

PROMOTING FERTILIZER USE IN ETHIOPIA

Economic theory typically does not justify the use of input subsidies because in general, the public cost of such subsidies is greater than the gains that will supposedly accrue to producers purchasing the inputs. However, there is one case in which input subsidies are justified: if input demand is hindered by a lack of infrastructure (such as transportation) or by market failures (such as credit or insurance), then the private marginal cost will be higher than the private marginal benefit of using the input and a public intervention may be required to decrease private costs and encourage input use. This idea was recently examined by an IFPRI study concerning the use of fertilizers in Ethiopia.¹

Since the early 1990s, Ethiopia has focused on increasing agricultural

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productivity, with particular emphasis placed on increasing the use of fertilizers and improving the country's infrastructure. Recent fertilizer imports have increased significantly, from 440 thousand

tons in 2008 to 890 thousand tons in 2012. However, the percentage of Ethiopian farmers using

fertilizers remains modest (30-40%), with an application rate (37 to 40 kg per hectare) that is lower than the recommended level. One explanation may be that fertilizer prices are too high: in 2006, the World Bank reported that the price of fertilizers is higher in Africa compared to other developing countries because of high ocean freights and domestic transportation costs.² Moreover, in Ethiopia, imports and fertilizer storage are centralized by a government input marketing agency, the Agricultural Input Supplies

AGRODEP is a Modeling Consortium of African researchers living and working in Africa with research interests ranging from economic modeling to regional integration and development to climate change, gender, poverty, and inequality. There are currently 153 members from 27 countries; our members work at top research institutions and universities in their own countries as well as various government agencies and non-profit organizations.

The **benefits of being an AGRODEP member** include opportunities for research grants, free access to cutting-edge economic research tools, data, and training. Members also gain access and exposure to large global networks of economic researchers and experts. [Click here to learn more.](#)

¹ Rashid, S., Tefera, N., Minot, N. and G. Ayele, 2013, Can modern input use be promoted without subsidies? An analysis of fertilizers in Ethiopia, *Agricultural Economics*, 44(2013), 1-17.

² World Bank 2006, Factors affecting the supply of fertilizers in Sub Saharan Africa, ARD Discussion Paper No. 24, The World Bank, Washington.

Enterprise (AISE), which may not be as efficient as a private company in terms of reducing costs and margins.

The IFPRI study conducted a survey in four major cereal-growing regions in Ethiopia in 2012. Contrary to what was expected, the authors found that fertilizer prices in Ethiopia actually appear to be very competitive: 10 to 30% lower than in neighboring countries. In particular, fertilizer prices are 10 to 15% lower in Ethiopia than in Kenya, where an important input subsidy program has been implemented. No such subsidies are in effect in Ethiopia.

The low prices seen in Ethiopia may be explained by the country's current policy promoting the use of fertilizer. Bank interest for fertilizer is fixed at 4.01% instead of the national lending rate of 12%; in addition, no storage costs or spoilage are allowed by the AISE, and the margins for the small cooperatives in charge of the

marketing and distribution of fertilizers are fixed by the government at only 1% of retail price. Together, these costs are estimated at US\$ 54 million per year. Moreover, the study finds that the costs associated with carryover stocks have increased significantly since 2008.

These findings show that Ethiopia's fertilizer promotion policy comes at a significant fiscal cost, and it remains to be seen if this cost is justified. To examine this issue, the authors conduct an evaluation of the profitability of fertilizer use by compiling estimates from secondary sources based on data available at experimental stations. Value Cost Ratios (VCRs) - that is to say, the value of increased yields due to fertilizer use relative to the cost of those fertilizers - is then estimated. Generally, it is thought that a VCR of at least 2 is needed in order for fertilizers in Africa to be profitable. The study finds a range of VCRs from 1.7 to

6.5 depending on the region and the crop examined. These estimates do not account for specific households or climatic or geographic conditions, which is why the authors proceed to a second estimation of VCRs using the EDRI-IFPRI household survey. The estimation finds that there are variations across regions but that maize is more responsive to fertilizer use fertilizers than other crops. The second estimated VCRs are lower than those estimated earlier but they still reveal substantial profitability to be gained from fertilizer use. Simultaneously, the study finds low price elasticity for fertilizer demand, implying that the Ethiopian government cannot expect the implementation of a fertilizer subsidy to significantly increase fertilizer use. Thus, other veins for increasing use of fertilizers need to be investigated.

