AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

POLICY SYNTHESIS
for Cooperating USAID Offices and Country Missions
(http://www.aec.msu.edu/agecon/fs2/psynindx.htm)
Number 83 October 2008
Office of Sustainable Development

PROMOTING FERTILIZER USE IN AFRICA: CURRENT ISSUES AND EMPIRICAL EVIDENCE FROM MALAWI, ZAMBIA, AND KENYA*

Isaac Minde, T.S. Jayne, Eric Crawford, Joshua Ariga, and Jones Govereh**

INTRODUCTION: It is generally agreed that increasing agricultural productivity is critical to stimulating the rate of economic growth in Africa. There are many important and often complementary determinants of agricultural productivity. In this brief and the full paper it draws from, the focus is on fertilizer and improved seed, without intending to imply that they are the only or most significant productivity determinants.

Promoting the use of fertilizer and improved seed involves addressing the supply and demand constraints that keep usage rates low, especially among smallholder farmers. Such inputs must be available, affordable, and profitable—for suppliers and farmers alike—without creating untenable financial risks. Agricultural research, input market development, and direct promotion of input use through provision of credit and subsidized distribution are used to improve access to improved inputs and the incentive to use them.

Recently, the role of input subsidies in stimulating growth and addressing food security and poverty alleviation objectives has re-emerged as an important agricultural policy debate. Sharp increases in world food and fertilizer prices in 2007 and 2008 have created a sense of urgency in meeting productivity and social welfare goals, and have put fertilizer promotion programs and fertilizer subsidies high on the list of options for government and donor responses to the crisis.

OBJECTIVES: The purpose of this policy synthesis is to highlight insights from a paper that draws experiences with recent fertilizer promotion approaches in Malawi, Zambia, and Kenya, involving both subsidized distribution and development of private sector input markets. The aim of this cross-country work is to contribute empirically based insights about when to invest in fertilizer promotion programs, including those with a significant subsidy element, and about how best to design and implement them. The full report draws briefly from the extensive recent debate about the case for and against fertilizer subsidies and how to make them more effective. It then focuses on four salient questions:

- What are the guiding principles of a "smart" fertilizer subsidy program, and what determines its costs and benefits?
- What has been the experience of Malawi and Zambia with fertilizer subsidy programs—their achievements and limitations—and what lessons can be drawn for the design of future subsidy programs that would contribute most effectively to national food security and smallholder productivity?
- What can be learned from Kenya's experience of rapid smallholder adoption of fertilizer without subsidies?
- How do the sharply higher world food and fertilizer prices affect the justification for fertilizer subsidies in the region?

CONCLUSIONS AND IMPLICATIONS FOR POLICY: The existence of acute poverty and hunger, exacerbated by soaring food and fertilizer prices, cries out for an immediate response.

"Smart" fertilizer subsidy programs in Africa are attractive to many because they offer the potential to increase the food grain harvest and thus reduce hunger in the short run. Income gains transferred to farmers through the subsidy are expected to result in greater savings and investment in productive assets, contributing to longer-run growth. In addition, income transfers to farmers address the social and political objectives of poverty alleviation and improved equity.

However, achieving these benefits depends greatly on how the programs are implemented. The contribution of fertilizer subsidy programs to reducing poverty and hunger would be higher if they could be designed and implemented so as to (a) target households with little ability to afford fertilizer; (b) target areas where applying fertilizer can actually give positive net economic benefits; and (c) promote rather than undercutting the development of a commercial fertilizer distribution system.

1. **CONSIDERING SUBSIDIES:** The paper highlights several caveats to be considered before choosing to implement fertilizer subsidies:

a. ***Fertilizer subsidies may not be the best option for addressing the current crisis of high food and fertilizer prices***. Significant increases in demand for fertilizer are likely to drive up prices further (Salzburg, 2008). Also, the supply response to increased fertilizer use is not assured, given weather and other production risks prevalent in most of eastern and southern Africa. Thus, implementing large-scale fertilizer subsidy programs will not guarantee an adequate harvest. Lastly, subsidies targeted to particular crops such as maize may reduce area planted to other food crops such as cassava (Zulu et al., 2001), reducing the supply of alternative staple foods.

