ASTI Country Brief | July 2019

SRI LANKA

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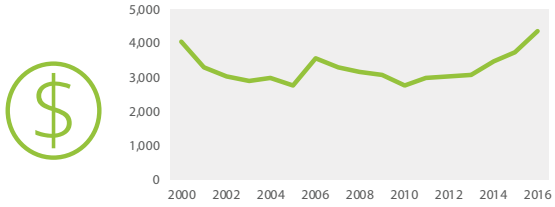
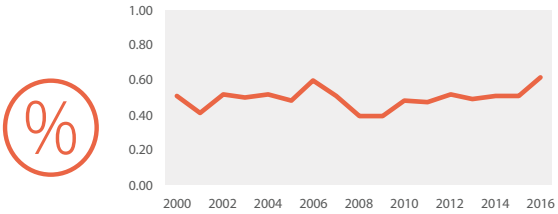
AGRICULTURAL RESEARCH SPENDING



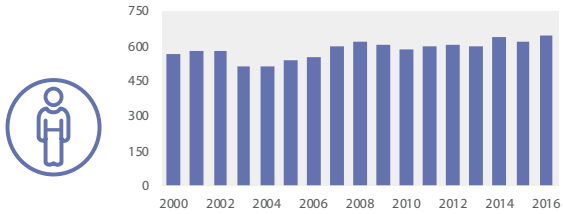
	SRI LANKA	BANGLADESH	INDIA (2014)	NEPAL
Million Sri Lankan rupees (2011 constant prices)	4,343.1			
Million PPP dollars (2011 constant prices)	112.4	287.9	3,298.4	81.9

SPENDING INTENSITY



	SRI LANKA	BANGLADESH	INDIA (2014)	NEPAL
Agricultural research spending as a share of AgGDP	0.62%	0.38%	0.30%	0.42%

AGRICULTURAL RESEARCHERS

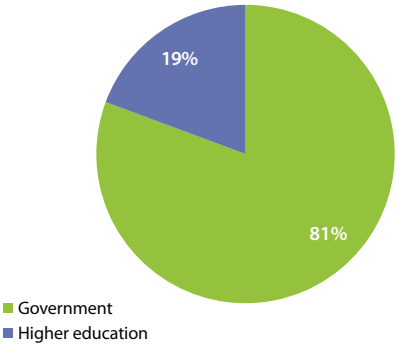


	SRI LANKA	BANGLADESH	INDIA (2014)	NEPAL
Full-time equivalents	648.0	2,268.6	12,746.6	519.7
Share of researchers with MSc and PhD degrees	78%	91%	99%	71%

Notes: Data in the table above are for 2016. Information on access to further resources, data procedures and methodologies, and acronyms and definitions are provided on Page 8. See **www.asti.cgiar.org/sri_lanka/directory** for an overview of Sri Lanka's agricultural R&D agencies.

- In 2016, Sri Lanka invested 0.62 percent of its AgGDP in agricultural research, representing an increase since 2010. Nevertheless, levels remained below those needed to address the country's numerous productivity-related challenges.
- Long-term recruitment restrictions have prevented government agricultural research agencies from expanding their pools of researchers over time.
- Sri Lanka stands out from most low- and middle-income countries globally in that the majority of its agricultural researchers are female. Comparatively few women hold managerial positions, however.

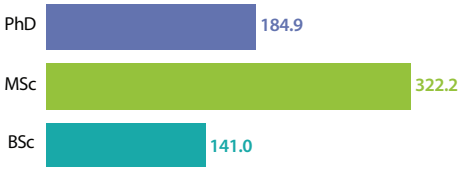
INSTITUTIONAL PROFILE, 2016



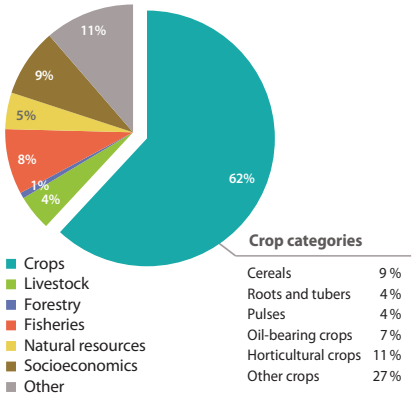
RESEARCHER PROFILE, 2016

By gender (%)

By qualification level (FTEs)



RESEARCH FOCUS, 2016



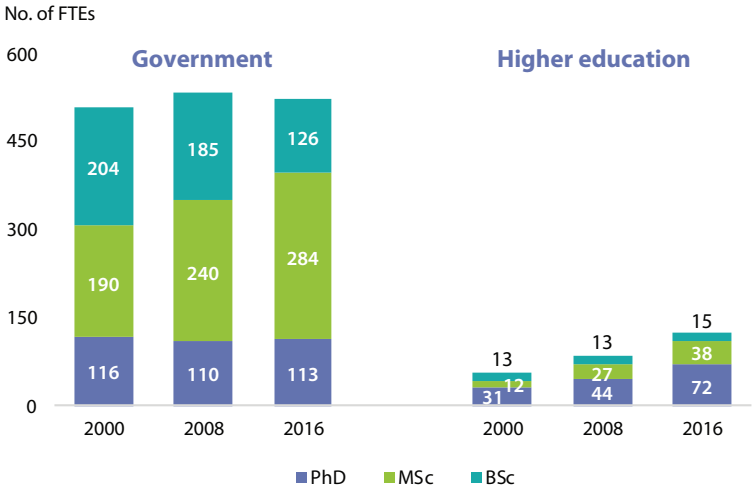
CHALLENGE

- Long-term recruitment restrictions have left Sri Lanka's government-based agricultural research institutions severely challenged. A large majority of the PhD-qualified researchers employed at these agencies will reach retirement age within the next ten years, and a significant share of the officially approved researcher positions remain vacant.