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NEW AGRODEP WORKING PAPER RELEASED

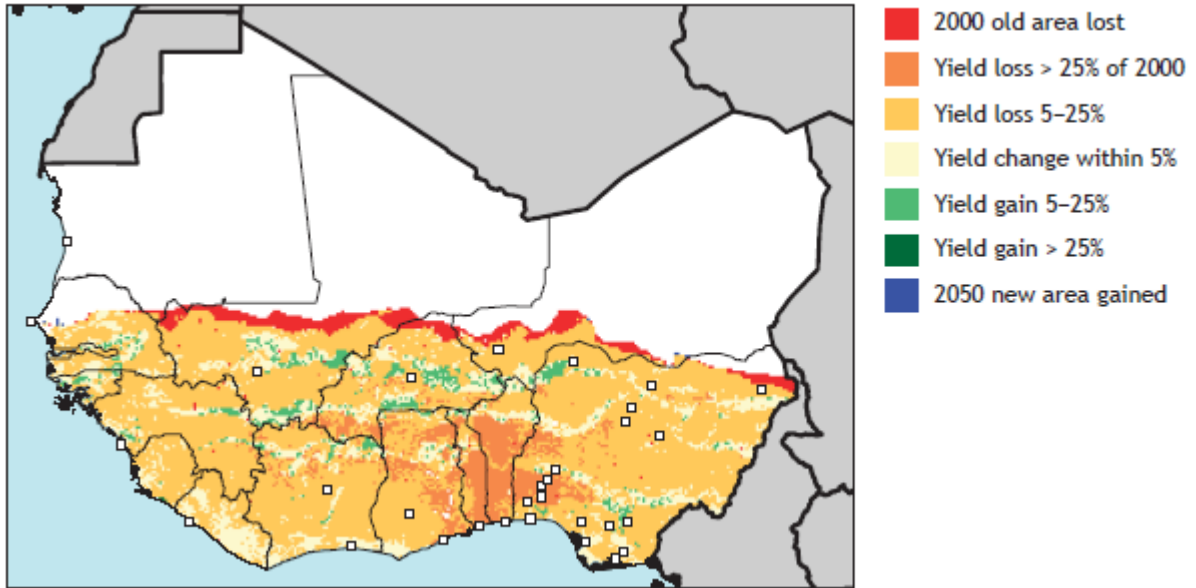
AGRODEP Provides Funding, Publication Opportunities

AGRODEP recently published the second paper in its [Working Paper series](#). [Trade Reform and Quality Upgrading in South Africa: A Product-Level Analysis](#), by AGRODEP member [Marko Kwaramba](#), examines the impact of tariff liberalization on product quality in the South African manufacturing sector. The study finds that tariff liberalization is associated with a decline in quality upgrading, implying that the South African government should engage in a case-by-case evaluation of future tariff reforms. The author received funding for the research from AGRODEP's 2012 Innovative Research grant series. The AGRODEP Working Paper Series is a bilingual (English and French) publication series open to AGRODEP members only

DATA

Recent statistics about Africa

Figure 1: Changes in Yields (percent), 2000-2050, from the DSSAT Crop Model, sorghum (rainfed), CSIRO A1B



Source: *West African Agriculture and Climate Change*

A [recent IFPRI book](#), the first in a series of three books on agriculture and climate change, examines how to foster agricultural development and food security in West Africa despite the effects of climate change. The authors utilize several plausible weather-based scenarios to determine how climate change could impact West African countries between now and 2050 and use crop models to specifically examine the potential impacts on crop production. The book also includes a variety of proposed policies to counter the effects of climate change, including expanded irrigation and improved infrastructure.

