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TOWARDS A STRATEGY FOR IMPROVING AGRICULTURAL INPUTS MARKETS IN AFRICA

By

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BACKGROUND: As we enter the 21st century, figuring out how to improve rural as well as urban food security, and to stimulate underlying food system development in Africa remains a major challenge. For over a decade MSU's Food Security Project has investigated the factors affecting farm productivity and agricultural inputs. This research has been based on a number of field surveys across Africa involving host country research collaborators, and MSU students and faculty.

This research actually began in the mid-1980s, prior to the Food Security Project, with studies of Senegal's fertilizer and seed distribution systems and factors affecting farmers' adoption of fertilizer. Later the research evolved to cover broader studies of social, economic and environmental factors influencing farm productivity throughout Sub-Saharan Africa (e.g., Burkina Faso, Rwanda, Zimbabwe, Zambia).

More recent efforts include analyses of the impact of structural adjustment reforms on input sectors (particularly in countries of the CFA franc zone), and studies of promising private sector and government initiatives to lower the cost of supplying inputs and other technology to farmers (Ethiopia, Mozambique, Kenya, Mali). Related research has been conducted on agricultural technology development and transfer, output marketing and market information systems, and synergies between cash and food crops. Field studies have been complemented with literature reviews on fertilizer response and profitability; technical aspects of the interactions between fertilizer use, organic matter, and soil quality; and seed sector development.

OBJECTIVE: Host country and donor policy makers are currently revisiting the important question of how to develop realistic and sustainable strategies for

improving agricultural input markets in Africa. To help inform this discussion, the objective of this policy synthesis is to review key conclusions from Food Security Project research, and outline findings about major challenges ahead. More detailed results of these research efforts are summarized in a number of policy syntheses and research papers available from MSU and USAID (see list of downloadable Policy Syntheses by subtopic in Table 1).

KEY CONCLUSIONS: Agricultural intensification (i.e., raising yields on fixed supplies of arable land) based on privately and socially profitable technology (organic and inorganic fertilizers, soil/water conservation technologies, improved seeds, pesticides, and animal traction) is essential if rural incomes are to rise and Africa is to feed its rapidly growing population without destroying the natural environment.

1. In many Sub-Saharan African (SSA) countries, some smallholder and commercial farmers are successfully using improved technologies, often introduced by government- or NGO-sponsored projects or private sector (including joint venture or cooperative) outgrower schemes. Input-responsive technology, high-quality extension services, financially sound savings and credit systems, and well-functioning input and output markets are vital to **sustaining** farmer adoption of intensive practices and **expanding** the adoption of technologies by farmers outside the small group of relatively well-off early adopters.

2. Input and output markets serve farmers best when there is some degree of **vertical coordination** among input distribution, output marketing, and credit functions, which lowers costs and improves loan repayment rates. To date, the most successful and long-lived examples of vertical coordination have been in subsectors producing industrial or export crops (cotton, for example). In such cases, increased access to improved inputs and more reliable output markets stimulate productivity in food crops as well as in cash crops.

3. A key feature of these sustainable cash cropping schemes has been their ability to provide incentives that make it profitable over the long run for farmers to sell their output through the scheme. This in turn makes it profitable for the scheme to extend credit, inputs, and other services that support smallholder productivity growth (including for food crops), to the mutual benefit of both the scheme and participating farmers.

4. By contrast, where the institutional arrangements do not provide farmers with sufficient incentive to market their output through the scheme, the system often breaks down and the contribution of cash cropping to food crop productivity is not realized.

5. Through most of the 1980s, input delivery and output marketing activities in SSA were provided directly by government parastatals or semi-public

Table 1. *FS II Policy Syntheses* Relevant to Agricultural Inputs Market Development

(available on the Web at http://www.aec.msu.edu/agecon/fs2/psynindx.htm)

AGRICULTURAL PRODUCTIVITY

Number 3. Promoting Farm Investment for Sustainable Intensification of African Agriculture. Thomas Reardon, Eric Crawford, Valerie Kelly, and Bocar Diagana

Number 7. Cash Crop and Foodgrain Productivity in Senegal: Historical View, New Survey Evidence, and Policy Implications. Valerie Kelly, Bocar Diagana, Thomas Reardon, Matar Gaye, and Eric Crawford

Number 9. Will the CFA Franc Devaluation Enhance Sustainable Agricultural Intensification in the Senegalese Peanut Basin? Bocar Diagana and Valerie Kelly

Number 12. Food Marketing and Pricing Policy in Eastern and Southern Africa: Lessons for Increasing Agricultural Productivity and Access to Food. T. S. Jayne and Stephen Jones

Number 22. Determinants of Farm Productivity in Africa: A Synthesis of Four Case Studies. Thomas Reardon, Valerie Kelly, Eric Crawford, Thomas Jayne, Kimseyinga Savadogo, and Daniel Clay