b. ***As a tool for increasing overall agricultural productivity, especially for small, poor farmers, fertilizer subsidies have a questionable record.*** Long experience with input subsidy programs in Africa is not encouraging on several points: (i) there is very little evidence from Africa that fertilizer subsidies have been a sustainable or cost-effective way to achieve agricultural productivity gains compared to other investments, (ii) there are no examples of subsidy programs where the benefits were not disproportionately captured by larger and relatively better-off farmers, even when efforts were made to target subsidies to the poor, and (iii) there is little evidence that subsidies or other intensive fertilizer promotion programs have "kick-started" productivity growth among poor farmers in Africa enough to sustain high levels of input use once the programs end.

c. ***In the high potential areas of Kenya, Zambia, and Malawi, many if not most households use fertilizer regularly.*** In lower-potential zones where fertilizer is profitable, low or no fertilizer use by many smallholders is explained not just by credit constraints that limit acquisition, but also by the risk of crop failure, with resulting financial losses and consumption shortfalls. The lack of insurance causes inefficiency in production choices (Dercon and Christiaensen, 2007). Recent trials of weather-indexed insurance are a promising potential solution for the risk problem (World Bank, 2007a, p. 149).

d. ***Hence, a balance is needed between interventions to address short-term supply shortages and avoid widespread hunger vs. investments and policies (targeted appropriately by region) to drive growth and lift poor households out of the poverty trap in which they are caught.*** Currently, the governments of Malawi and Zambia devote at least 60% of their agricultural budgets to input and crop marketing subsidies, leaving relatively little for the long-term investments required for sustainable reductions in poverty and hunger.

2. IF PROCEEDING WITH SUBSIDY PROGRAMS: For those planning to implement input subsidies, the experiences of

Zambia and Malawi provide several practical guidelines for how to maximize their effectiveness in meeting important national objectives other than economic growth, such as improved national food security, alleviation of poverty and hunger:

a. ***Use input vouchers that can be redeemed at local retail stores rather than direct distribution*** in order to maintain or improve the capacity of the private sector input delivery system.

b. ***Involve a wide range of fertilizer importers, wholesalers, and retailers in the input voucher scheme, even if it entails additional logistical costs.*** Providing tenders to only 2-3 firms to import fertilizer can entrench their position in the market, cause other firms to cease making investments in the system or drop out altogether, leading to a more concentrated input marketing system and restricted competition when the input subsidy program comes to an end. A system that allows farmers to redeem coupons at the full range of existing independent agro-dealer retail stores will promote additional investment in remote rural areas where it is most needed. By contrast, failure to involve the small rural retailers may lead many of them to stop carrying fertilizer, as was the case in Malawi after the 2005/06 season, leading to erosion rather than development of a private retailing system.

c. ***Before deciding to target the input vouchers, carefully consider the objectives of the targeting and the practical feasibility and costs of implementing a targeted program, including personnel costs, time requirements and potential delays, leakage, and displacement of commercial sales by subsidized inputs***.

If the subsidy program objective is to increase total output, then the inputs need to reach farmers who can use them efficiently and on a large enough area to generate significant gains in total output. Evidence indicates that a high proportion of non-poor farmers are able to acquire fertilizer through markets so spending scarce government resources to provide them with discounted fertilizer will largely substitute subsidized fertilizer for commercial fertilizer, adding relatively little to overall fertilizer use or crop output. In some cases, small farmers may also use fertilizer more efficiently than larger farmers.

If the subsidy program objective is to alleviate poverty, or to overcome liquidity constraints for poor farmers who would otherwise be unable to purchase fertilizer, then it must be possible to identify poor farmers, and socially acceptable to **channel vouchers to them, at a reasonable cost including leakage.** Assisting low-income households to acquire fertilizer or other inputs, especially in a high food price environment, may make the difference between their ability to eat and going hungry. Providing crop production support to relatively asset-poor households also contributes importantly to equity and social protection objectives,

If effective targeting does not seem feasible or achievable at an acceptable cost, then a small universal voucher program would be worth considering. For example, a program designed to provide all farmers with inputs for 0.2 ha would primarily benefit small farmers while at the same time limiting the displacement of commercial purchases by larger higher-income farmers, some degree of which might occur anyway under a program that fails to target small farmers successfully.

d. ***Address infrastructure and input supply constraints as well as improving procurement efficiency (joint procurement arrangements and regional procurement hubs).*** This will help achieve the goal of enhancing farm-level fertilizer supplies at a lower price. Facilitating the movement of fertilizers across borders (removing customs duties and export taxes) will also contribute to overall improvements in supply efficiency.