As Figure 1 shows, based on the CSIRO general circulation model and the MIROC climate outcomes of the SRES A1B scenario detailed in the book, sorghum yields in West Africa would decline by 5-25%, with the greatest reduction seen in Togo and Benin.

RESEARCH VALORIZATION GRANTS

Three Members Receive Funding

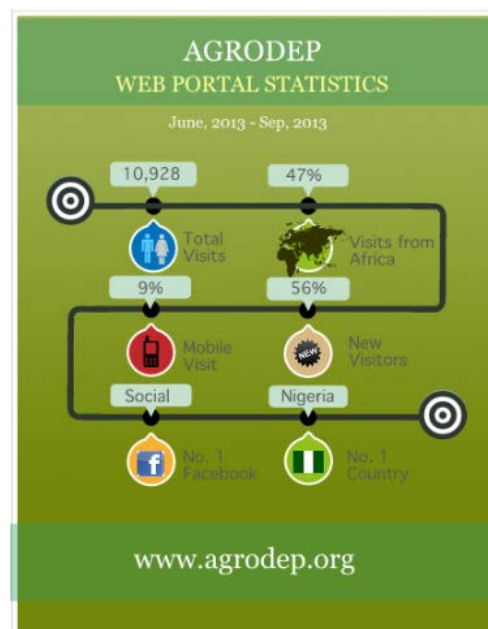
Three AGRODEP members have recently received funding through AGRODEP's Research Valorization grant series to attend the Fourth International Conference of the African Association of Agricultural Economists in Tunisia, which was held on September 22-25. The members who received the grant were [Abiodun Elijah Obayelu](#), [Oluwakemi Obayelu](#), and [Roseline Akinlade](#).

AGRODEP's [Research Valorization Grants](#) are available to all AGRODEP members and provide financial assistance for members to present research at international conferences and pay publication submission fees.

CALL FOR INNOVATIVE RESEARCH GRANT PROPOSALS

Grant Series in Second Year

In August, AGRODEP announced the second call for its [Innovative Research Grant series](#). The theme of this year's call is "Economic Growth and Development in Africa: Lessons from the Last 40 Years and Implications for Sustainability," focusing on how individual factors have contributed to Africa's recent economic turn-around and how the regional recovery can be sustained and broadened to benefit a wider range of ordinary African citizens. The grant series is open only to AGRODEP members, and members are encouraged to submit joint or collaborative proposals in order to increase networking among colleagues. This year's call will close on September 30, and selected proposals will be announced by the end of October.



AGRODEP TRAININGS

2013 Closes with Three More Courses

The AGRODEP 2013 Training Course series will wrap up with three final courses taking place between October-December. The course on [Applied Microeconomics](#) will be held from October 1-3 and will be instructed by Manuel Hernandez of IFPRI. Part Two of the Impact Evaluation and Analysis of Development Interventions will be held from December 9-13; this course is organized by Tanguy Bernard of IFPRI and will be instructed by Clare Delavallade and Susan Godlonton of IFPRI. Finally, the course on GAMS-Based CGE Models (Basic) will be held from December 9-20 and will be instructed by Veronique Robichaud of Laval University.

AGRODEP MEMBER WORKSHOP

Upcoming Annual Workshop and Governance Meetings

The annual AGRODEP member workshop will be held in Dakar from November 19-20. This year's workshop will include presentations from members who have received innovative research grants in 2010 and 2013, as well as members who received seed fund grants and research valorization grants. Annual meetings for the AGRODEP governance groups, including the Scientific Advisory Board, Network Advisory Committee, and Steering Committee, will be held on November 18.

WHAT IS AGRODEP?

The African Growth and Development Policy (AGRODEP) Modeling Consortium is an initiative led by the International Food Policy Research Institute (IFPRI). The goal of AGRODEP is to position African experts to take a leading role in both (1) the study of strategic development questions facing African countries as a group and (2) the broader agricultural growth and policy debate, which traditionally has been dominated by external actors and concerns.

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