

Agricultural R&D Investments and Capacities: Recent Trends in Latin America & the Caribbean

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**Agricultural Science & Technology Indicators
(ASTI) initiative**

**REVISED PRESENTATION WITH FINAL DATA RESULTS (OCTOBER
2008)**

Presentation at the Fifth International Meeting of FORAGRO,
Montevideo, Uruguay, 28-30 July, 2008

Outline of presentation

- Overview of the Agricultural S&T Indicators (ASTI) initiative and activities in Latin America
- Global investment trends in public and private agricultural R&D
- Updated public investment and capacity data in Latin America & the Caribbean

Background ASTI Initiative and Activities in Latin America

Relevance of agricultural S&T indicators

- Important to measure and monitor inputs, outputs, and performance of agricultural S&T systems.
- One of the tools to assess the contribution of agricultural S&T to agricultural and overall economic growth.
- Assist R&D managers and policymakers in policy formulation and decision-making.
- Provide information on the state of agricultural S&T at national, regional, and international levels.
- Will be an important tool in monitoring the potential increase and distribution of agricultural R&D investments in the future.

- Objective: To provide internationally comparable information on the investment and institutional environment surrounding agricultural R&D, thereby informing and improving research policy decisions around the world.
- Collaborative network with large number of national, regional and international partners and led by IFPRI.
- Dataset includes country and regional-level trends on researchers (by degree & gender), other staff, spending, sources of funding, research focus.
- Outputs: country briefs, regional and global reports, datasets, other publications are available on the ASTI website (www.asti.cgiar.org).

Plans for the new ASTI phase (2008-11)

- Grant from the Gates Foundation with co-funding by IFPRI.
- Update of ASTI dataset for Sub-Saharan Africa and South Asia.
- Monitoring survey round of main ASTI indicators in other developing regions to enable new global update.
- Pilot studies of private-sector involvement in Africa and South Asia.
- Upgrade ASTI website to a CGIAR-level platform including links to other datasets related to S&T in agriculture and food.
- Improve data presentation and downloading facility of ASTI website.
- Consultation round to identify relevant supplementary indicators, and decide which ones can be taken on under the ASTI umbrella (e.g., output indicators, capacity indicators).

ASTI activities in Latin America and the Caribbean (1)

- Update agricultural R&D investment and capacity indicators for Latin America (last year available was 1996).
- Focus on public investments (government, higher-education, and nonprofit)
- Funding for region-specific costs provided by the Inter-American Development Bank (IDB) and European Union.
- Institutional survey rounds were conducted in 15 countries
 - Southern Cone: Argentina, Brazil, Chile, Uruguay, Paraguay
 - Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama
 - Other: Colombia, Dominican Republic, Mexico