TECHNOLOGY DEVELOPMENT AND AGRICULTURAL TRANSFORMATION

Number 13. Fostering Agricultural and Food System Transformation in Africa. John Staatz and Moussa Ba

Number 20. Payoffs to Investments in Agricultural Technology in Sub-Saharan Africa. James F. Oehmke and Eric W. Crawford

DEMAND AND SUPPLY FOR FERTILIZER AND SEED

Number 30. Developing Cereal-Based Demand for Fertilizer Among Smallholders in Southern Africa: Lessons Learned and Implications for Other African Regions. Joseph Rusike, Thomas Reardon, Julie Howard, and Valerie Kelly

Number 31. Seed Sector Evolution in Zambia And Zimbabwe: Has Farmer Access Improved Following Economic Reforms? Joseph Rusike, Julie Howard, and Mywish Maredia

Number 33. Facilitating Seed Sector Transformation in Africa: Key Findings From the Literature. Mywish Maredia and Julie Howard

LITERATURE REVIEWS ON FERTILIZER AND SOIL FERTILITY

Number 32. Fertilizer in Sub-Saharan Africa: Breaking the Vicious Circle of High Prices and Low Demand. Valerie Kelly, Thomas Reardon, David Yanggen, and Anwar Naseem

Number 37. Restoring Soil Fertility in Sub-Saharan Africa: Technical and Economic Issues. David Weight and Valerie Kelly

CASH CROP/FOOD CROP COMPLEMENTARITIES

Number 34. Smallholder Cash-Cropping, Food-Cropping and Food Security in Mozambique's Cotton Belt. Paul J. Strasberg

Number 39. Successes and Challenges of Food Market Reform: Experiences from Kenya, Mozambique, Zambia, and Zimbabwe. D. Tschirley, T. S. Jayne, M. Mukumbu, M. Chisvo, M. T. Weber, B. Zulu, R. Johansson, P. Santos, and D. Soroko

Number 40. Effects of Cash Crop Production on Food Crop Productivity in Zimbabwe: Synergies or Trade-offs? Jones Govereh and T. S. Jayne

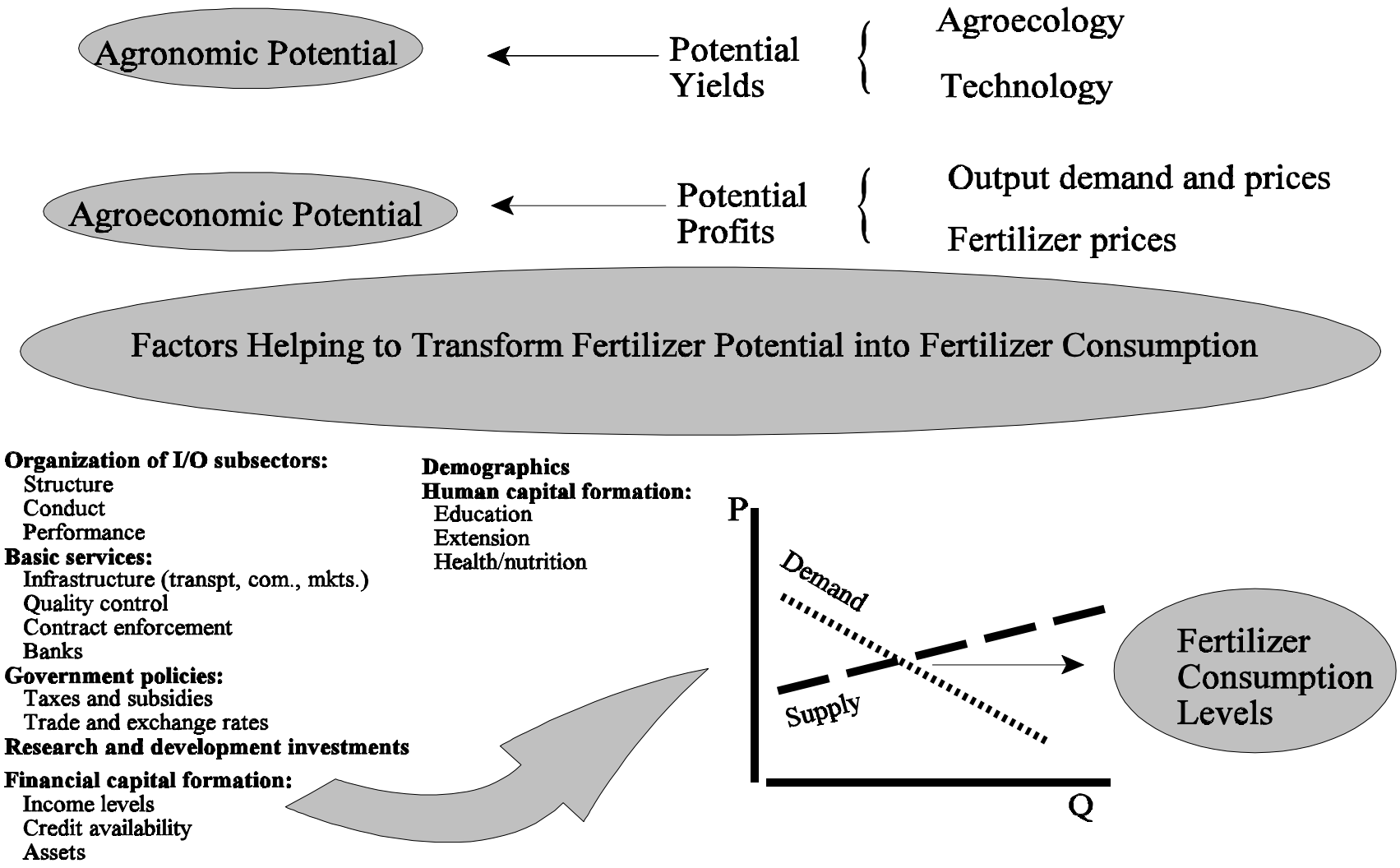
Number 41. Effects of Agricultural Commercialization on Food Crop Input Use and Productivity in Kenya. Paul J. Strasberg, T. S. Jayne, Takashi Yamano, James Nyoro, Daniel Karanja, and John Strauss

