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# Fertilizer Use In African Agriculture Lessons Lea

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## ANDREW BLANKENSHIP

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*Integrated Soil Fertility Management in Africa* International Monetary Fund  
 Most of the world's hunger and poverty occurs in rural areas. The use of fertilizers could improve agricultural productivity in these areas. However, many developing countries attach a low priority to the subsistence / smallholder sector, particularly in disadvantaged areas. This publication summarizes the information from 21 countries: the crops on which fertilizers are used, the social and structural context, appropriate fertilizer application rates and their profitability, arrangements for supplying fertilizers to

farmers and for marketing their produce, credit facilities, and research.

*Reforming agricultural markets in Africa* Island Press

Food security, one of the basic human rights, seems to be ever eluding the people of sub-Saharan Africa. With each occurrence of crop failure, agriculturalists around the world reawaken to the challenge of ensuring stable, adequate food production in the tropical African environments. The International Fertilizer Development Center (IFDC), with its mandate of alleviating food shortages through judicious use of fertilizers, formulated a program to study fertilizer use strategies for sub-Saharan Africa. With generous financial assistance from the International Fund for Agricultural Devel

opment (IFAD), IFDC, in collaboration with the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) and the International Institute for Tropical Agriculture (IITA), initiated a research project aimed at assessing means to remedy soil nutrient deficiencies that constrain food production in the humid, subhumid, and semiarid tropics of Africa. The results of this project were summarized during a workshop held in Togo, March 25-28, 1985; the proceedings of that meetings are found in this volume. The project established collaboration with numerous national programs that were responsible for much of the data collection. The data presented in Chapters 6 and 9 include much of this information. We wish to acknowledge the contribution

of the individual scientists, J.T. Ambe, F. Ganry, M. Gaoh, M. Issaka, J. Kiazolu, J. Kikafunde-Twine, K. Kpombekou, F. Lompo, H.

Successes in African Agriculture Intl Food Policy Res Inst

The long-term reduction of hunger and poverty in Sub-Saharan Africa remains one of the great challenges for the international development community.

Eliminating hunger and promoting widespread growth in the region inevitably involves agriculture, given its central role in the region's economies. Over the past 20 years, most African governments have carried out reforms to deregulate agricultural markets and reduce the role of state enterprises. How much has the state actually withdrawn from agricultural markets? Have well-functioning private markets emerged? How successful were these reforms in boosting agricultural production, economic growth, and the incomes of the rural poor? What lessons can we learn from the reform process? The authors of this book address these questions through an analysis based on an extensive review of experiences with reform, focusing on three major agricultural markets: fertilizer, food crops, and export crops. They examine the historical rationales for intervention, the factors contributing to reform, the process of implementation, and the impact of the reforms on farmers and consumers in Sub-Saharan Africa. The authors find that reforms have had many favorable results, but that the impact has been muted by partial implementation and structural constraints. They propose a new agenda for promoting the development of agricultural markets in Sub-Saharan Africa, identifying areas where governments can play a supportive role. They argue that appropriate agricultural marketing policies and investments can improve livelihoods and the economic health of the region.

Agriculture in Africa Springer Nature  
Fertilizer in selected sub-saharan countries; fertilizer policy in Benin; principal constraints to fertilizer use in Cameroon; the fertilizer sector in cote D'Ivoire; the place of fertilizer in Ghana's quest for increased agricultural productivity; fertilizer policy in Kenya; fertilizer supply and demand in Malawi; fertilizer policy and programs: Nigeria's experience; fertilizer use in Senegal and perspectives; problems related to the use of fertilizers in Togo; fertilizer policy in Zambia; fertilizer use in Zimbabwe: supply, demand, policy and related problems; fertilizer consumption in sub-saharan Africa: an analysis of growth and profile of use; fertilizer supply in sub-

saharan Africa - an analysis; fertilizer use in Asia: lessons from selected country experiences; agronomic aspects of mineral and organic fertilizer use in sub-saharan Africa; micro-socio economic research on constraints to fertilizer use in sub-saharan Africa for policy development; strategies to enhance the dissemination of fertilizer information in the sub-saharan region.

