

IMPROVING INFORMATION AND ACCESS TO TECHNOLOGY: THE CASE OF ONIONS IN SENEGAL

While agricultural investments could augment product quality and yields in Africa, there remain many impediments to increasing such investment: lack of access to seeds and fertilizers, information, and financial services; insufficient roads and communication infrastructure; small local markets, etc. Empirical evidence supporting these constraints is large: for example, the recently released World Bank's 2017 Enabling the Business of Agriculture report ranks Sub-Saharan Africa as the lowest region (along with South Asia) on its global score (see the Data section for more details). Sub-Saharan Africa ranks particularly low in terms of access to seeds and fertilizers, market regulations, transport infrastructure, and information and communication technology.

These insufficient infrastructures and market failures may lead to an insufficient supply of agricultural goods and/or to

the provision of goods of low quality. The question remains, however, how much a policy reform addressing these issues could augment the supply or the quality of agricultural goods. A recent study by Bernard et al. (2017)¹ finds

An increase in quality was recognized by the market and resulted in higher prices.

some potentially important production responses by farmers when some of

these failures are addressed, even if only with small changes.

Onions form a basic element of Senegalese cooking; for example, they are a key ingredient in the preparation of the famous "Thiéboudienne" and the "Yassa de Poulet". More than 200,000 tons of onions are consumed annually in Senegal, i.e. around 13 kilograms per year per person (the world consumption, by contrast, is around 7 kilograms per year per person). Many domestic onion producers continue to see low yields, however, and 150,000 tons of onions are imported annually. On many occasions, the Senegalese government has

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 183 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 Bernard, Tanguy, Alain de Janvry, Samba Mbaye, and Elisabeth Sadoulet. "Expected

Product Market Reforms and Technology Adoption by Senegalese Onion

Producers." *American Journal of Agricultural Economics* (2017).

attempted to stimulate the local production of this key crop, first by banning onion imports and then by launching a national plan for irrigation, input subsidies, and technical support through the Institut Sénégalais de Recherche Agricole (ISRA).

The Podor department is located in North Senegal, several hundred kilometers from the large consumer markets of Dakar, Touba, and Saint-Louis. In this region, onion production covers a large area (3,500 hectares in 2000). The cultivation of this crop is relatively easy; however, the size and quality of onions depends on planting density and the use of fertilizers. Commercialization remains a major constraint, reducing crop quality, the benefits of onion production for farmers, and their willingness to invest in the crop. Challenges to commercialization are due to several factors: transportation costs are high, local markets are tiny, and onions are perishable crops. In Podor department, collection points also do not have scales so farmers are remunerated by a flat fee for each forty-kilogram bag of onions. Since bags are not weighted, however, farmers often preferred to use less expensive but less effective urea-based fertilizer and to overfill bags with lower

quality, large, fast-deteriorating onions (deterioration is due to the onions' high water content).

In late 2013, local authorities from the Podor department introduced scales at local collection points. At the same time, the research team implemented a randomized controlled experiment to evaluate the impact of organized training sessions on quality-enhancing technologies and good practices in the cultivation of onions for the villages in this area.

In January 2014, half of the villages were randomly selected for the training session and an information campaign about the upcoming introduction of scales at the three local collection points. At every collection points, scales would be installed early in the season and weighting would be operated by external agents from the local university. After a specific training, these agents would be able assess the quality of onions based on their size, compactness, and rate of deterioration; bags would then be labeled with information regarding their weight and quality.

Almost all of the farmers in the region were eventually informed about the installation of scales at each collection

point, with a slightly higher proportion in the treatment group. Moreover, the treatment group was informed earlier in the season, relying less on information passed on by relatives or friends or upon delivery at the collection points. The study found that the training sessions had a significant effect on fertilizer use: the treatment group exhibited a nine percentage-point decrease in the use of urea as a fertilizer and a large increase (27 percentage points) in the use of the 10-10-20 fertilizer (i.e. the contents of nitrogen, phosphorus, potassium; this is the fertilizer recommended for increasing onion quality). It was also found that this increase in quality was recognized by the market and resulted in higher prices. With no loss in yields, these changes led to significant gains for farmers.

This experiment clearly shows that small, inexpensive reforms, such as improving farmers' information and introducing scales and labelling at market places may have a significant impact on farmers' incomes. In addition, the study shows that an effective regulatory power is needed to implement these changes.

