Raising agricultural productivity and accelerating agricultural growth are commonly promoted as core development strategies throughout Africa, since the majority of the continent’s poor and malnourished population depends largely on farming. Despite these strategies, agricultural growth in Africa lags behind overall economic growth, and agricultural performance falls below that of other developing regions of the world, particularly those associated with Asia’s Green Revolution.

*Agricultural Productivity in Africa: Trends, Patterns, and Determinants*, an edited volume written by research and data experts, brings together historical and current data on various characteristics of African agriculture, and presents new and updated analyses of agricultural productivity trends across countries and subregions. The book aims to improve understanding and explain trends in African agricultural productivity to identify opportunities for raising productivity and accelerating growth.

**A BRIEF HISTORY**

A look at African history begins to explain the continent’s poor agricultural growth performance. African development efforts have suffered since colonial times from sweeping generalizations about the region, its agricultural sector, and how best to deal with the challenges of economic growth which fostered well-intended, yet simplistic approaches, that lasted into the 1960s. These approaches failed to account for Africa’s diversity and variation, and ignored agriculture’s potential as a source of job creation. During this same period, African economies were developed primarily with the goal of exporting agricultural products. This goal was achieved with some success. In the 1960s, 10 of the top 20 global producers of tropical cash crops were from African countries. Exports included cocoa beans, green coffee, unshelled groundnuts, palm oil, rubber, sisal, tea, tobacco, and cassava.

Models of development in the 1960s viewed agriculture as a low-productivity supplier of food, raw materials, and surplus labor to a modern and more urbanized industrialization process. Government investments in agriculture concentrated on input subsidies, government-provided services, and the establishment of input and commodity marketing parastatals to promote the export crops, which provided African governments with their main source of foreign exchange.

The 1970s further complicated the economic and agriculture landscape with the oil and drought shocks that were felt across the continent. For the first time, African agriculture’s chronic poor performance gained visibility.
The 1980s and 1990s ushered in the structural adjustment programs (SAPs) and the economic recovery programs (ERPs) of the International Monetary Fund (IMF) and the World Bank. These programs required a withdrawal of government from agriculture to establish conditions for receiving new loans or international development assistance. Policy changes included cuts to government expenditures, dismantling the parastatals, and ending commodity and input subsidies.

It is important to remember that the Green Revolution, which started in Mexico and quickly spread to Asia, occurred before the SAPs were established in Africa. In the new millennium, formalization of the Poverty Reduction Strategy Papers (PRSPs) refocused development strategies on promoting and supporting the use of yield-enhancing technologies and modern management practices, as practices that characterized the Green Revolution in Asia.

The success of the Green Revolution in Asia demonstrated the value of development factors beyond introduction of high-yielding crop varieties. Factors neglected in Africa:

- Approaches that take into account Africa’s diverse landscapes. Many countries in Africa have small economies and limited capacities and resources for adopting or adapting technologies that fit their national interests and needs;
- Investment in research and technology, irrigation, infrastructure, and extension;
- Analyses of climate variability—associated with droughts, floods, and land degradation—and its significant and often debilitating role in agricultural productivity;
- Commitments to clear, strong policies, a stable geopolitical landscape, and government support to smallholders.

However, a new hope for addressing these challenges emerged in July 2003 when African heads of state launched the Comprehensive Africa Agriculture Development Programme (CAADP) in Maputo, Mozambique, at the Second Ordinary Session of the Assembly of the African Union. This agriculture-led integrated framework of development priorities for Africa aims to reduce poverty and increase food security in the various regions.

CAADP’s approach differs from preceding development strategies in Africa in that it emphasizes the role of agriculture as an engine of domestic development, characterizes four mutually reinforcing types of investments, and specifies targets for agricultural investment and productivity.

**IMPROVING AGRICULTURAL PRODUCTIVITY**

**Agricultural Productivity in Africa: Trends, Patterns, and Determinants** examines how best to achieve and sustain significantly higher levels of agricultural productivity. By the end of 2014, 40 African countries had signed CAADP compacts with their main stakeholder groups, and many of them had developed detailed country investment plans (or National Agricultural Investment Plans [NAIPs] or National Agricultural and Food Security Investment Plans [NAFSIPs]). While individual countries have taken various investment and development approaches in preparing these plans, a critical question remains: Which strategies work best in which contexts and do so cost-effectively?