Improving Crop Yields in Sub-Saharan Africa - What Does the East African Data Say World Bank Publications

This book looks at the input-output relations of low-resource agriculture in Africa and shows how the intensification process through the application of modern technologies can work successfully to raise productivity and to sustain production over the long term.

Aid to African Agriculture World Bank Publications

The book gives a detailed description of the application of DSSAT in simulating crop and soil processes within various Agro-ecological zones in Africa. The book, an output of a series of 3 workshops, provides examples of the application of DSSAT models to simulate nitrogen applications, soil and water conservation practices including effects of zai technology, phosphorus and maize productivity, generation of genetic coefficients, long-term soil fertility management technologies in the drylands, microdosing, optimization of nitrogen x germplasm x water, spatial analysis of water and nutrient use efficiencies and, tradeoff analysis. The minimum dataset requirements for DSSAT is discussed. This book arises from attempts to address the limited use of models in decision support by African agricultural (both soil scientist and agronomists) scientists.

Fertilizer Use Optimization in Sub-Saharan Africa Routledge

The good practice guidelines - which form the basis of an interactive policymaker's tool kit included on a CD accompanying the book - relate not only to the more focused problem of encouraging increased fertilizer use by farmers, but also to the broader challenge of creating the type of enabling environment that is needed to support the emergence of efficient, dynamic and commercially viable fertilizer marketing systems."--Jacket.

Fertilizer Use in African Agriculture Ifdc-An International Center for Soil Fertility and Agricultural Development

As part of its efforts to improve fertilizer use and efficiency in West Africa, and following the recent adoption of the West African fertilizer recommendation action plan (RAP) by ECOWAS, this volume

focuses on IFDC's technical lead with key partner institutions and experts to build on previous and current fertilizer recommendations for various crops and countries in West Africa for wider uptake by public policy makers and fertilizer industry actors.

**Improving the Profitability, Sustainability and Efficiency of Nutrients Through Site Specific Fertilizer Recommendations in West Africa Agro-Ecosystems** Muscle Shoals, Ala. : International Fertilizer Development Center ; Washington, D.C. : International Food Policy Research Institute

This book explores recent experiences in the effort to bring about a Green Revolution in Sub-Saharan Africa (SSA). The chapters focus on rice and maize, which are promising and strategic smallholder crops. Significantly, we find that an African Rice Revolution has already begun in many irrigated areas, using Asian-type modern varieties, chemical fertilizer, and improved management practices. Further, we find that the same technological package significantly increases the productivity and profitability of rice farming in rainfed areas as well. We also find evidence that that management training, when done well, can boost productivity on smallholder farms. This suggests that African governments can accelerate the pace of Africa's Rice Revolution by strengthening extension capacity. The story for maize is wholly different, where most farmers use local varieties, apply little chemical fertilizer, and obtain very low yields. However, in the highly populated highlands of Kenya, a number of farmers have adopted high-yielding hybrid maize varieties and chemical fertilizer, as was the case in the Asian Green Revolution, apply manure produced by stall-fed cows, as was the case during the British Agricultural Revolution, and keep improved cows or cross-breeds from European cows and local stock, as was the case of the Indian White Revolution. We conclude that while rice in Africa has benefited from an Asian Green Revolution strategy that emphasizes modern seeds, inputs, and focused knowledge transfers, the success of Africa's Maize Revolution will require a different system approach based on hybrid maize, chemical and organic fertilizers, and stall-fed cross-bred cows.

**Reaping Richer Returns** Intl Food Policy Res Inst

As part of its efforts to improve fertilizer use and efficiency in West Africa, and following the recent adoption of the West African fertilizer recommendation action

plan (RAP) by ECOWAS, this volume focuses on IFDC's technical lead with key partner institutions and experts to build on previous and current fertilizer recommendations for various crops and countries in West Africa for wider uptake by public policy makers and fertilizer industry actors.