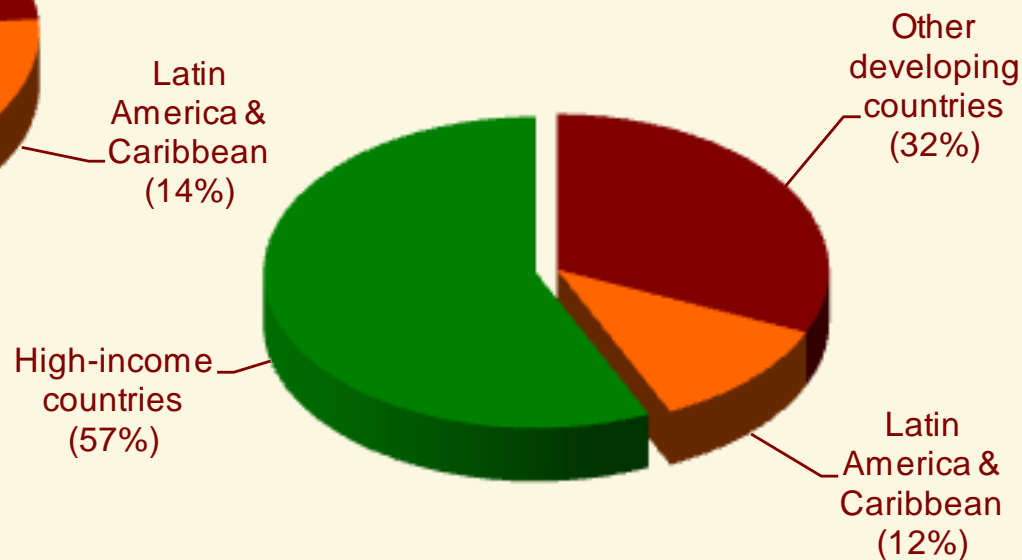
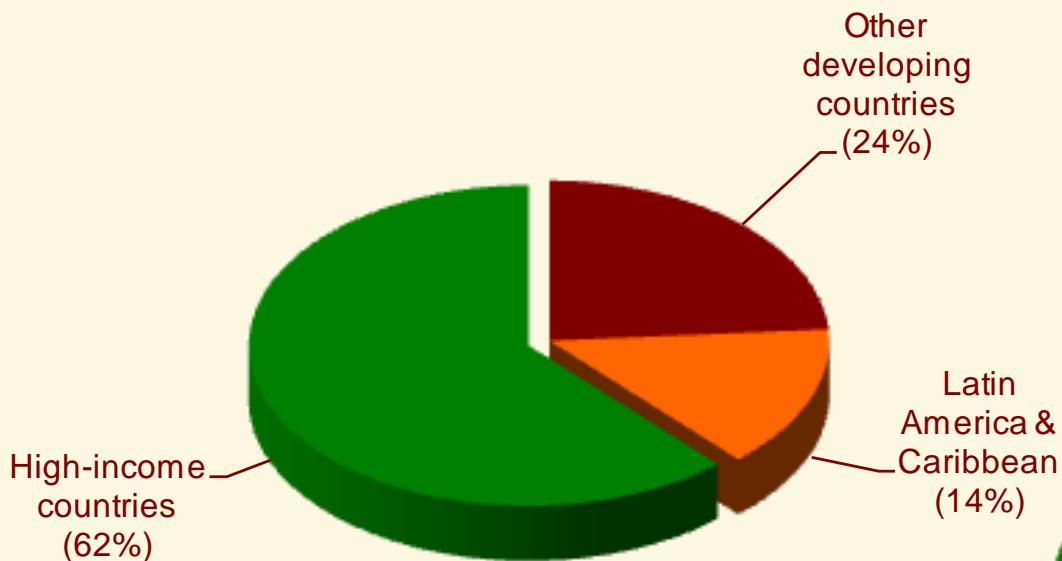
ASTI activities in Latin America and the Caribbean (2)

- Close collaboration with INIAs; Central America with IICA.
- Additional collaboration with PROCITROPICOS for INIAs of Bolivia, Ecuador, Peru, and Venezuela.
- Improved coverage and data collection procedures – revision in trends for earlier years.
- Brazil: survey round not complete – higher-education sector estimated.
- Coverage: more than 400 public agencies in 14 countries (excl Brazil).
- Outputs in the next few months: Country briefs & fact sheets, regional report & brief, datasets – will all become available on the ASTI website (www.asti.cgiar.org).

Revised Global Trends in Agricultural R&D

Public agricultural R&D investment trends globally, 1981 and 2000 (revised)

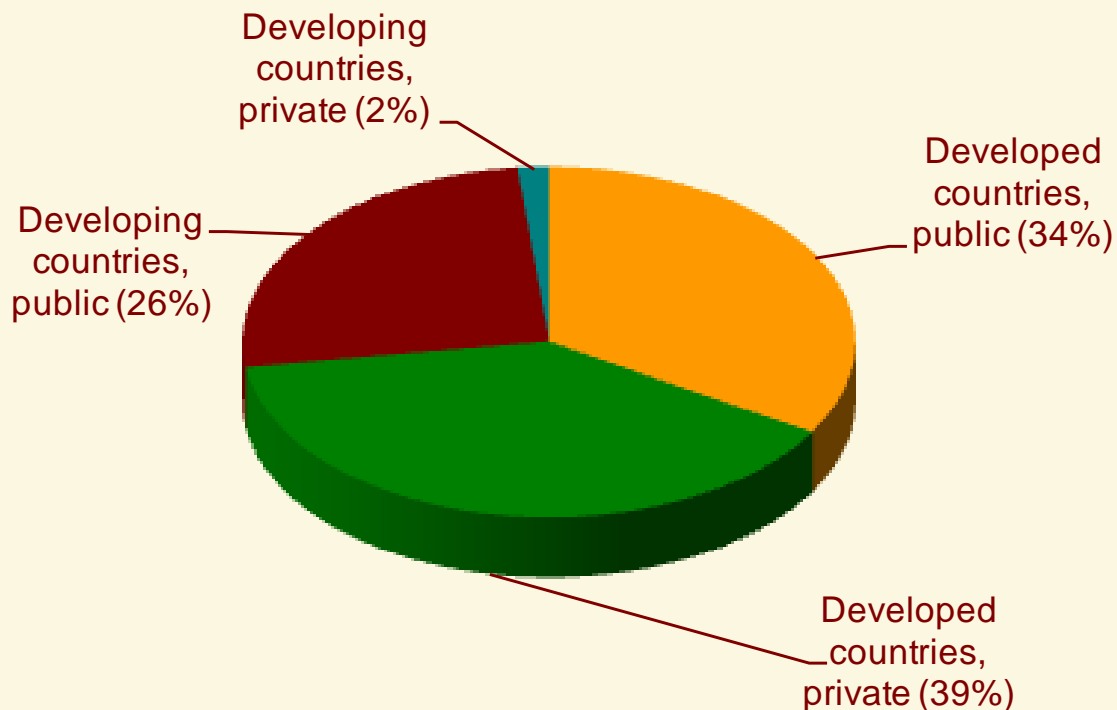
1981: 15.8 billion 2005 international (PPP) dollars



