

Key trends in agricultural R&D investments in the Philippines

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Introduction*

In 2005, agriculture accounted for 14 percent of the Philippines' gross domestic product (GDP), down from 23 percent in 1982. Despite the decreasing importance of agriculture in the country's GDP and exports, the sector still represents a priority area to the Philippines as roughly three-quarters of the rural poor depend on agriculture for employment and income. Agricultural research and development (R&D) is crucial in alleviating rural poverty and it is therefore granted a priority by the Philippine government.

This brief provides an overview of the major investment trends in agricultural research in the Philippines since the mid-1980s, drawing on a new set of data developed through a comprehensive survey by the International Food Policy Research Institute (IFPRI) and the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD).

Public Agricultural Research Human Resource and Investment Trends

The organization of public agricultural R&D in the Philippines is complex. PCARRD acts as the central coordinating body providing support to 132 implementing R&D agencies collectively called the National Agriculture and Resources Research and Development Network (NARRDN) as well as 14 region-based consortia. We identified around 270 agencies involved in agricultural R&D in the Philippines, including a sizeable number of private sector agencies. In 2002, the 247 agencies for which data were available employed more than 3,750 full-time equivalent (fte) researchers and spent more than 3 billion Philippine pesos (in 2000 prices)—the equivalent of 269 million international 2000 dollars (Table 1).¹

The government agencies in our survey sample combined employed 2,071 fte researchers in 2002, accounting for close to two-thirds of the Philippines' public agricultural R&D staff. Besides the (mostly Manila-based) national government agencies, each of the country's 15 administrative regions disposes of its own region-based agricultural research facilities. More than one-third of all region-based government agency R&D expenditures were spent in Region III (Central Luzon), where the Philippine Rice Research Institute (PHILRICE) and the Philippine Carabao Center (PCC) are headquartered. We

identified around 160 faculties, colleges, and other higher education agencies involved in agricultural research in the Philippines. Together, they accounted for roughly one-third of the country's total agricultural research staff and investments in 2002.

Table 1—Composition of public agricultural research expenditures and total researchers, 2002

Type of agency	Spending		Researchers (fte's)
	2000 Philippine pesos (millions)	2000 international dollars	
Government agencies	1,513.2	137.7	2,070.7
Nonprofit agencies	21.3	1.9	17.0
Higher education ^a	896.4	81.6	1227.7
Public-sector total	2,430.9	221.2	3,315.5

Sources: Stads et al. (2007) based on data from the ASTI database.

^a Expenditures for the higher education sector in our sample are estimates based on average expenditures per researcher at the government agencies.

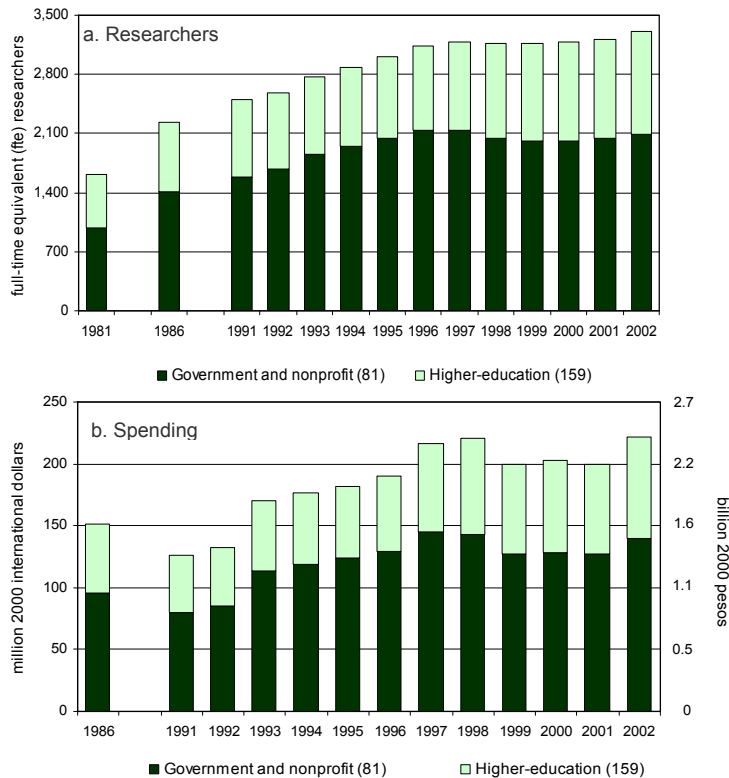
During the period 1981-2002, total agricultural research staff in a 231-agency sample, excluding the private sector, increased at an average rate of 3.4 percent per year (Figure 1a). This overall rate masks differences among institutional categories and subperiods. The total number of agricultural researchers grew rapidly during 1981-1996, but stalled after that. Research staff totals at the government agencies grew by 3.7 percent per year during 1981-2002, but once again most of this increase occurred during 1981-1996. The corresponding growth rate of the higher-education sector was 2.9 percent. Research staff numbers at the 148 higher education agencies showed constant growth during 1981-2002, although the growth was higher during the first half of this period than during the second half. The institutional composition of public agricultural research staff in the Philippines does not show important shifts during 1981-2002. The share of the government agencies remained relatively stable at about two-thirds. Similarly, the share that the higher-education agencies occupy remained relatively unchanged at an average of 34 percent.