**The Role of Smallholder Farms in Food and Nutrition Security** Springer Science & Business Media

This volume examines the dominant neoliberal agenda for agricultural development and hunger alleviation in Africa. The text reviews the history of African agricultural and food security policy in the post-colonial period, across a range of geographical contexts, in order to contextualise the productionist approach embedded in the much heralded New Green Revolution for Africa. This strategy, supported by a range of international agencies, promotes the use of hybrid seeds, fertilisers, and pesticides to boost crop production. This approach is underpinned by a new and unprecedented level of public-private partnerships as donors actively work to promote the private sector and build links between African farmers, input suppliers, agro-dealers, agro-processors, and retailers. On the consumer end, increased supermarket penetration into poorer neighbourhoods is proffered as a solution to urban food insecurity. The chapters in this volume complicate understandings of this new approach and raise serious questions about its effectiveness as a strategy for increasing food production and alleviating poverty across the continent. This book is based on a special issue of African Geographical Review.

**Fertilizer Policy in Tropical Africa** Springer Science & Business Media

This paper provides an overview of innovative options for developing and using water for food production in sub-Saharan Africa (SSA) in light of the growing scarcity and competition for water resources. These options include rainwater harvesting, selective development of wetlands for agriculture, exploitation of shallow groundwater, and recycling urban waste. The options are largely based on low-cost individualized technologies, which lend themselves to private-sector promotion. Water-demand management approaches are also discussed.

**Report of the Second Session on Soil Fertility and Fertilizer Use in West Africa, Held at Dakar, Senegal 11 to 16 Jan. 1965** CRC Press

Nitrogen is an essential element for plant growth and development and a key agricultural input-but in excess it can lead

to a host of problems for human and ecological health. Across the globe, distribution of fertilizer nitrogen is very uneven, with some areas subject to nitrogen pollution and others suffering from reduced soil fertility, diminished crop production, and other consequences of inadequate supply. Agriculture and the Nitrogen Cycle provides a global assessment of the role of nitrogen fertilizer in the nitrogen cycle. The focus of the book is regional, emphasizing the need to maintain food and fiber production while minimizing environmental impacts where fertilizer is abundant, and the need to enhance fertilizer utilization in systems where nitrogen is limited. The book is derived from a workshop held by the Scientific Committee on Problems of the Environment (SCOPE) in Kampala, Uganda, that brought together the world's leading scientists to examine and discuss the nitrogen cycle and related problems. It contains an overview chapter that summarizes the group's findings, four chapters on cross-cutting issues, and thirteen background chapters. The book offers a unique synthesis and provides an up-to-date, broad perspective on the issues of nitrogen fertilizer in food production and the interaction of nitrogen and the environment.

**Innovation In African Agriculture** Springer

For 25 years, population growth has outpaced increases in agricultural production in Sub-Saharan Africa. The lack of food and the degradation of agricultural land have forced policymakers to reassess agricultural strategies for the region. This paper provides such a reassessment by identifying policies and investments that have worked and those that have not. The author sets out the common elements required for agricultural and rural development throughout the region. The strategy presented in this paper comprises elements from several development sectors, including transport, water supply, education, finance, and the environment. The author makes five broad recommendations to promote Region: adoption of policies to promote private sector farming and agricultural marketing, processing, and credit development and distribution of new technologies inclusion of farmers in decisions affecting their livelihood development of infrastructure and social programs in support of agriculture improved management of natural resources Projections of the likely effects of the proposed policies and investments are included. Tables throughout the text present statistics on agricultural growth rates, commodity

prices, and deforestation in the region. An annex contains more general tables, with information on population growth and fertility rates, land use, agricultural exports, and droughts. The strategies suggested in this paper will be of interest to policymakers, academics, and to development practitioners involved in African agriculture.

**Planning and Organization of Fertilizer Use Development in Africa** IWMI

This volume explores the usefulness of the Asian model of agricultural development for Africa, where, even before the recent world food crisis, half the population lived on less than on dollar a day, and a staggering one in three people and one third of all children were undernourished. Africa has abundant natural resources; agriculture provides most of its jobs, a third of national income and a larger portion of total export earnings. However the levels of land and labor productivity rank among the worst in the world. The book explains Africa's productivity gap and proposes ways to close it, by examining recent experience in Africa and by drawing on lessons from Asia.