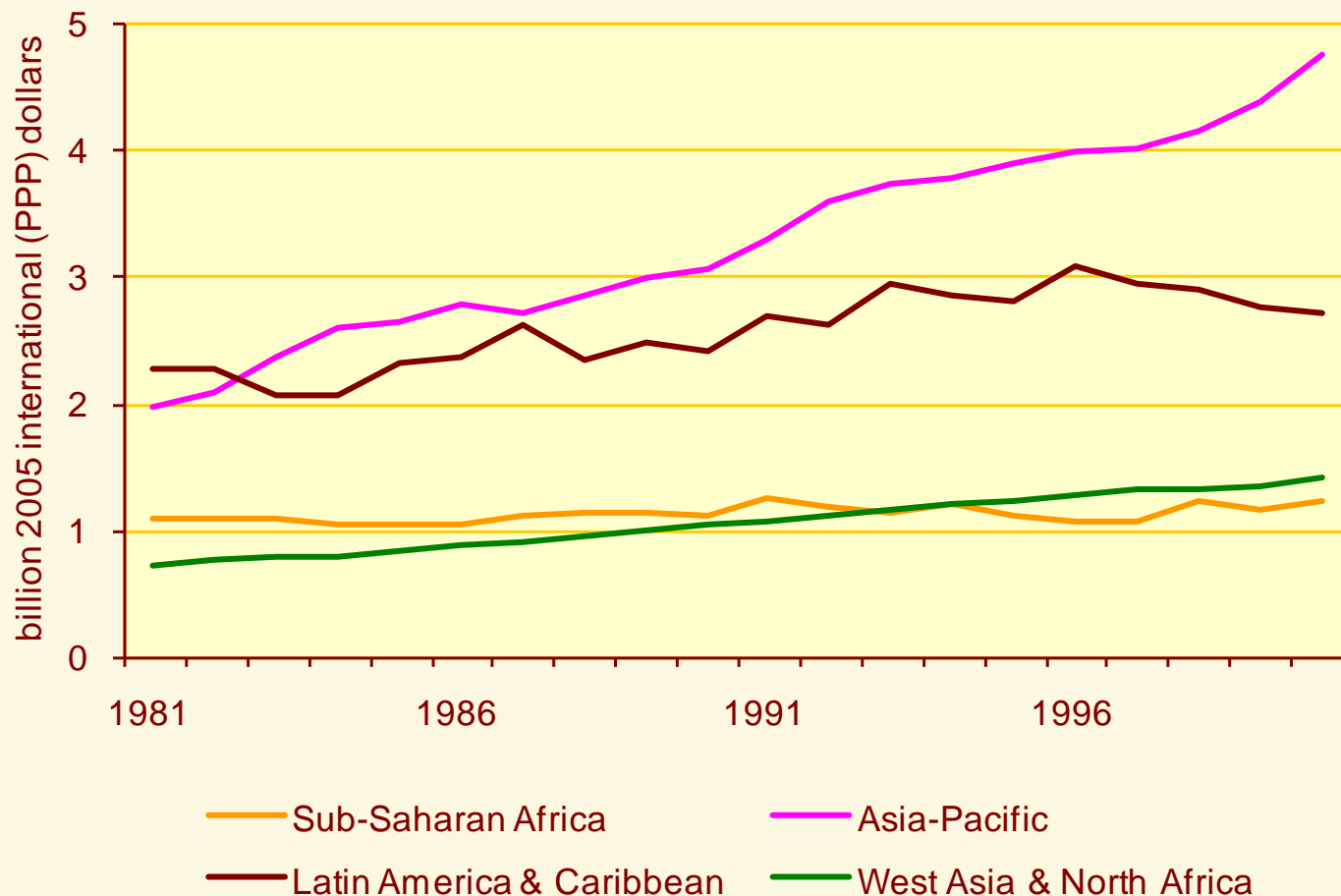
2000: 23.4 billion 2005 international (PPP) dollars