POLICY IMPLICATIONS

- In order to secure the necessary level of qualified agricultural scientists at the national level, the government of Sri Lanka needs not only to recruit and train young researchers without delay, but also to ensure that sufficient financial resources are available to retain them over time and provide the conditions to motivate them. In addition, raising the retirement age of government researchers from 57 to 65 years (in line with the country's universities), would allow more time for senior researchers to train and mentor these new recruits.

Agricultural researchers by institutional category and qualification level, 2000–2016



- Recruitment restrictions caused the total number of agricultural researchers employed at government institutions to stagnate over time. In contrast, agricultural researcher numbers at Sri Lanka's universities steadily increased during 2000–2016. In 2016, 29 percent of the country's 648 agricultural FTEs were PhD-qualified, and about half held MSc degrees. Average qualification levels improved considerably in both the government and higher education sectors. Increasing numbers of Sri Lankan students are enrolling in PhD programs at local universities, although the majority still pursue PhD degrees overseas.

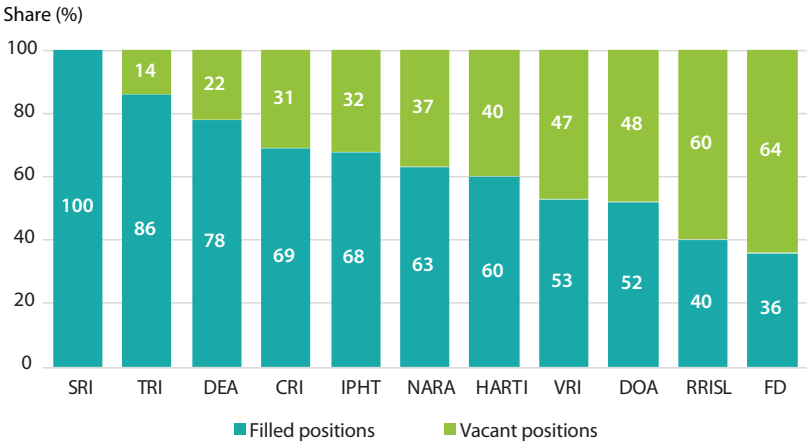
Agricultural researchers by sector, agency, and qualification level, 2016

SECTOR/AGENCY	PhD	MSc (FTEs)	BSc
Government (13)			
Department of Agriculture			
DOA	23.5	120.3	48.8
Ministry of Plantation Industries			
CRI	19.0	10.0	9.0
RRISL	15.0	5.0	15.0
SRI	5.0	13.0	8.0
TRI	11.8	20.2	21.0
Other government agencies			
DEA	7.0	25.0	12.0
VRI	5.6	7.7	—
NARA	12.8	45.6	8.8
IPHT	4.0	7.0	1.0
HARTI	2.0	25.0	—
FD	0.5	1.5	0.5
NBG	0.6	2.1	0.6
SLCARP	6.0	2.0	1.0
Higher education agencies (8)			
University of Peradeniya	31.6	7.6	2.0
Other higher education	40.6	30.2	13.3
Total (21)	**184.9**	**322.2**	**141.0**

Note: Values in parentheses indicate the number of agencies in each category.

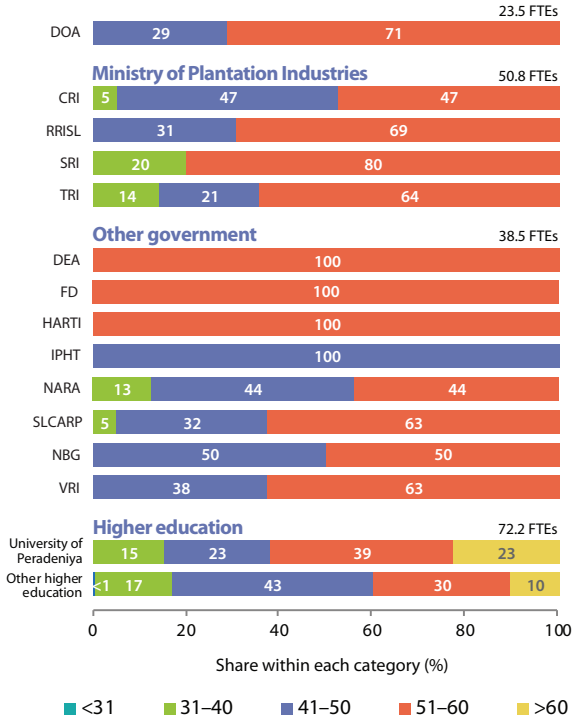
- In 2016, 58 percent of agricultural researchers at the universities held PhD degrees compared with just 22 percent in the government sector. To some extent, these differences can be explained by the large salary gaps between university- and government-based positions. Most PhD-qualified researchers in the government sector are employed at the plantation crop institutes (CRI, RRISL, and TRI, in particular) as well as NARA.