**FIGURE 1** Land, labor, and total factor productivity (TFP) growth and TFP growth decomposition in Africa (% annual average 1961-2012)

![TFP Growth Decomposition](chart)

**NOTE:** Authors’ calculation and illustration based on productivity model results.
To begin to answer this question the book analyzes intertemporal trends for different indicators and measures of agricultural productivity, providing a broad overview of the contemporary landscape of African agricultural productivity. Productivity embodies different components, creating a range of direct and indirect effects on the pathways to achieving development objectives. The authors use time-series data to measure and analyze trends in partial and total factor productivity (Figure 1).

The following chapter in the book presents a more spatially explicit perspective on land and labor productivity using a harmonized collection of Africa-wide geographic information system data. The spatial data cover farming systems and various biophysical and socioeconomic factors. Building on that data, the book characterizes “agricultural productivity zones” (APZs)—geographical areas with potentially similar pathways of technology adoption and agricultural productivity growth. The APZs are nested within farming systems, and characterized by various agricultural production conditions (biophysical and socioeconomic); incorporating these allows for a finer system for identifying context-specific strategies (Table 1).

The authors examine some of the predominant APZs in terms of how they are likely to influence technology adoption, specifically agricultural intensification and fertilizer use. The evolution of agricultural intensification in Africa is assessed, and the changes in output composition and input use associated with different intensification patterns are discussed.

### AGRICULTURAL INTENSIFICATION

This analysis contributes to a better understanding of agricultural intensification, which is defined as the process of relative changes in the availability of land, labor, and capital driven by population growth and by higher returns to farming and improvements in market infrastructure. The authors look at a series of interrelated questions:

- What is the role that population growth plays in agricultural productivity?
- What shapes demand for different technologies and the particular intensification paths followed by different countries?
- Can Africa benefit from the same high-yielding cereal varieties, fertilizer, and labor use that fueled Asia’s Green Revolution?

Africa has little incentive to adopt labor-intensive technologies due to its population densities, which are much lower than many of the Asian countries. But the authors find that Africa is not at a disadvantage in terms of adopting high-yielding varieties or intensifying use of chemical inputs like fertilizer, herbicides, and pesticides. However, the path that many countries in Africa will follow to incorporate new technology and increase production and productivity in agriculture will reflect the characteristics of Africa’s landscape.

### TABLE 1 Agricultural productivity zones (APZs) in Africa by farming system

<table>
<thead>
<tr>
<th>Farming system</th>
<th>Number of APZs</th>
<th>Number of clusters or typologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree-root crop</td>
<td>94</td>
<td>3</td>
</tr>
<tr>
<td>Forest based</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Highlands</td>
<td>56</td>
<td>4</td>
</tr>
<tr>
<td>Cereal-root crop</td>
<td>76</td>
<td>3</td>
</tr>
<tr>
<td>Maize mixed</td>
<td>53</td>
<td>4</td>
</tr>
<tr>
<td>Pastoral-agropastoral</td>
<td>141</td>
<td>5</td>
</tr>
<tr>
<td>Irrigated</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Rice-tree crop</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Coastal</td>
<td>49</td>
<td>3</td>
</tr>
<tr>
<td>Large commercial &amp; smallholder</td>
<td>19</td>
<td>2</td>
</tr>
</tbody>
</table>

**NOTE:** Authors’ calculation and illustration based on cluster analysis.
THE ROLE OF FERTILIZER

Where population density is lower, fertilizer is used as an instrument for land expansion, and the contribution of increased land productivity is low. At higher population densities, the contribution of land productivity increases as fertilizer is used more intensively to raise yields. The use of fertilizer also depends on the production systems. For example, production systems based on tree and root crops that use land more intensively are less responsive than cereal-based systems to fertilizer, as is the case in the tree-root crop, cereal-root crop, forest-based, and coastal systems, and in the banana+roots subsystem of the highland system.

INTERVENTION

Interventions for agricultural development include programs, projects, and other agricultural development initiatives. Twenty-five productivity-enhancing interventions in various APZs are examined. The benefits of many of them only lasted for the duration of the project, raising questions about the sustainability and scalability of the small projects that seem to dominate in the continent. The successful ones include those that take local conditions into account, internalize the views of potential beneficiaries and involve them in all phases of implementation, and address environmental issues.

MOVING FORWARD

Adherence to such important factors must be considered during the design and implementation of the interventions, as well as a comprehensive study of the sustainability of their effects. Lessons from interventions that failed to meet their objectives are as important as those that were successful.

In the last decade or so, since 2003, many African countries have begun an agricultural transformation or Green Revolution agenda through policy and investment. The various strategies and findings presented in Agricultural Productivity in Africa: Trends, Patterns, and Determinants should assist policy analysts and policymakers in African countries and development agencies in designing and implementing policies that accelerate agricultural productivity in the region, as a means to decrease hunger and poverty.

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