Public and private sector investment in agricultural R&D, ca. 2000 (revised)

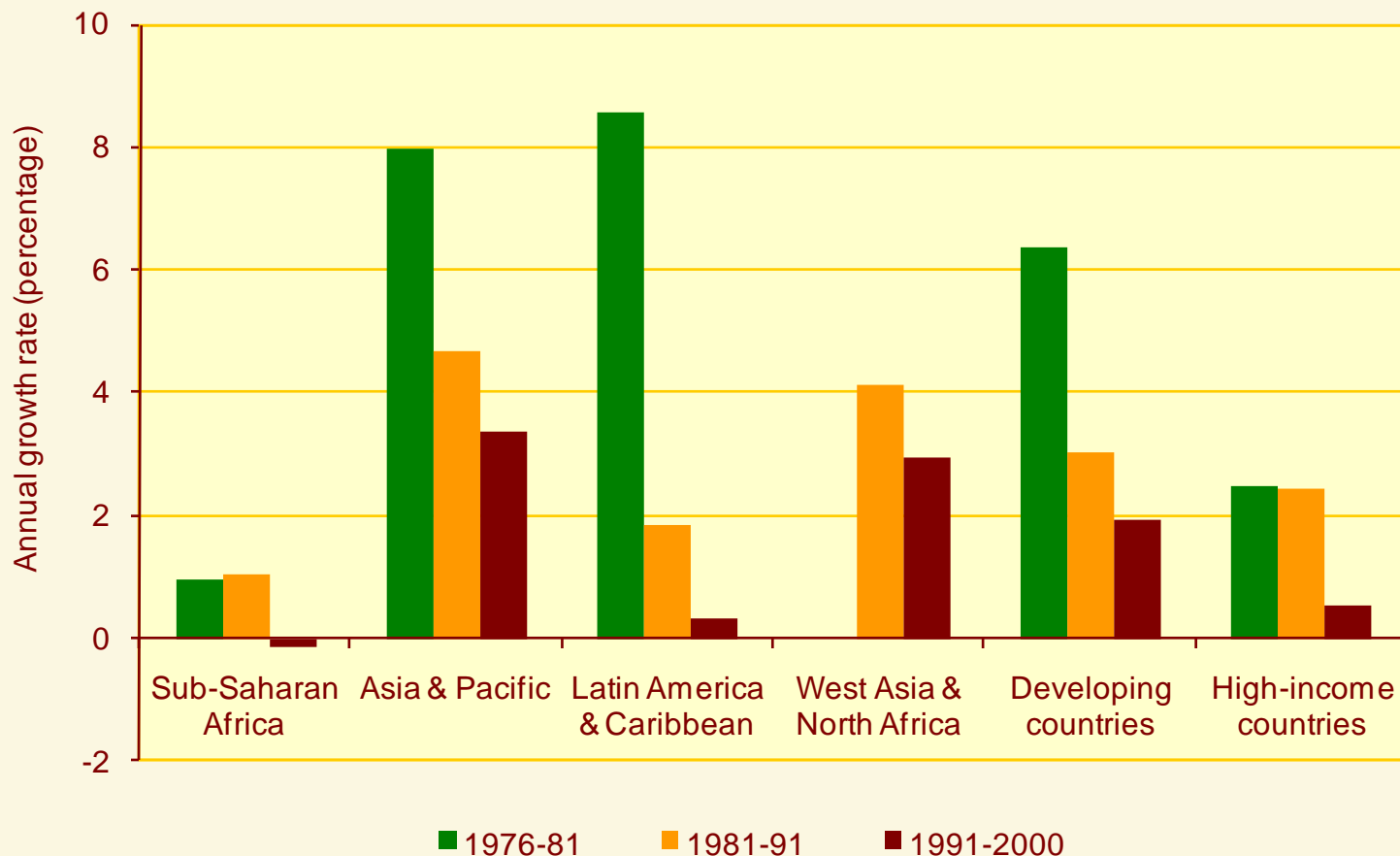
**circa 2000: 39.6 billion in 2005
international (PPP) dollars**