Vacancies versus approved positions, 2016



- As of 2016, more than 40 percent of the officially approved positions for scientists at the government research institutions were vacant. FD and RRISL were experiencing the most severe shortages of researchers, and SRI was the only government agency with 100 percent of its positions filled. Large-scale recruitment and training is needed to fill gaps at the other agencies.

Distribution of PhD-qualified agricultural researchers by age bracket, 2016



Nearly two-thirds of the researchers at the government research agencies with PhD degrees are in their fifties, and fast approaching the mandatory retirement age of 57. Similarly, a considerable portion of the university-based agricultural researchers are older than 50 (though the retirement age at universities is set at 65). Recruitment and training of young scientists has become an urgent priority, given the high number of retirees in the coming years.

The number of researchers projected to retire from the government research agencies during 2017–2022 are as follows: 2017 (18), 2018 (15), 2019 (13), 2020 (8), 2021 (12), 2022 (14).

Sri Lanka lacks a critical mass of PhD-qualified researchers in a number of key areas. Based on a thorough skills-gap analysis, a large number of MSc-qualified researchers are currently pursuing PhD-level training in other Asian countries. Incentives need to be put in place to ensure these new PhD-qualified research remain motivated over time.

Government-sector agricultural researchers by discipline, 2016

	FTEs	
DISCIPLINE	MSc	PhD
Plant breeding/genetics (incl. biotechnology)	56.0	18.4
Plant pathology	15.5	8.8
Plant physiology	9.4	7.3
Botany	—	1.1
Seed science and technology	3.3	1.0
Other crop sciences	17.7	4.1
Animal and livestock sciences	8.6	6.7
Forestry and agroforestry	3.0	0.5
Fisheries and aquatic resources	52.4	13.8
Soil sciences	20.8	11.3
Natural resources management	1.6	—
Water and irrigation management	2.8	1.3
Food sciences and nutrition	3.8	1.1
Socioeconomics (incl. agricultural economics)	13.7	4.4
Extension and education	16.8	3.0
Other sciences	59.1	30.1
Total	**284.4**	**112.7**

LARGE-SCALE POSTGRADUATE TRAINING

In 2017, SLCARP submitted a proposal to the Ministry of Agriculture to address the most pressing gaps emerging at the government research institutes based on projected large-scale capacity losses due to the retirement of senior researchers. The Ministry agreed to allocate 300 million Sri Lankan rupees per year (in current prices) to capacity strengthening and postgraduate training over the 2018–2022 period. Shortly after this ministerial approval, SLCARP began the process of interviewing and selecting suitable candidates for MSc and PhD training overseas. As part of this program, a total of 41 candidates from the government research institutions (21 women and 20 men) commenced postgraduate training in 2018 and 2019 in the Philippines, Malaysia, and Thailand, with more to follow thereafter. In addition, a number of researchers are pursuing PhD training at Indian universities as part of a memorandum of agreement between the Indian Council for Agricultural Research and SLCARP.

Overseas postgraduate training of government researchers by degree, gender, and location, 2018–2020

	BY DEGREE		BY GENDER		BY LOCATION		
DISCIPLINE	PhD	MSc	Male	Female	Philippines	Malaysia	Thailand
Plant breeding	5	2	5	2	7	0	0
Aquaculture	5	0	2	3	0	3	2
Extension education	0	4	2	2	4	0	0
Plant pathology	1	2	1	2	1	2	0
Soil science	3	0	0	3	1	2	0
Entomology	3	0	2	1	2	1	0
Horticulture	3	0	0	3	2	1	0
Food science	2	0	0	2	0	2	0
Agronomy	1	1	2	0	2	0	0
Animal science	1	0	1	0	1	0	0
Agricultural economics	1	0	0	1	0	1	0
Marine and freshwater ecosystem	1	0	0	1	0	1	0
Family economics and management	1	0	1	0	0	1	0
Sustainable plantation management	1	0	1	0	0	1	0
Climate change and sustainable development	1	0	0	1	0	0	1
Development communication	1	0	1	0	1	0	0
Agricultural engineering	1	0	1	0	1	0	0
Plant systematics	1	0	1	0	1	0	0
Total	**32**	**9**	**20**	**21**	**23**	**15**	**3**

Note: Data exclude researchers pursuing PhD training in India.