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DATA

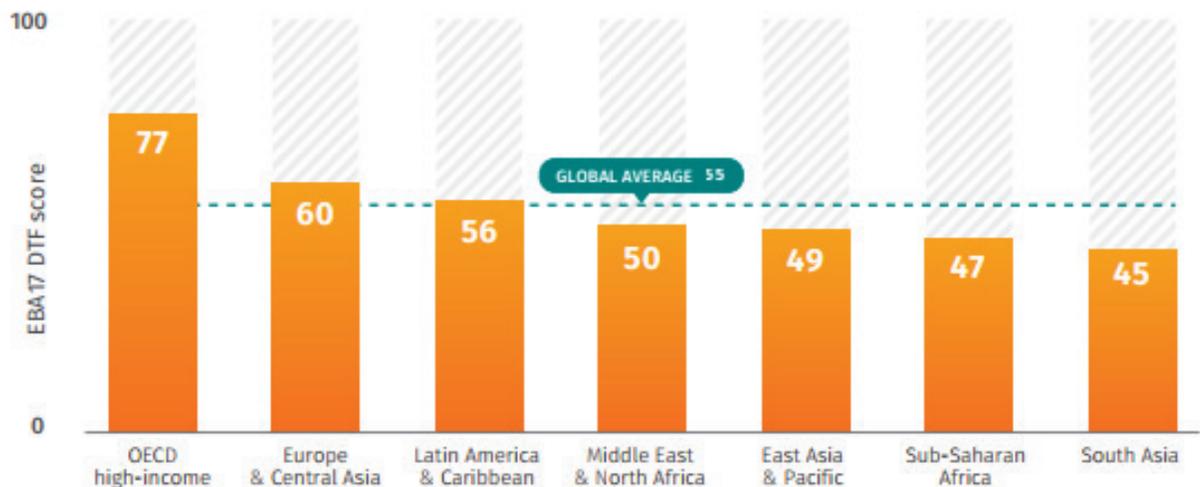
Recent statistics about Africa

The World Bank's [2017 Enabling the Business of Agriculture \(EBA\) report](#) collects data on laws and regulations that impact the business environment for agriculture. It builds on the Doing Business method, which was initiated for small and medium-sized enterprises in large cities. The EBA focuses on small agricultural businesses outside of these large cities.

The EBA report collects data for eight topics: seeds, fertilizers, machinery, finance, markets, transport, water, and Information and Communication Technology (ICTs). The report covers 62 countries in seven regions. EBA indicators are based on a collection of primary data through standardized questionnaires completed by expert respondents in each country. Experts come from the private sector, the public sector, and civil society.

The 2017 EBA finds a low ranking for Sub-Saharan Africa, particularly in terms of access to seeds and fertilizers, market regulations, transport infrastructure, and ICTs.

Figure 1: 2017 EBA Rankings



Source: EBA database.

Note: The EBA17 distance-to-frontier (DTF) score is the average of the DTF scores of the following topics: seed, fertilizer, machinery, finance, markets, transport, water and information communication and technology.

Source: World Bank's 2017 Enabling the Business of Agriculture report

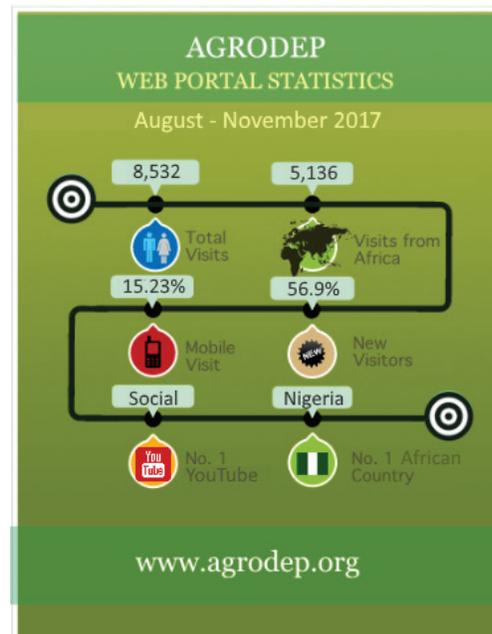
LATEST SPECIAL CALL FOR MEMBERSHIP

AGRODEP Membership Set to Grow

The AGRODEP Management Team launched a **special call for membership** in early November. The call closed on November 30; as of November 29, the Management Team had received 470 applications.

This call focused on researchers engaged in trade policy analysis, value chain analysis, or agricultural transformation and investments. Applications from female researchers and from African countries with low current AGRODEP representation were also particularly encouraged.

The AGRODEP network currently includes 181 **regular members** from 27 African countries and 30 **affiliate members** who are either based outside Africa or work in international organizations in Africa.



MACROECONOMIC CLOSURE TOOLBOX

New Tool Examines CGE Models

AGRODEP recently released a new tool called the **Macroeconomic Closure Rule Toolbox**. This tool enables researchers to analyze the sensitivity of computable general equilibrium (CGE) models to the choice of macroeconomic closure rules. It utilizes the standard IFPRI model for Nigeria and Tanzania to present two sets of simulations: a 50 percent decrease in import taxes and a 10 percent increase in agricultural productivity. For each simulated scenario, the tool looks at 10 closure rules related to the government, the rest of the world, the investment-savings equilibrium, and the factors market.

An accompanying **Technical Note** explains the methodology behind the standard IFPRI model, as well as the chosen closure rules. The note, number 15 in the **Technical Note series**, also explores and analyzes the results of each simulation. The study finds that the model's simulations are sensitive to the choice of closure rule.

NEXT AGRODEP TRAINING COURSE

Training Course Series Continues in December

AGRODEP will hold the next course in its training course series on December 19-20 in Dakar. This course will focus on **Policy Analysis and Innovations in Value Chains** and will be taught by Tanguy Bernard and Gashaw Tadesse Abate of IFPRI. The course forms part of AGRODEP's Value Chain Analysis Virtual Hub.

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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