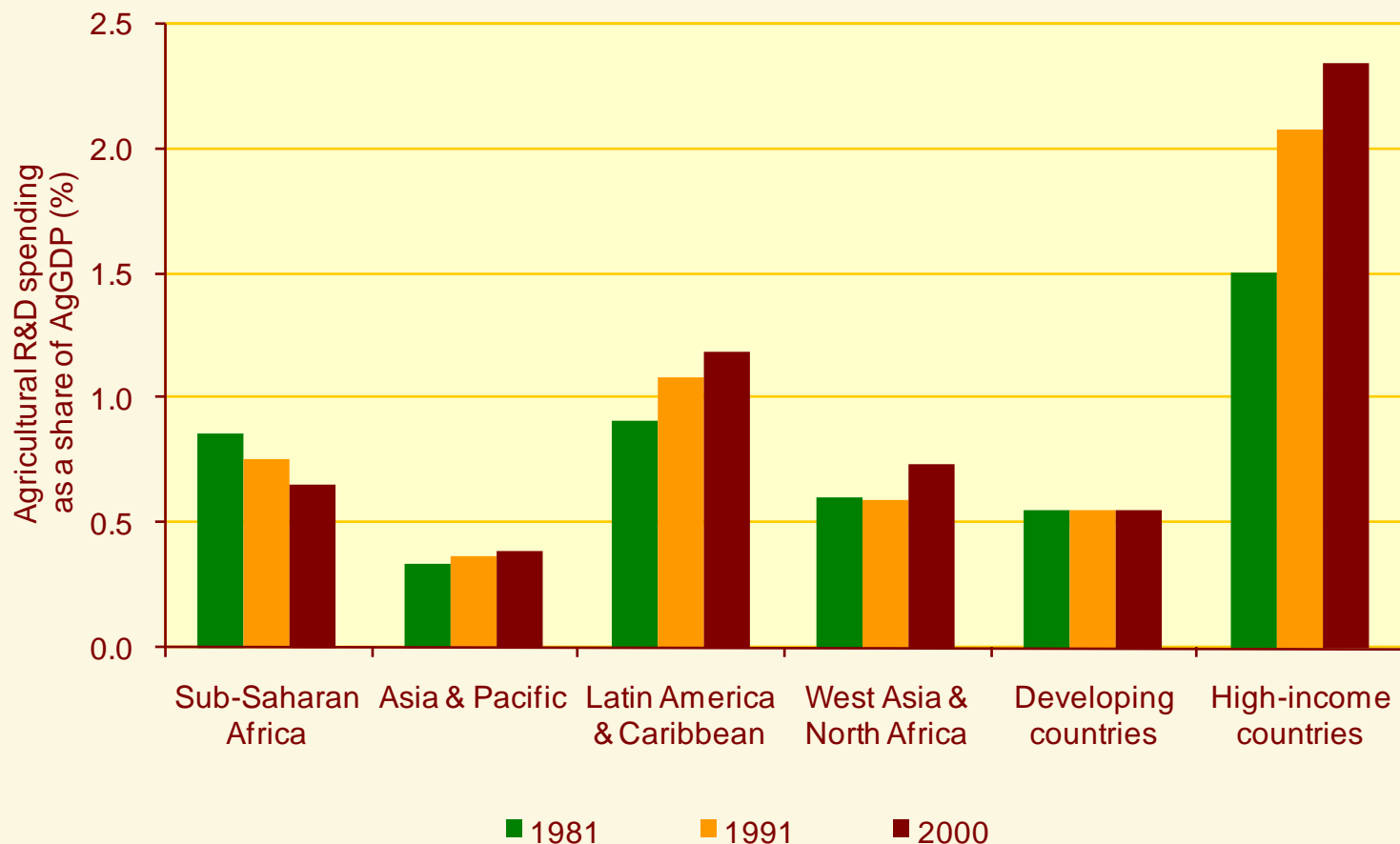
Public agricultural R&D investment trends in developing countries, 1981-2000 (revised)