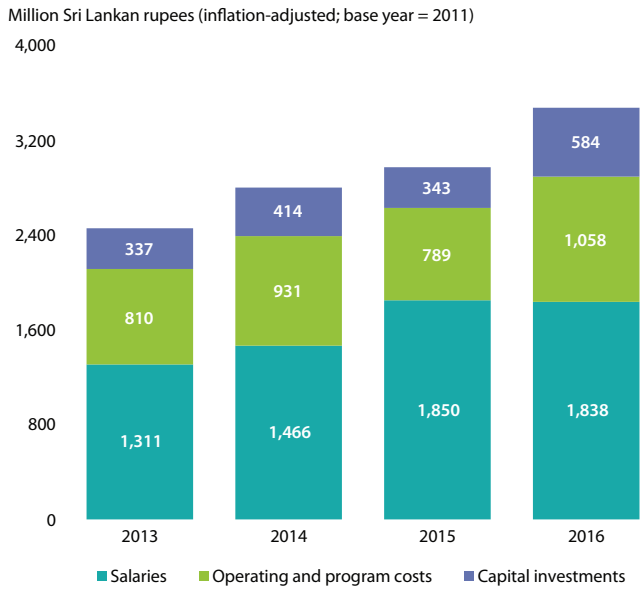
CHALLENGE

- Despite its recent increase in agricultural research spending, Sri Lanka is still underinvesting. In 2016, the country's spending on agricultural R&D represented only 0.62 percent of its AgGDP, which is low given sluggish growth in food production and declining yields for the main export crops (coconut, tea, and rubber) in recent years. Agricultural productivity improvements are fundamental to reducing poverty in Sri Lanka given that nearly 90 percent of its poor and malnourished population live in rural areas.

POLICY IMPLICATIONS

- The government has plans to transition Sri Lanka's economy to the upper middle-income level by 2025, and transforming the agricultural sector is a key factor in achieving this goal. This includes increased investment in agricultural research, and the removal of policy constraints that have stifled growth, such as recruitment restrictions and ministerial fragmentation of decisionmaking on matters relating to agriculture. Recent initiatives to stimulate private funding for agricultural research are encouraging. Nevertheless, more investment is needed in emerging areas, such as biotechnology, geographic information systems, postharvest technology, and nanotechnology to ensure more efficient agricultural production and environmental conservation.

Government-sector expenditures by cost category, 2013–2016



Government-sector spending, 2016

AGENCY	Million Sri Lankan rupees (in 2011 constant prices)
Department of Agriculture	
DOA	1,305.8
Ministry of Plantation Industries	
CRI	291.5
RRISL	425.7
SRI	291.6
TRI	287.3
Other government	
DEA	140.6
FD	14.2
HARTI	167.8
IPHT	98.7
NARA	374.6
NBG	7.9
VRI	74.4

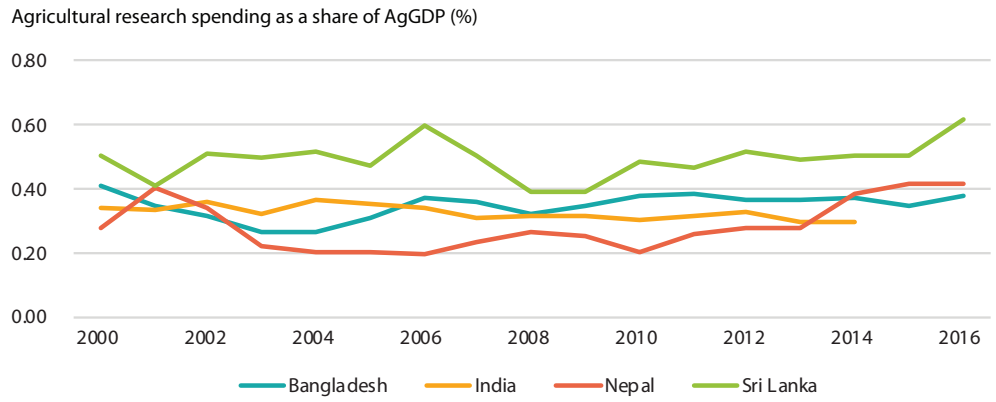
Note: Data exclude SLCARP.

- Between 2013 and 2016, total spending by Sri Lanka's government agricultural research agencies rose by more than 40 percent (in inflation-adjusted terms), after being more or less stagnant during the previous ten years. The nationwide pay rise for public service employees in 2015 was the key factor in this increase. Operating and program costs, and capital investment also rose considerably in 2016, largely driven by CRI and FRDI. Although operating costs accounted for 30 percent of the government agencies' total expenditures in 2016, very little was spent on actual research programs.

SRI LANKA VISION 2025

The Sri Lankan government has set the ambitious goal of reaching upper middle-income status by 2025. Its Vision 2025 sets out a course of reforms to increase the country's competitiveness and lift the standards of living of its people. These reforms range from labor law transformations, to restructuring social safety net programs, and stimulating technology acquisition and digitization. Vision 2025 explicitly calls for large increases in the productivity of domestically grown food crops, and for ways to address undernourishment in 4.7 million Sri Lankans. As such, the government proposes to increase the efficiency of agricultural markets, encourage private investment in agriculture, and modernize the plantation sector, among other strategies. To ensure that Sri Lanka's agricultural research agenda is aligned with the ambitious goals set in Vision 2025, SLCARP formulated a set of national agricultural research priorities for the coming years through a broad stakeholder consultation process. These were enumerated in the National Agricultural Research Policy and Strategy 2018–2027. In this strategy, SLCARP specifies research priorities for the plantation sector, export crops, rice, other field crops, livestock, fisheries, forestry, and floriculture, as well as a number of cross-cutting areas addressing research policy. In addition, SLCARP has prepared a National Agricultural Research Plan in accordance with research priorities identified in the Government Development Policy Framework and the policies of the various line ministries, which covers both the government and higher education sectors.