**Alleviating Soil Fertility Constraints to Increased Crop Production in West Africa**

Springer Science & Business Media  
Recent micro level data from East Africa is used to benchmark aggregate data and assess the role of agricultural inputs in explaining variation in crop yields on smallholding plots. Fertilizer, improved seeds, protection against erosion and pesticides improve crop yields in Rwanda and Ethiopia, but not Uganda, possibly associated with lack of use there. With all positive yield determinants in place, wheat and maize yields could increase fourfold. The data hints at the negative effect of climate change on yields and the benefits of accompanying measures to mitigate its adverse impact (access to finance and protection against erosion). The adverse effect of crop damage on yields varies between 12/13 percent (Rwanda, Uganda) to 36 percent (Ethiopia). Protection against erosion and investment financing mitigate these effects considerably.

**Proceedings of Fertilizer Efficiency Research and Technology Transfer Workshop for Africa South of the Sahara** Intl Food Policy Res Inst

Given the central role that agriculture plays in the rural economy of Africa, several countries have implemented supply- and demand-driven policies and programs to promote sustainable fertilizer use, with mixed results. However, not much has been said about the market structure or competitive behavior along the supply chain in the highly

concentrated fertilizer industry, nor about how this affects fertilizer uptake in the region. Globally, the industry has only a few producers, and African countries are highly and increasingly dependent on imported fertilizer. Locally, fertilizer distribution channels are also characterized by a limited number of market actors, often with a poor dealer network.

*Weather Risk Intl Food Policy Res Inst*  
Tropical Africa escaped from the glaciers that covered the temperate parts of the world during the Ice Age. The legacy is that most of the parent materials of the soils of tropical Africa are old, highly weathered and devoid of bases and phosphate-bearing minerals. Traditional farming systems which were relatively stable and sustainable relied on long fallow periods after one to two years of cropping to maintain the productive capacity of the soils. In recent times and especially in densely populated areas, a sizeable class of 'landless' farmers have begun to cultivate marginal lands or to invade the 'forest reserves' thereby exacerbating the problems of land and environmental degradation. of soil fertility that will facilitate the production of adequate quantities of the principle  
Maintaining a level staples has become a major challenge to agricultural scientists in tropical Africa. To increase the nutrient supplying power of soils requires the inputs of fertilizers. These can be organic or inorganic. The efficiency with which

these externally supplied inputs can increase agricultural production and reduce soil and environmental deterioration is dependent on the ability of scientists to determine the right types and quantities of the products to apply to each soil, crop and cropping system as well as the ability of farmers to acquire requisite farm management skills.

*Variable returns to fertilizer use and its relationship to poverty* Springer

Africa can achieve self sufficiency in food production through adoption of innovations in the agriculture sector. Numerous soil fertility and crop production technologies have been generated through research, however, wide adoption has been low. African farmers need better technologies, more sustainable practices, and fertilizers to improve and sustain their crop productivity and to prevent further degradation of agricultural lands. The agricultural sector also needs to be supported by functional institutions and policies that will be able to respond to emerging challenges of globalization and climate change.

*Improving Soil Fertility Recommendations in Africa using the Decision Support System for Agrotechnology Transfer (DSSAT)* Intl Food Policy Res Inst

Stylized facts set agendas and shape debates. In rapidly changing and data scarce environments, they also risk being ill-informed, outdated and misleading. So, following higher food prices since the 2008

world food crisis, robust economic growth and rapid urbanization, and climatic change, is conventional wisdom about African agriculture and rural livelihoods still accurate? Or is it more akin to myth than fact? The essays in "Agriculture in Africa †" Telling Myths from Facts? aim to set the record straight. They exploit newly gathered, nationally representative, geo-referenced information at the household and plot level, from six African countries. In these new Living Standard Measurement Study-Integrated Surveys on Agriculture, every aspect of farming and non-farming life is queried—from the plots farmers cultivate, the crops they grow, the harvest that is achieved, and the inputs they use, to all the other sources of income they rely on and the risks they face. Together the surveys cover more than 40 percent of the Sub-Saharan African population. In all, sixteen conventional wisdoms are examined, relating to four themes: the extent of farmer's engagement in input, factor and product markets; the role of off-farm activities; the technology and farming systems used; and the risk environment farmers face. Some striking surprises, in true myth-busting fashion, emerge. And a number of new issues are also thrown up. The studies bring a more refined, empirically grounded understanding of the complex reality of African agriculture. They also confirm that investing in regular, nationally representative data collection yields high social returns.