Global growth rates in agricultural R&D investment, 1976-2000



Intensity of public agricultural R&D investments, 1981-2000



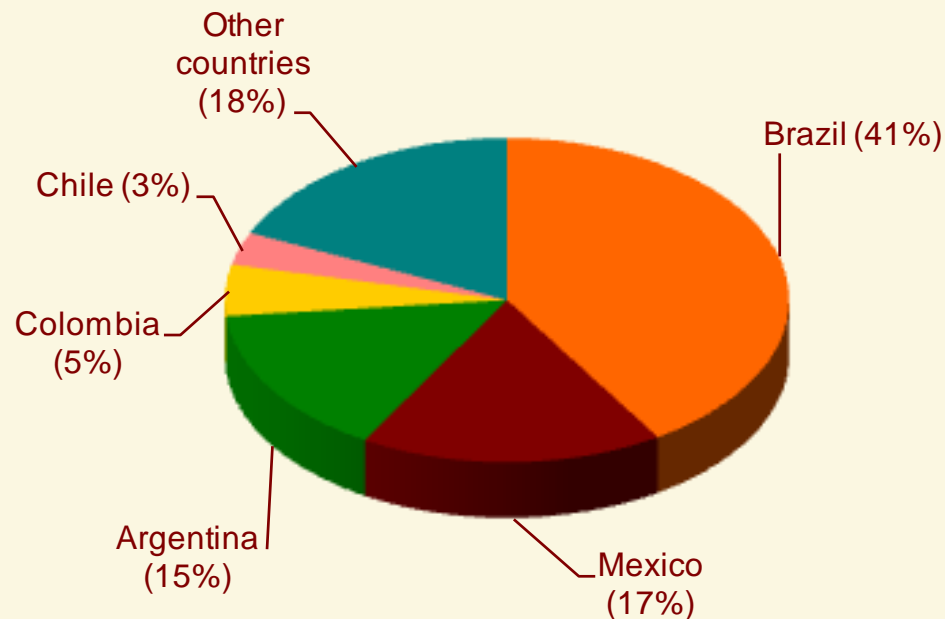
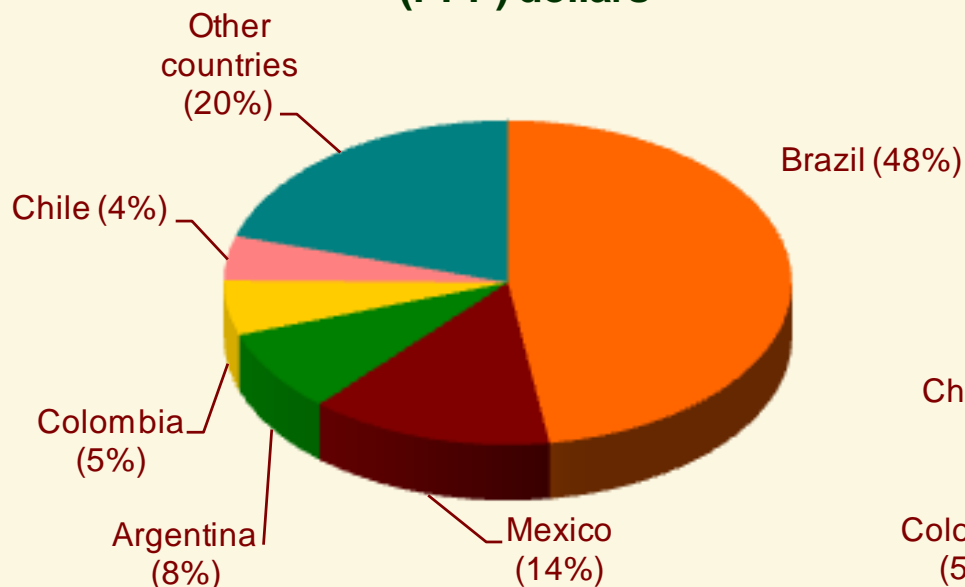
Post-2000 public agricultural R&D trends in developing countries

- Asia-Pacific: Increase of about 20% during 2000-03. This was mainly due to a 33% and 40% increase in total public agricultural R&D spending in India and China, respectively.
- Sub-Saharan Africa; West Asia & North Africa: ??
- Latin American & the Caribbean: Total public agricultural R&D increased by 10% from 2000 to 2006 despite declining spending levels in Chile, Colombia and 4 of the 7 Central American countries.