Agricultural research intensity, 2000–2016

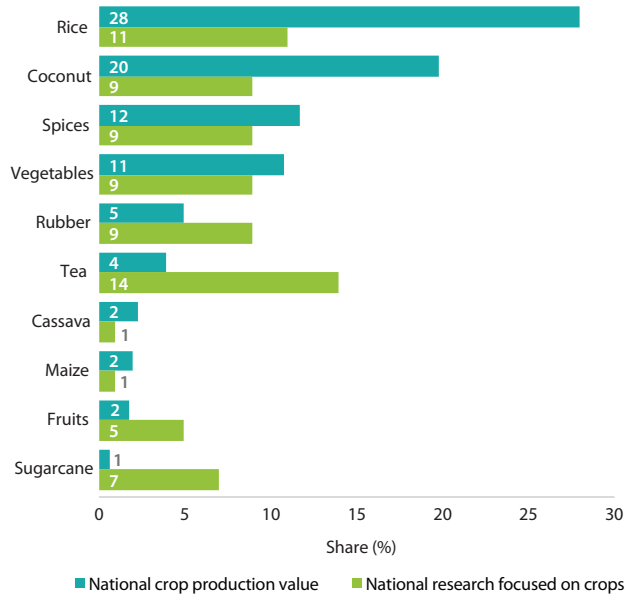


The recent rise in Sri Lanka's agricultural research spending (albeit predominantly driven by increased salary levels) is clearly reflected in the country's agricultural research intensity ratio. Agricultural research spending rose to 0.62 percent of AgGDP in 2016. Although Sri Lanka's research intensity ratio has shown considerable volatility over time, it has been consistently higher than comparable ratios for Bangladesh, India, and Nepal. It should be noted, however, that when comparing intensity ratios across countries, broader agricultural and economic contexts also need to be taken into account.

SHIFTS IN AGRICULTURAL RESEARCH FUNDING

Government funding is by far the predominant source of agricultural research funding in Sri Lanka. In recent years, an increasing share of government funds has been channeled to the research agencies on a competitive basis through the National Research Council and the National Science Foundation. Given that, over time, university-based researchers have become more accustomed to competing for funding, they have developed a distinct advantage over their colleagues at government research institutes. In addition, private-sector funding to universities has also increased considerably over the past decade. The predominant types of services offered by universities to the private sector include contract/joint research, consultancies, and seminars. Since 2014, the Sri Lankan government has offered a tax deduction to private businesses for R&D activities outsourced to a university or government research agency. The tax deduction is 300 percent, meaning that the business reduces its taxable income by three times the amount of the contracted R&D expenditure (Larsen et al. 2016).

Congruence between agricultural research and production value for selected commodities, 2016



Sources: Research focus data are from ASTI. Crop production value data are from FAO.

Major incongruencies exist between the focus of Sri Lanka's crop researchers and the crops that generate the highest production value. Rice, for instance, accounted for 28 percent of Sri Lanka's total value of crop production in 2016, but only 11 percent of the country's crop researchers conduct rice research. Similarly, coconut also seems to be comparatively underresearched based on its production value. In contrast, comparatively more resources are allocated to plantation crops, such as tea, rubber, and sugarcane, than the production values of these crops alone would warrant. A balanced research portfolio that allocates sufficient resources to food, plantation, and export commodities is of vital importance to address the multitude of challenges the agricultural sector is facing, including stagnating productivity of Sri Lankan food crops (including rice); high regional disparities in malnutrition; and an underperforming plantation sector that needs to become more efficient, innovative, and globally competitive.

The number of journal articles, books, and book chapters published by agricultural researchers employed at the government agricultural research institutes rose steadily during 2013–2016, as has the average number of publications per researcher. Nevertheless, the publication record of Sri Lankan researchers remains low by international standards.

Number of peer-reviewed publications by government agricultural research agencies, 2013–2016

TYPE OF PUBLICATION	2013	2014	2015	2016
International journals	57	73	53	70
South Asian journals	5	11	9	11
Sri Lankan journals	140	159	186	201
Books	2	2	4	3
Book chapters	16	8	5	5
Total	**220**	**253**	**257**	**290**
Peer-reviewed publications per FTE researcher per year	0.45	0.49	0.51	0.55

CHALLENGE

- Despite the release of a steady flow of improved varieties over time, ASTI analysis indicates that, compared with many countries around the world, the long-term impact of agricultural research on agricultural productivity has been relatively limited in Sri Lanka. Long-term political unrest, ineffective institutions, and an underachieving agricultural extension system are important underlying factors.

POLICY IMPLICATIONS

- Political and economic stability are just as important as increased research investment in ensuring Sri Lanka's future agricultural productivity growth. The government needs to make sure that R&D agencies have the long-term human, financial, and physical resources needed to develop, adapt, and disseminate science and technology innovations both efficiently and effectively. An enabling policy environment is critical to maximizing the impact of innovations on the agriculture sector, on rural and economic development, and ultimately on poverty and malnutrition.