The institutional structure of agricultural R&D expenditures in our sample did not differ much from the breakdown of fte researchers (Figure 1b). In 2002, the government agencies accounted for 62 percent of public agricultural R&D expenditures, while higher education agencies had 37 percent of the expenditures. Agricultural R&D investments for our sample of 228 agencies (excluding the private sector) grew substantially during 1986-2002 at an average rate of 4.7 percent per annum. R&D expenditures rose particularly fast in the early 1990s. In 1992, total public agricultural R&D expenditures in the Philippines totaled \$128 million. Five years later, this level had

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increased to \$210 million, after which it stabilized somewhat (Figure 1b). The rapid increase in agricultural R&D spending in the early 1990s can be attributed to the fact that PCC was founded and that PhilRice intensified its research expenditures during this period.

Figure 1—Public agricultural R&D trends, 1981/86–2002



Sources: Stads et al. (2007) based on data from the ASTI database.

Notes: See Table 1. Figures in parentheses indicate the number of agencies and programs surveyed in each category. Expenditures for the higher education agencies in our sample are estimates based on average expenditures per researcher at the government agencies.

A Regional Perspective

The Philippines accounted for less than 3 percent of the Asia-Pacific region's total agricultural R&D spending in 2000, similar to the share recorded in 1991 (Table 2). Total research spending showed a steady increase throughout this period, as did total R&D expenditures for the region as a whole. As a result, the share of the Philippines remained more or less unchanged.

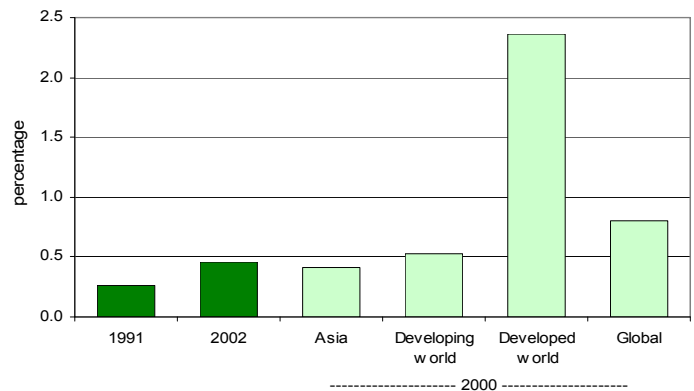
Table 2—Public agricultural R&D spending in Asia and the Pacific, 1981–2000

	1981	1991	2000
Total spending	<i>(million international dollars)</i>		
Philippines	Na	123	196
China	1,049	1,733	3,150
India	533	1,004	1,858
<i>Asia and Pacific (28 countries)</i>	<i>3,047</i>	<i>4,847</i>	<i>7,523</i>
Shares	<i>(percentages)</i>		
Philippines	Na	2.5	2.6
China	34.4	35.8	41.9
India	17.5	20.7	24.7
<i>Other Asia and Pacific (25 countries)</i>	<i>na</i>	<i>41.0</i>	<i>30.8</i>

Sources: Stads et al. (2007) and Pardey et al. (2006) based on data from the ASTI database.

Total public spending as a percentage of agricultural output (AgGDP) is a commonly used indicator of a country's research investment levels and a useful means of comparing agricultural R&D spending across countries. In 2002, the Philippines invested \$0.46 for every \$100 of agricultural output, which represented a rise of more than 70 percent compared with its corresponding 1991 ratio of 0.27 (Figure 2). The comparable 2000 averages reported for Asia and the developing world as a whole were 0.41 and 0.53, respectively.

Figure 2—Philippine's public agricultural research intensity compared regionally and globally



Sources: Philippines data are compiled from Figure 1; AgGDP data are from World Bank (2005); all other intensity ratios are from Pardey et al. (2006).

Private-Sector Investments

Compared to most countries in the Asia-Pacific region, the private sector plays a relatively important role in conducting agricultural R&D in the Philippines. Based on the sample agencies for which data were available and estimates made for omitted agencies, we attributed 16 percent of the country's total agricultural research staff and 18 percent of its agricultural R&D spending to the private sector (See Table 3).

Table 3—Estimated public and private expenditures, 2002

	2000 Philippine pesos	2000 international dollars	Share
	<i>(millions)</i>		<i>(percentage)</i>
Public agencies	2,430.9	221.2	82.1
Private agencies	528.8	48.1	17.9
Total	2,959.7	269.3	100.0

Sources: Stads et al. (2007) based on data from the ASTI database.

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