3**. OTHER BUILDING BLOCKS OF IMPROVED FERTILIZER USE:** Whether fertilizer subsidy programs are implemented or not, the following investments and policies are important for attacking the underlying fundamental constraints to obtaining a high economic and social payoff to improved fertilizer use.

a. ***Facilitate private sector partnerships with farmers***, such as through contract

farming where conditions are suitable, would go a long way toward reducing the financial burden on government.

b. ***Strengthen farmers' effective demand for fertilizer by making fertilizer use profitable and by building durable input and output markets that can absorb the increased output without gluts that depress producer prices***. This involves two major commitments from government:

- To increase farmers' demand for fertilizer, governments should invest in rural infrastructure, efficient port facilities and standards of commerce to reduce the costs of distribution; fund agricultural research to produce seeds that respond to fertilizer; determine and disseminate fertilizer use recommendations that are appropriate for different areas (as opposed to one blanket recommendation for an entire country); and nurture the development of rural financial systems, market information systems, institutions for contract enforcement, and telecommunications to attract new investments by commodity marketing firms. These "public goods" investments, often considered outside the scope of fertilizer marketing policy, nevertheless strongly affect the demand for fertilizer and hence whether sustainable markets for fertilizer can arise.

- To build durable input and output markets, governments should establish a supportive policy environment that attracts local and foreign direct investment The case of Kenya shows how a stable policy environment has induced an impressive private sector response that has helped to make fertilizer accessible to most small farmers. Importantly, this has involved reforms to the financial market (elimination of foreign exchange controls) as well as to fertilizer and crop markets. In other countries, the implementation of large subsidy programs has inhibited the type of private investment response seen in Kenya, due to the risk of huge losses that subsidy programs inflict on commercial input dealers.

c. ***Increase fertilizer use efficiency*** by promoting farmers' use of improved crop management practices such as crop rotation with legumes, changes in density and spacing patterns of seeds and placement of fertilizer and seeds at planting (FIPS Africa, 2008), improved soil organic matter, early planting, timely weeding, applying fertilizer in response to rainfall (Snapp, Blackie, and Donovan, 2003; Blackie et al., 2006), water harvesting, and other conservation farming methods (Haggblade and Tembo, 2003)

REFERENCES/ACKNOWLEDGMENTS:

For details on references listed in this brief, see the full paper.

* The full study is downloadable at: http://www.aec.msu.edu/agecon/fs2/inputs/documents/ReSAKSS_Fert_report_final.pdf
This study was carried out for the Regional Strategic Agricultural Knowledge Support System (Re-SAKSS) for Southern Africa, based at the International Water Management Institute, Pretoria, South Africa, managed by ICRISAT, IFPRI and IWMI, and funded by USAID, DfID and Sida. Much of the data and analysis reported in this study was carried out under the Tegemeo Agricultural Monitoring and Policy Analysis Project, funded by USAID/Kenya; the Food Security Research Project and the Markets, Trade and Enabling Environment (MATEP) Program, funded by USAID/Zambia and the Swedish International Development Agency; and by the Food Security Cooperative Agreement, funded by AID/Washington's Africa (AFR) and Economic Growth, Agriculture and Trade (EGAT) Bureaus.
** See the full study for author affiliations.

This brief is published with funding provided by the American people, via the Food Security III Cooperative Agreement (GDG-A-00-000021-00) between Michigan State University and the United States Agency for International Development, through the Africa Bureau, and the Bureau for Economic Growth, Agriculture and Trade's Office of Agriculture and Food Security. All errors are the authors' sole responsibility.