

Improving Productivity Growth in Africa

How much is needed?
What are the challenges?
What are the opportunities?
How do we realize them?

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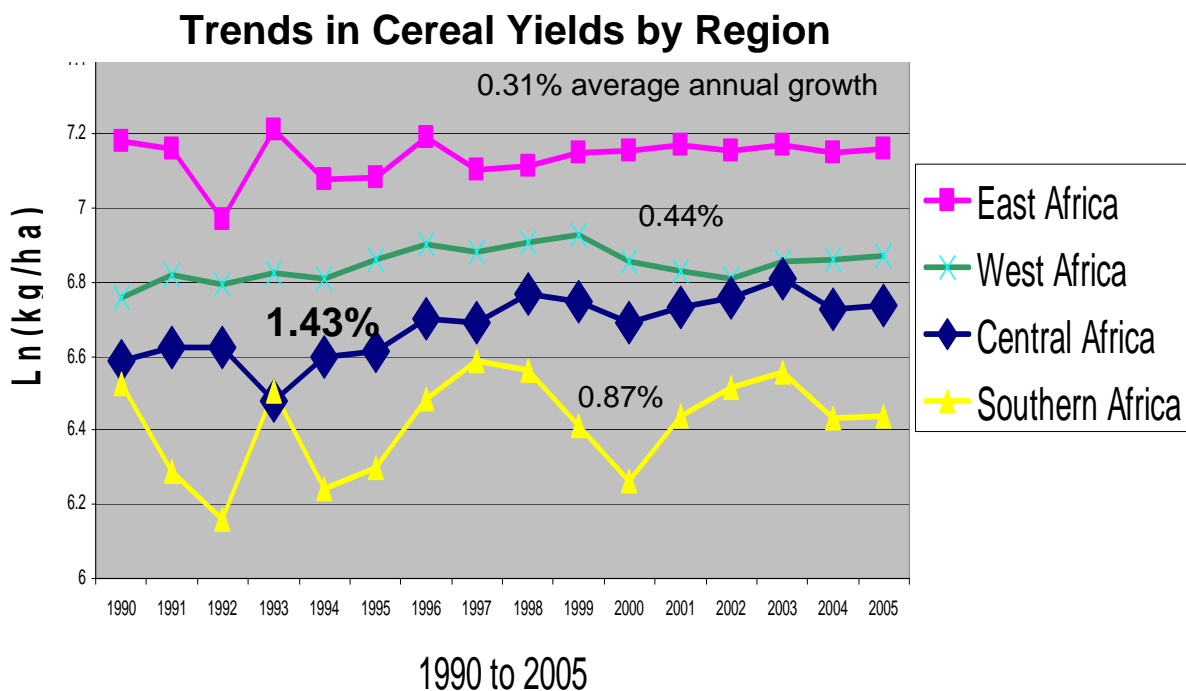
What do we mean by productivity growth?

- Important to think about definitions and measurement for the SAKSS context
- Most commonly used measures:
 - Returns to land (yield growth)
 - Returns to labor
 - Total Factor Productivity (TFP)

How much growth is required?

- Estimates for SSA made during 1990s
 - 3% annual growth in yields
 - 1.5% annual growth in labor productivity
 - Area expansion of 20 million ha of cereals
- Indian experience 1970-1990
 - 3% annual yield growth
 - 1.7% annual growth in labor productivity

How much growth do we have?



What are the challenges to increasing productivity growth?

- Economy-wide challenges:
Inadequate investment in “non-conventional” inputs such as public goods (transport, education) and policies that stimulate private initiative and market development
- Ag sector challenges:
Inadequate or inappropriate use of “conventional” inputs such as land, labor, fertilizer, seed, pesticides

What are the opportunities for Ministries of Agriculture wanting to promote productivity growth?

- On-the-shelf technologies
- Public/private partnerships for extension
- Irrigation
- Pro-growth and pro-poor agricultural research
- Diversification of crops and ag activities
- Lobbying other branches of government for provision of “non-conventional” inputs

On-the-shelf technologies

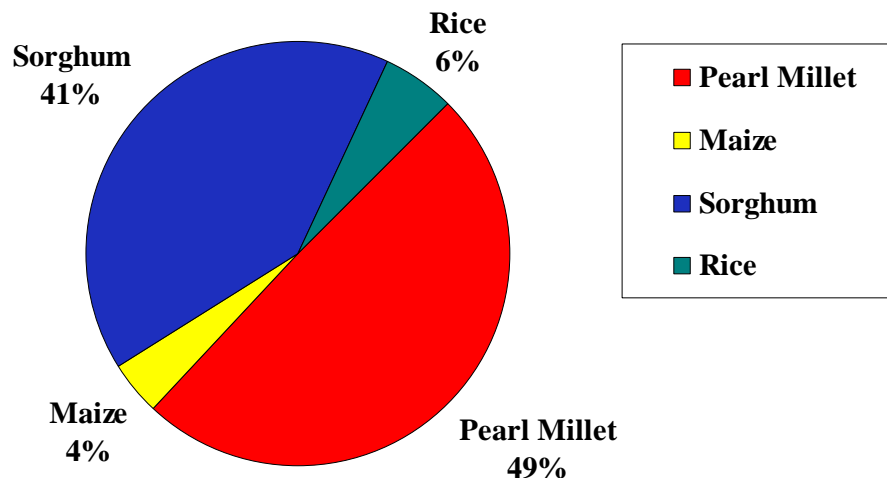
Include:

- Some improved varieties for traditional food crops
- SWC, ISFM, CF, NRM practices
- Inorganic fertilizers for a variety of crops and agroecologies

Improved Varieties for Traditional Food Crops

- The problem:
 - Not as many high-yielding varieties as hoped for
 - Low adoption of varieties with good yield potential
- Factors that improve adoption include:
 - Introduction of new varieties in combination with risk reducing cultivation practices (e.g., SWC)
 - Demand-pull markets (pulses for processing or export)
 - Small pack test packages (SeedCo in Zimbabwe)
 - Promotion in combination with inorganic fertilizers
 - Improved management of food aid and food security programs to maintain profitable output prices

Contribution of individual crops to total cereal production in the Semi-Arid Tropics of W & C Africa



Source: ICRISAT

Evidence on the *Acronym* Technologies

Yields Before/After Adoption of SWC practices in Mali

Crops	Before	After SWC		
	(1999)	(2000)	(2001)	(2002)
Sorghum	647	969	1,027	1,018
Millet	678	936	1,044	1,004
Maize	1,025	1,422	1,467	1,900
Cotton	810	1,171	1,191	998
Rainfall (mm in Segou)	955	624	673	505
Rainfall (mm in Sikasso)	1,123	973	1,022	779

Source: Berthé 2004.

Productivity potential of fertilizer

- Maize and rice have best response in SSA
- Some bright spots for sorghums
- Poor results for millet
- Mixed results for cash crops (coffee, peanuts, cotton, etc.)

Bright spots in fertilizer promotion: FIPS Approach

- Demonstration plots
- Extension messages/tools to improve seed spacing and fertilizer placement
- Soil testing by proxy
- Building retail networks
- Small packs for small budgets
- New product development and testing
- 3 year horizon for scale impacts

Demos stimulate fertilizer use by smallholders

FIPS in Kenya found:

- 10% adoption in first year
- 40-60% in second/third
- ALL THROUGH SALES!



- **Good way to promote public private partnerships**

- FIPS promoting sales of fertilizer small packs with free seed samples provided by seed companies
- Agricultural fairs expanding in Kenya
- CNFA in Malawi promoting supplier sponsored demos with extension participation

Small packs for seeds and fertilizer make both affordable



“On-the-shelf” caveats

- Adoption to date has generally been by higher income households
- Knowledge base on what has blocked further expansion is poor, particularly for the “acronyms”
- Quantitative data on yield, profitability and environmental benefits over time needs to be improved
- Extension must do better if these technologies are to make a difference

Adapting extension to current realities

- Less dependence on donor funding
- More balance between budget for personnel and operations
- More public/private partnerships
- Transition from agronomic focus to farming as a business focus
 - Requires retraining existing staff
 - Requires new diploma programs

Potential of Irrigation Investments

- *Office du Niger* in Mali has been a major (but rare) SSA irrigation success story
 - Rice now 12.3% of agricultural value added, (up from only 4.3% in the 1980s).
 - Average annual growth 1980 to present 9.3%
- Debate continues in Mali and elsewhere about merits of different scales and qualities of irrigation investments

Opportunities for pro-growth and pro-poor agricultural research

- Bt Cotton-Burkina preliminary results
 - 20% yield increase and 4 fewer insecticide applications
 - Potential for \$7-\$67 million benefits per country in W. Africa depending on adoption and yield advantages
- Disease-resistant and variable production cycles for domestic horticultural crops
- Dual-purpose dwarf sorghums
- Heat-tolerant animal vaccines
- Improved nutrition and labor productivity through food quality improvements

Opportunities for Income Diversification



New income crops

Can be complement to and financing for traditional food crops

Need market research and value chain analysis

Lobbying for “non-conventional” inputs

- MOA can't build roads, but can identify needs and develop food for work or input voucher programs to get them built
- MOA often not responsible for water infrastructure, but can identify needs and make sure research/extension are ready so infrastructure used in a cost-effective manner
- MOA usually doesn't regulate and legislate but can work with appropriate services to develop regulations and provide funding for enforcement
- Etc., etc....

Summarizing Key Responses to Initial Questions?

- How much productivity growth is needed?
 - Probably more than the 3%
- What are the opportunities?
 - On-the-shelf technologies
 - Public/private partnerships for extension
 - Irrigation
 - Pro-growth and pro-poor agricultural research
 - Diversification of crops and ag activities
 - Lobbying for provision of “non-conventional” inputs

Some priorities for MOA action and expenditures

- Market friendly input promotion programs involving public/private partnerships in research, extension, input supply and output marketing to move existing technologies off the shelf
- Decentralization and redirection of extension services based on analysis of needs at local level and application of “farming as a business” approach
- More solid empirical analysis of input promotion programs (costs/benefits) and determinants of farmer adoption – need to monitor impacts over 5 or more years
- B/C analyses of irrigation infrastructure investments, with attention to financial returns and income distribution
- Lobbying of other branches of government to get more investment in “non-conventional” inputs

The End