New varieties released or registered by Sri Lankan government research agencies, 2013–2016

BY CROP		BY AGENCY	
Beans	3	DEA	8
Chilis	1	DOA/FCRDI	14
Flowers	7	DOA/FRDI	18
Fruit	18	DOA/HORDI	12
Groundnuts	2	NBG	4
Maize	3	RRDI	13
Mushrooms	1	SRI	5
Onions	1	**TOTAL**	**74**
Other	1		
Pulses	2		
Rice	13		
Roots and tubers	1		
Soy	1		
Spices	7		
Sugarcane	5		
Vegetables	8		
TOTAL	**74**		

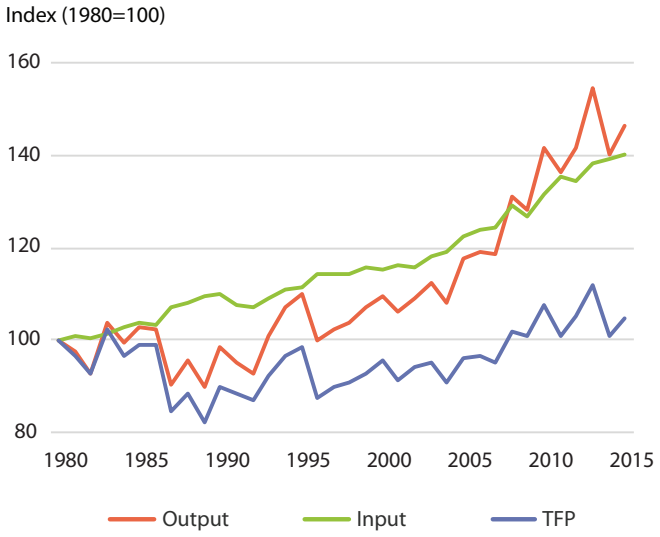
- During 2013–2016, FRDI released 18 new fruit varieties; RRDI 13 new rice varieties; FCRDI 14 new maize, groundnut, pulse, and vegetable varieties; HORDI 12 new vegetable and floriculture varieties; DEA 8 new spice varieties; SRI 5 new sugarcane varieties; and NBG 4 new floriculture varieties. Despite the importance of tea research in Sri Lanka, no new tea plant varieties were released during 2013–2016. CRI released no new coconut varieties during this period either, although it currently has 11 cross varieties under evaluation.

LIMITED AGRICULTURAL PRODUCTIVITY GROWTH

- Increasing the efficiency of agricultural production—that is, getting more output from the same amount of resources—is critical for improving food security. Total factor productivity (TFP) is an indicator of how efficiently agricultural land, labor, capital, and other inputs (seed, fertilizer, and so on) are used to produce a country's agricultural outputs (crops and livestock). It is calculated as the ratio of total agricultural output to total production inputs. When more output is produced from a constant amount of resources—indicating that resources are being used more efficiently—TFP increases.

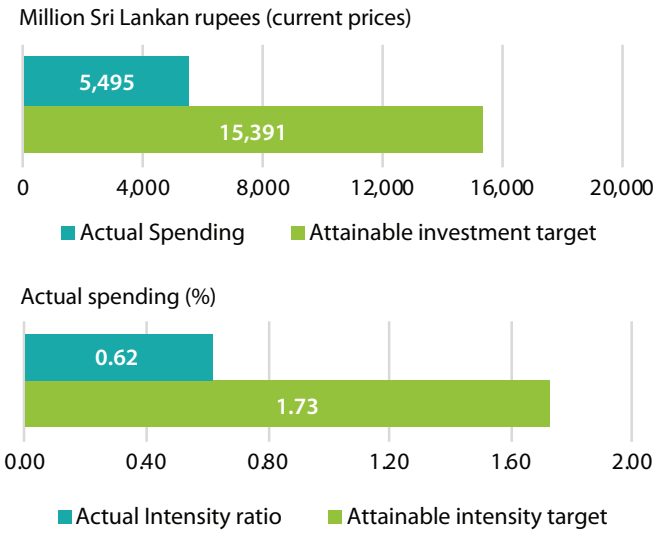
Agricultural output in Sri Lanka grew by roughly 50 percent during 1980–2015, which was about three times lower than in Bangladesh, India, Nepal, and Pakistan during the same period. Various factors underlie the poor performance of Sri Lanka's agricultural sector, including periodic droughts and stabilization policies intended to contain the fiscal deficit and control inflation. The most important factor, however, is civil conflict. The start of the civil war in 1983 diverted public resources and discouraged foreign investment. Consequently, agricultural research investment plummeted and remained low for most of the 1980s. Unsurprisingly, both agricultural output and TFP were affected as well. It was only in the years leading up to the 2009 peace agreement that increasing areas of abandoned land was brought back under cultivation, causing agricultural output and TFP growth to accelerate. Given the substantial lag from the time agricultural research investments are made and the time tangible outputs are attained—which is typically decades rather than years—the effects of this sustained period of underinvestment are still being felt today in terms of low productivity growth.

Long-term agricultural input, output, and productivity growth, 1980–2015



Source: Calculated by authors based on USDA-ERS (2018).

