

AGRICULTURAL SCIENCE AND TECHNOLOGY INDICATORS INITIATIVE

Internationally Comparable Data and Analyses on Agricultural Research Trends in Developing Countries

Extensive empirical evidence demonstrates that agricultural research and development (R&D) investments have greatly contributed to economic growth, agricultural progress, and poverty reduction in developing regions over the past five decades. Effectively disseminated new technologies and crop varieties resulting from R&D investments have enhanced the quantity and quality of agricultural products, at the same time increasing sustainability, reducing consumer food prices, providing rural producers with access to markets, and improving gender-based allocations and accumulations of physical and human capital within households. Given important challenges—such as rapid population growth, adaptation to climate change, increasing weather variability, water scarcity, and the volatility of prices in global markets—policymakers are increasingly recognizing the value of greater investment in agricultural R&D as an essential element in increasing agricultural productivity.

The **Agricultural Science and Technology Indicators (ASTI)** initiative is one of the few sources of information on agricultural R&D statistics for low- and middle-income countries. Facilitated by the International Food Policy Research Institute (IFPRI), ASTI has been compiling, analyzing, and publicizing primary data on institutional developments, investments, and capacity trends in agricultural R&D in low- and middle-income countries since 2001, building on prior projects undertaken by IFPRI and the former International Service for National Agricultural Research (ISNAR). ASTI has published sets of country briefs and country notes, datasets, regional synthesis reports, and other analytical reports that have been widely and frequently cited in national and international agricultural research policy documents. ASTI outputs provide both data trends—the progress of human and financial capacity in agricultural research over time—and data comparisons—the performance of a country or a region relative to another. The initiative has produced a large amount of original and ongoing survey work focusing on developing countries, but

it also maintains access to relevant data for developed countries for comparative purposes. ASTI is also a comprehensive source of qualitative information on the history of national agricultural R&D systems, institutional changes, and constraints that agencies and researchers face in undertaking agricultural R&D. Data collection, analysis, and dissemination are conducted through a network of national, regional, and international agricultural R&D agencies.

“You Can’t Manage What You Don’t Measure”: The Importance of Agricultural R&D Indicators

Data on the size and scope of R&D capacity and investments together with the changing institutional structure and functioning of agricultural research agencies enhance our understanding of the contribution of agricultural R&D in promoting agricultural growth. Indicators derived from such information allow the performance, inputs, and outcomes of agricultural R&D systems to be measured, monitored, and benchmarked.

ASTI Portfolio of Outputs

Publications: These include regional and global analyses of agricultural R&D investments, as well as country reports, briefs, notes, and fact sheets that present the analysis from ASTI’s country-level survey rounds.

Various datasets: These can be accessed and customized through an interactive data tool on the ASTI website.

Website: The website provides access to ASTI’s data tool, country profiles, publications, news, and other outputs.

ASTI workshops, seminars, and outreach events: These events allow ASTI to bring together national collaborators for training on methodology, share survey experiences and improve indicator relevance, and present results to a variety of stakeholders and to the media.



ASTI Portfolio of Data

- **Institutional arrangements** and changes affecting agricultural R&D
- **R&D spending** time series data by cost category
- Time series data by **funding source**
- Time series data on **researchers and support staff** by degree and gender
- **Age distribution** of researchers (for some countries)
- **Research focus** data by commodity and thematic area

The indicators assist research managers and policymakers in formulating policy and making decisions about strategic planning, priority setting, monitoring, and evaluation. They also provide information to governments and others involved in the public debate on the state of agricultural R&D at national, regional, and international levels. For example, monitoring African agricultural R&D systems is fundamental to assessing progress toward the targets of the Comprehensive Africa Agriculture Development Program (CAADP) under the African Union's New Partnership for Africa's Development (NEPAD). CAADP's foundational pillar focuses on increasing investments in agricultural research, extension, education, and training as a means of promoting agricultural productivity growth.

Current and Planned Activities

- 1. Establishing an institutionalized data collection system at regular intervals.** An institutionalized data collection system will facilitate more decentralized and frequent collection, synthesis, and analysis of data through a set of national and regional focal points, thereby promoting ownership of the datasets by national partners, stimulating further advocacy and analysis, and securing the continuity of data collection activities.
- 2. Expanding ASTI's geographical coverage.** In recent years, data collection activities have focused primarily on Sub-Saharan Africa and South Asia. The expansion will enable ASTI to update its datasets for Southeast Asia and the Pacific, Latin America and the Caribbean, Central Asia, and the Middle East and North Africa. These updates are important to enhance assessments of agricultural R&D investment, human resources capacity, and

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Facilitated by IFPRI

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ASTI Stakeholders



institutional patterns across low- and middle-income countries, and to generate status reports on global agricultural R&D.

- 3. Expanding analysis beyond the descriptive examination of national and regional capacity and investment trends conducted to date.** The intensification of analysis will be achieved by developing capacity within ASTI; sourcing a network of external analysts; and organizing a series of workshops, seminars, and conferences.

ASTI's Impact to Date

The impact of ASTI's outputs and partnerships can be observed at the national, regional, and international levels.

- National partner institutions have used ASTI data to advocate for increased funding to agricultural R&D.
- Participation in the ASTI survey has prompted improved data collection and management of ASTI-type indicators at a number of institutions.
- International organizations such as the World Bank have used ASTI data for decisionmaking in and analysis of funding for agricultural R&D.
- Investment data from ASTI were featured widely at the first Global Conference on Agricultural Research for Development (GCARD).
- National partner institutions have used ASTI gender data to encourage increased hiring of women researchers; the gender data has also been used for project development and implementation as part of the African Women for Agricultural Research and Development (AWARD) program.



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Supported by the CGIAR

ASTI gratefully acknowledges substantial support from the Bill & Melinda Gates Foundation.