Investment and Capacity Levels in Public Agricultural R&D in Latin American countries

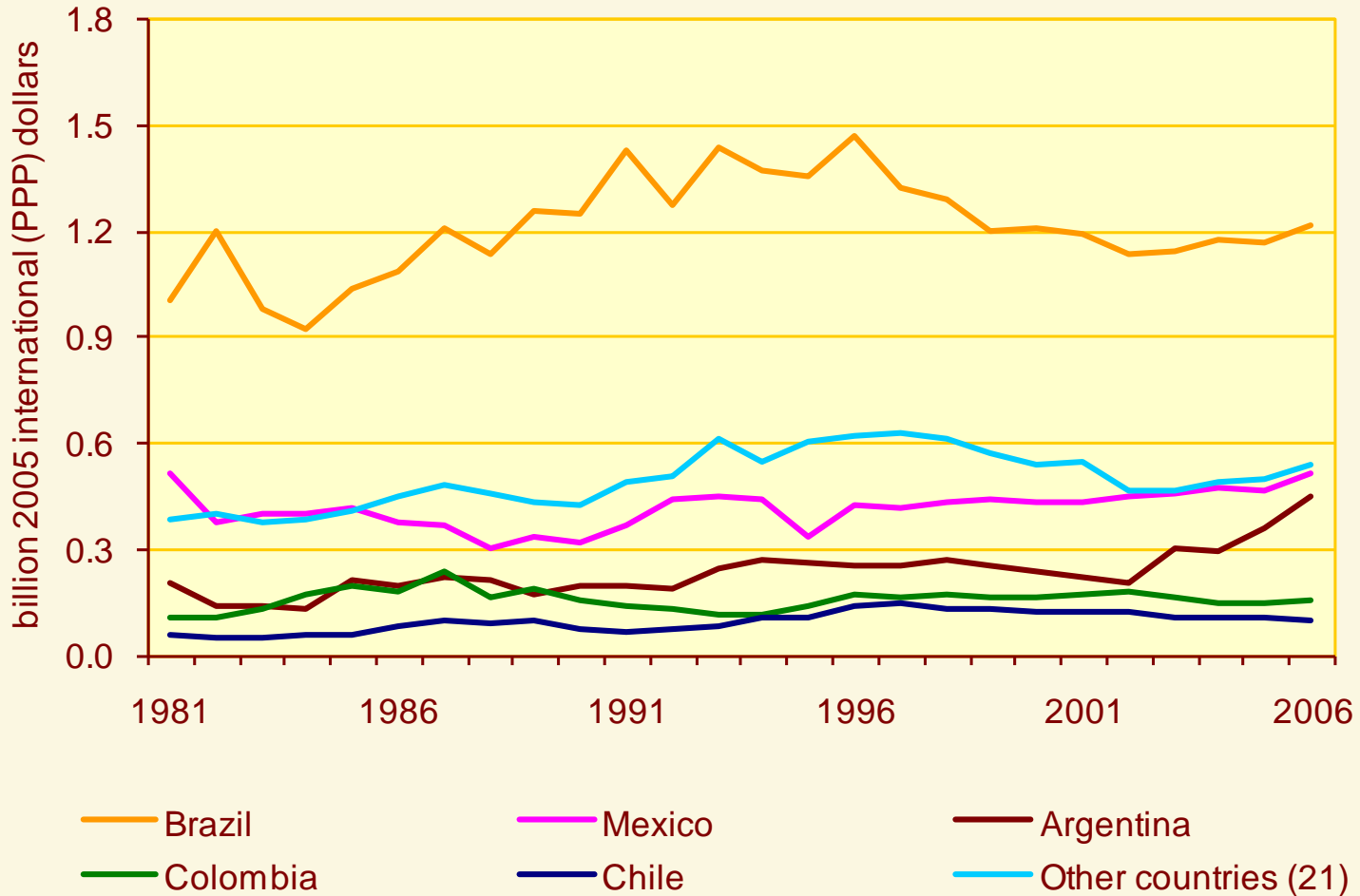
Public agricultural R&D spending shares by country/sub-region, 1996 and 2006