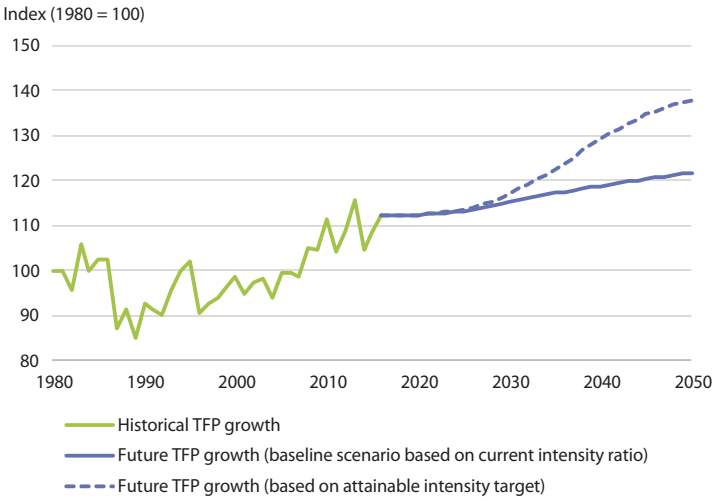
Actual research spending and attainable investment targets, 2016



Sources: Calculated by authors based on ASTI (2019) and Nin Pratt (2016).

Notes: Traditionally, agricultural research intensity ratios compare investment and AgGDP levels to determine whether countries may be underinvesting. ASTI's Intensity Index incorporates additional factors that account for the size and nature of a nation's economy and hence facilitate more accurate cross-country comparisons. For more information, see https://astinews.ifpri.info/2017/07/01/anew-look-at-research-investment-goals-for-ssa/.

Agricultural productivity projections based on actual and attainable investment rates, 1980–2050



Sources: Calculated by authors based on ASTI (2019), on USDA-ERS (2018), Nin Pratt (2016), FAO (2018), and World Bank (2018).

HOW MUCH IS SRI LANKA UNDERINVESTING IN AGRICULTURAL RESEARCH?

Conventional recommendations of agricultural research intensity levels, such as the 1 percent target set by the United Nations, assume that national investments should be proportional to the size of the agricultural sector. In reality, a country's capacity to invest in agricultural research depends on a range of variables, including the size of the economy, a country's income level, the level of diversification of agricultural production, and the availability of relevant technology spillovers from other countries. In efforts to address these nuances, ASTI developed a multi-factored indicator of research intensity that comprises a range of weighted criteria (for further details, see Nin Pratt 2016). Under this approach, countries with the same mix of inputs are expected to require similar minimum levels of research investment, and investment below that level can be interpreted as an indicator that the country is potentially underinvesting based on its particular input mix.

ASTI's weighted indicator of research intensity demonstrates that Sri Lanka is indeed underinvesting in agricultural research. Based on the structural characteristics of Sri Lanka's economy and agricultural sector, an investment target of 1.73 percent of AgGDP is thought to be realistic and attainable. To have met this target in 2016, Sri Lanka would need to have invested 15.4 billion rupees, instead of the 5.5 billion it actually invested (both in current prices). In other words, the gap between actual investment in agricultural research and estimated attainable agricultural research investment was nearly 10 billion rupees in 2016 alone. Even though the 2016 investment gap is lower than in the 1980–2010 period, it remains very high, raising questions as to what Sri Lanka's agricultural productivity could have been today had all these accumulated investments been made in the past.

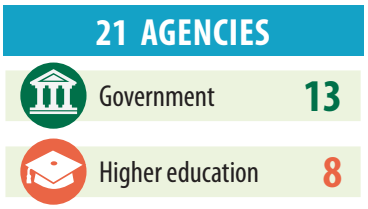
In an effort to answer this question, ASTI ran long-term projections on the impact of historical agricultural research investment on the country's agricultural output and productivity, and of the higher rates of investment needed to close the gap. The projections indicate that closing the agricultural R&D investment gap by 2030 would result in higher yearly agricultural productivity growth of around 0.4–1.1 percent to 2050—which is considerable, but perhaps not as large as would be expected. It is difficult to explain the exact reasons behind the relatively lower productivity growth projections at this level of aggregation, but the fact that Sri Lanka receives important spillovers from its large neighbor India reduces the overall impact of domestic investment. Second, the fact that Sri Lanka has struggled with civil unrest almost continuously over the past few decades has had a severely negative impact on policy continuity and effectiveness, thereby limiting the response of agricultural research investment on productivity growth. A sustained period of economic and political stability is likely to reverse this limited response.

INEFFECTIVE AGRICULTURAL EXTENSION SYSTEM

Another important factor limiting the impact of agricultural research investment in Sri Lanka is the relative ineffectiveness of the country's agricultural extension system. Government extension services were established many decades ago, covering all agricultural subsectors. Over time, these services have undergone important changes in terms of the approaches used and of service coverage, but they have remained mostly top-down and supply-driven. A lack of policy direction combined with declining funding mean that most extension providers are offering services far below the levels needed, and what is being offered is inadequately integrated into the agricultural innovation process. The use of information and communications technologies is also not widespread in extension, although innovative applications are being developed on a limited scale. Despite having high potential to accelerate extension delivery, public–private partnerships and collaborative extension programs have not been adequately developed. Training of extension workers has been insufficient in most subsectors too. Finally, the country lacks a central body, such as MANAGE in India, to develop the necessary regulatory framework, management systems, and personnel to integrate and optimize national and provincial level extension strategies (Wanigasundera 2015).

