promotion
  - Fertilizer profitability was one of many factors determining the choice of target zones
- Demonstrations differed from MINAGRI
  - Often in zones without a “green light”
  - Even when in a zone with a “green light” different fertilizer doses were allowed
  - Very small plots used (1 are)

ARMDP Demonstration Results

- “Except for Irish potatoes, the average profitability of fertilizer use is not apparent.” (Rapport PDMAR).
- BUT, when DAP/urea recommendations were used, the V/C ratios for maize and soybeans were >2 (better than the average results obtained by the MINAGRI demos)
Lessons from MINAGRI and ARMDP Demos

The research component of the demonstrations has confirmed that:

- Dap/urea fertilization of Irish potatoes is highly profitable in Ruhengeri, Gisenyi and Gikongoro.
- Dap/urea fertilization of maize is highly profitable in Gitarama, Byumba and Kigali Rural.
- Farmers participating in ARMDP programs are increasing input use.
Farmers in ARMDP Districts are Increasing Input Use

<table>
<thead>
<tr>
<th>Location</th>
<th>No. HH</th>
<th>% using 2001A</th>
<th>% using 2002A</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ntongwe</td>
<td>902</td>
<td>2</td>
<td>21</td>
<td>fertilizer</td>
</tr>
<tr>
<td>Ndiza</td>
<td>1040</td>
<td>11</td>
<td>74</td>
<td>fertilizer, pesticides</td>
</tr>
<tr>
<td>Taba</td>
<td>1117</td>
<td>17</td>
<td>42</td>
<td>fertilizer</td>
</tr>
</tbody>
</table>

More Lessons from Demos

- Poor implementation and supervision resulted in poor data and/or poor results for MINAGRI.
- Inadequate focus on profitable crop/zone combinations and most profitable doses reduced effectiveness of ARMDP demos.
- As a result of these inadequacies the pilot demos did not do an adequate job of showing farmers how profitable fertilizer can be, particularly on climbing beans, sorghum, and soybeans.
How to Improve Demonstrations

- Focus on one province per year
- Target crop/zone combinations with highest potential for fertilizer profitability first.
- Recommend only fertilizers and doses found to be most profitable in targeted zones.
- Harmonize official recommendations in *Agenda Agricole* with recent findings concerning DAP and urea profitability.

More on improving demos

- Adding a research component to the demonstration program is essential for improving policy and program design.
- The research component should include collection of data on the demonstration plot and follow-up surveys with farmers concerning subsequent fertilizer use.
- All demonstration programs conducted in Rwanda should participate in the monitoring and evaluation program and offer their results for inclusion in a consolidated analysis.
How to Complement Demonstrations

- Establish a system for monitoring soil changes in zones with high fertilizer consumption.
- Improve use of media for disseminating information about fertilizer profitability and prices.
- Facilitate farmer access to fertilizer to encourage expansion of fertilizer use after initial adoption.
- Stimulate expansion of output markets (local, regional, international)

Summary: Two priority recommendations

- Public sector demonstrations must remain the core of the fertilizer promotion strategy for increasing adoption and profitability of fertilizer use.
- National research and policy analysis capacity needs to be developed.
Moving Forward

- FSRP research suggests that Rwanda has the potential to use 23000 tons of fertilizer annually in the short to medium term.

- What must the GOR and its partners do to get back on track in moving toward the 23000 ton estimated potential?

- FSRP believes a major constraint is the lack of a clear strategy for the organization and implementation of fertilizer sector activities.

Moving from Project-Based to GOR-Based Design and Implementation

- At the national level
  - Who will be responsible...
    - for design of programs and policies?
    - for implementation?
    - for monitoring and evaluation?
    - for funding?
  - How can capacity be built to ensure that fertilizer policy analysis and extension programs continue when project funding ends?
Moving from Project-Based to GOR-Based Design and Implementation

**At the local level**
- Who will implement local programs?
- Who will monitor results?
- What will be the contribution of local beneficiaries?
- To what extent will decentralization affect the ability of local governments to design, fund, and implement their own programs?

Organizing the discussion

**Tasks**
- Demos (I, M&E)
  - Policy analysis
- Basic research
- Policy analysis

**Resources**
- MINAGRI
- Donors
- NGOs
- ISAR
- University
- Other schools
- Rural associations
Profitable Fertilizer Treatments for Sorghum

<table>
<thead>
<tr>
<th>Zone</th>
<th>Treatment*</th>
<th>Fertilizer Response (kg/ha)</th>
<th>Markets</th>
<th>Sorghum Price (Rwf/kg)**</th>
<th>V/C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>4b-Plateau du Sud</td>
<td>76 kg DAP 78 kg Urea</td>
<td>576</td>
<td>Butare</td>
<td>143/110</td>
<td>2,1</td>
</tr>
<tr>
<td>4d-Plateau du B.-B.</td>
<td>90 kg DAP* 70 kg Urea</td>
<td>1357</td>
<td>Kigali-Ville</td>
<td>100</td>
<td>4,2</td>
</tr>
<tr>
<td>4f-Plateau de l’Est</td>
<td>76 kg DAP 78 kg Urea</td>
<td>807</td>
<td>Kibungo</td>
<td>114/82</td>
<td>2,3</td>
</tr>
<tr>
<td>6A-Bugesera</td>
<td>110 kg DAP* 80 kg Urea</td>
<td>1864</td>
<td>Nyamata</td>
<td>80</td>
<td>3,6</td>
</tr>
</tbody>
</table>

* All treatment results based on application of 1-7 tons of manure/hectare on both test and control plots.

** When one price is shown analysis used nominal market price for Sept/Oct 1999; when two prices are shown analysis used average prices from 1995-1999 (base=Dec 1998) and two scenario: (1) average of prices during the harvest period and (2) average prices during the scarcity period. For the latter case, v/c ratios shown are an average of the two scenarios.
Riz : Recommandations