CASE STUDIES OF PROJECTS TO INCREASE INPUT USE AND PRODUCTIVITY

Number 38. Is Agricultural Intensification Profitable For Mozambican Smallholders? An Appraisal of the Inputs Subsector and the 1996/97 DNER/SG2000 Program. Julie A. Howard, José Jaime Jeje, David Tschirley, Paul Strasberg, Eric W. Crawford, and Michael T. Weber

Number 42. Green Revolution Technology Takes Root in Africa: The Promise and Challenge of the Ministry of Agriculture/SG2000 Experiment with Improved Cereals Technology in Ethiopia. Julie Howard, Valerie Kelly, Mulat Demeke, Mywish Maredia and Julie Stepanek

Figure 1: Determinants of Fertilizer Consumption



firms. Supported by direct and indirect subsidies, such activities frequently succeeded in boosting input use and marketed output, until budgetary deficits made them unsustainable. Subsequent structural reforms led to the removal of fertilizer subsides and the withdrawal of government from input distribution.

6. The fertilizer subsector in many countries has fallen into a low-demand, low-volume, high-input cost trap characterized by stagnant or declining use of improved seed/fertilizer technologies. Many had hoped that the private sector would take over the input marketing functions previously assured by government, yet high costs and risks (including policy uncertainty) have limited the scope of commercially viable private sector involvement. A few countries (e.g., Ethiopia) have made progress in stimulating farmers' use of improved inputs, but the sustainability of such efforts remains a concern.

MAJOR CHALLENGES:

1. While input and output marketing should be assured largely by the private sector, some government involvement is needed to facilitate efficient and transparent markets (See Figure 1 for an illustration of factors helping to transform fertilizer potential into consumption). The appropriate extent and type of government involvement is not obvious, however. Although economic theory provides some general guidelines, there is growing evidence that the role of government will vary from country to country and by stage in the agricultural transformation process, depending on factors such as capacity of the private sector to invest in input markets (which have high capital requirements and low profit margins) and farmers' effective demand for purchased inputs (dependent on availability of profitable technology, and farmers' knowledge of that technology and financial capacity to invest in it).

2. Sustainable improvements in agricultural productivity will require not only developing more input-responsive production technologies but also reducing the real **costs** and the **risks** associated with input and output marketing. Country-level research is needed to identify investments and institutions—both public and private—that can reduce costs and risks, and provide incentives for adoption of improved production, processing, and marketing technology throughout the food system.

3. The choice of investments and policies to reduce the cost and risk of improved inputs should be based in part on a cost-benefit analysis that takes into account both private and social benefits including national and global environmental impacts.

4. **Costs:** Among the questions that need to be answered are how to:

   - achieve economies of scale to decrease unit costs

- encourage expansion of cash crop outgrower schemes that facilitate vertical coordination of marketing, credit and extension services with positive spillovers for other crops and household incomes

- facilitate collaboration between farmer associations, NGOs, and for-profit firms to reduce marketing, extension and credit costs.

5. **Risks:** We know something about how risk affects both farmers' and input suppliers' decisions, but much less about cost-effective ways to diminish its negative impacts. As technologies requiring high levels of external input use are extended to more marginal production environments and poorer farmers, risk management will become more important. Among the key issues to examine here are:

   - What mix of crops and improved technologies—including alternative soil fertility-enhancing technologies such as green manuring, minimum tillage, improved fallows—is financially and economically viable in riskier environments? Purchased inputs may not be appropriate for all farmers.

   - What complementary institutions and organizations are necessary to spread risk more evenly among farmers and input suppliers, thereby encouraging reliable use and repayment of inputs credit? How can such institutions and organizations be designed and operated in a cost-effective way?

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