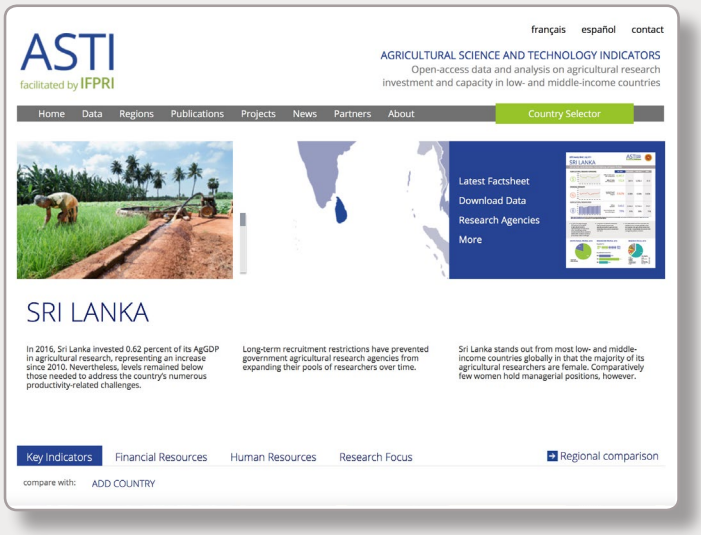
OVERVIEW OF SRI LANKA'S AGRICULTURAL RESEARCH AGENCIES

SLCARP is the umbrella organization overseeing Sri Lanka's public agricultural research system, comprises 13 national agricultural research institutes and a smaller higher education sector. The research institutes accounted for 81 percent of Sri Lanka's agricultural researchers in 2016. Excluding the SLCARP Secretariat, the following eight institutes fall under the Ministry of Agriculture: DOA, DEA, FD, HARTI, IPHT, NARA, VRI, and NBG. The remaining institutes—CRI, SRI, TRI, RRI, and RRISL—are all under the Ministry of Plantations. DOA is by far the largest of the institutes (193 FTEs) and focuses on increasing productivity in the food-crop sector. DOA has a complex structure that includes three research institutes (FCRDI, HORDI, and RRDI), a number of smaller technical service centers, and other support services. Eight Sri Lankan universities conduct agricultural R&D. In 2016, their agriculture-related faculties employed a total of 125 FTEs, up from 55 FTEs in 2000. The eight universities are Sabaragamuwa University, Wayamba University, the University of Jafna, Eastern University, the University of Ruhuna, the University of Peradeniya, Uva Wellassa University, and Rajarata University. The University of Peradeniya is the largest of these by far, employing 41 FTEs in agriculture-related sciences in 2016. Given lack of access to data, the private sector is excluded from the analysis in this brief. Privately performed agricultural R&D is believed to be limited to export crops, rice, vegetable seeds, and floriculture. Partnerships with the private sector are currently ongoing between both the government and higher education agencies. The private sector is also involved in SLCARP's planning activities through representation on the national committees that provide advice on the allocation of research spending.



For a complete list of the agencies included in ASTI's dataset for Sri Lanka, visit **www.asti.cgiar.org/sri_lanka**.

For more information on ASTI's **data procedures and methodology**, *visit* **www.asti.cgiar.org/methodology**; *for more information on agricultural R&D in Sri Lanka, visit* **www.asti.cgiar.org/sri_lanka**.



ACRONYMS USED IN THIS COUNTRY BRIEF

AgGDP	agricultural gross domestic product
CRI	Coconut Research Institute
DEA	Department of Export Agriculture
DOA	Department of Agriculture
FCRDI	Field Crop Research and Development Institute
FRDI	Fruit Research and Development Institute
FD	Forest Department
FTE(s)	full-time equivalent(s)
HARTI	Hector Kobbekaduwa Agrarian Research and Training Institute
HORDI	Horticultural Crop Research and Development Institute
IPHT	Institute of Post Harvest Technology
NARA	National Aquatic Resources Research and Development Agency
NBG	National Botanical Gardens
PPP	purchasing power parity (exchange rates)
R&D	research and experimental development
RRDI	Rice Research and Development Institute
RRISL	Rubber Research Institute of Sri Lanka
SLCARP	Sri Lanka Council of Agricultural Research Policy
SRI	Sugarcane Research Institute
TFP	total factor productivity
TRI	Tea Research Institute
VRI	Veterinary Research Institute

ABOUT ASTI, IFPRI, APAARI, AND UNIVERSITY OF PERADENIYA

Working through collaborative alliances with numerous national and regional R&D agencies and international institutions, **Agricultural Science and Technology Indicators (ASTI)** is a comprehensive and trusted source of information on agricultural R&D systems across the developing world. In the Indo–Pacific region, ASTI is facilitated by the **International Food Policy Research Institute (IFPRI)** and the **Asia-Pacific Association of Agricultural Research Institutions (APAARI)**. The **University of Peradeniya** is Sri Lanka's largest and oldest university. It hosts nine faculties, including the Faculty of Agriculture and the Faculty of Veterinary Medicine and Animal Science.

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