1996: 3.1 billion in 2005 international (PPP) dollars

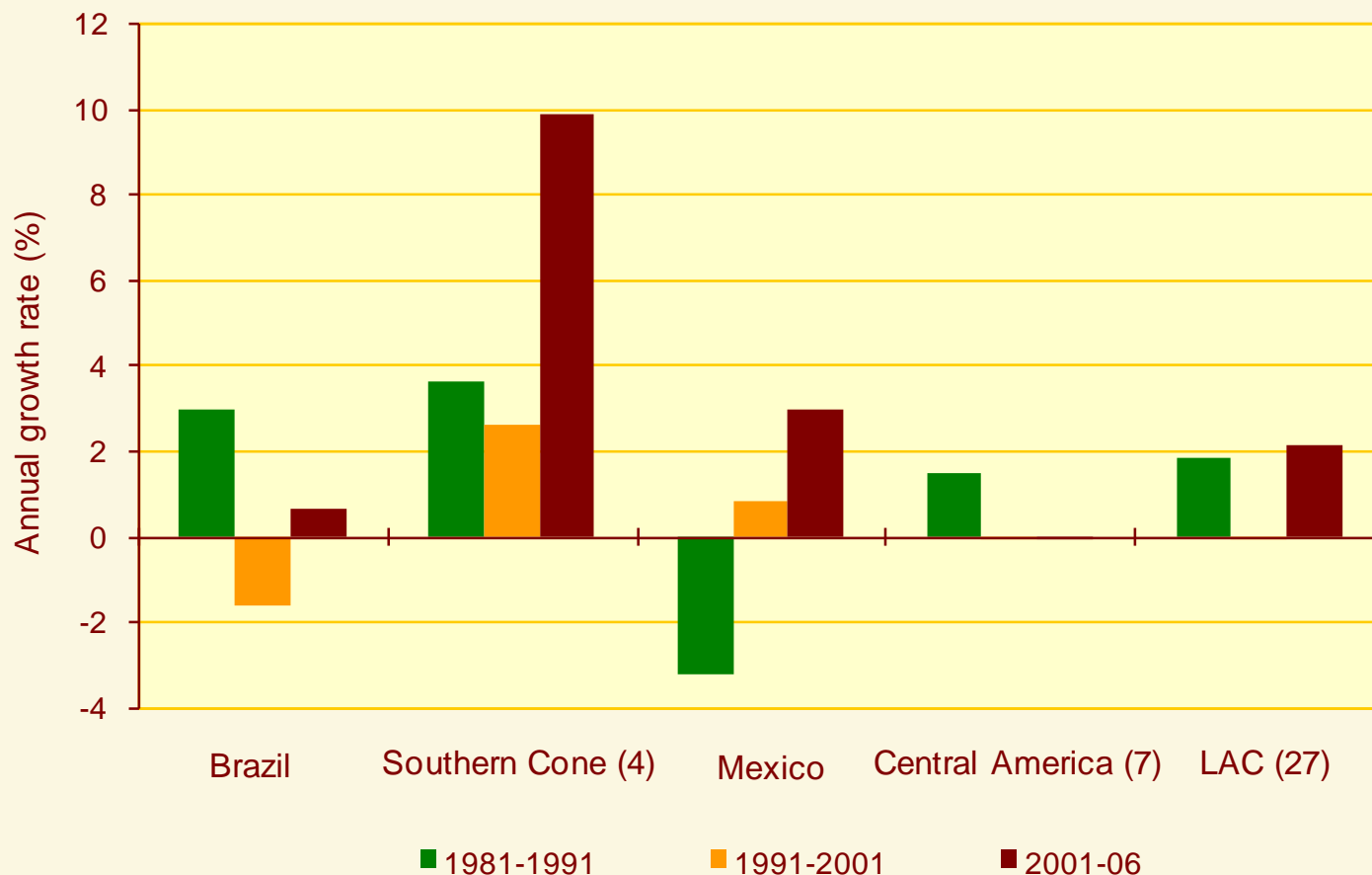


2006: 3.0 billion in 2005 international (PPP) dollars

LAC's public agricultural R&D spending trends by country/sub-region, 1981-2006



Growth in LAC's public agricultural R&D spending, 1981-2006



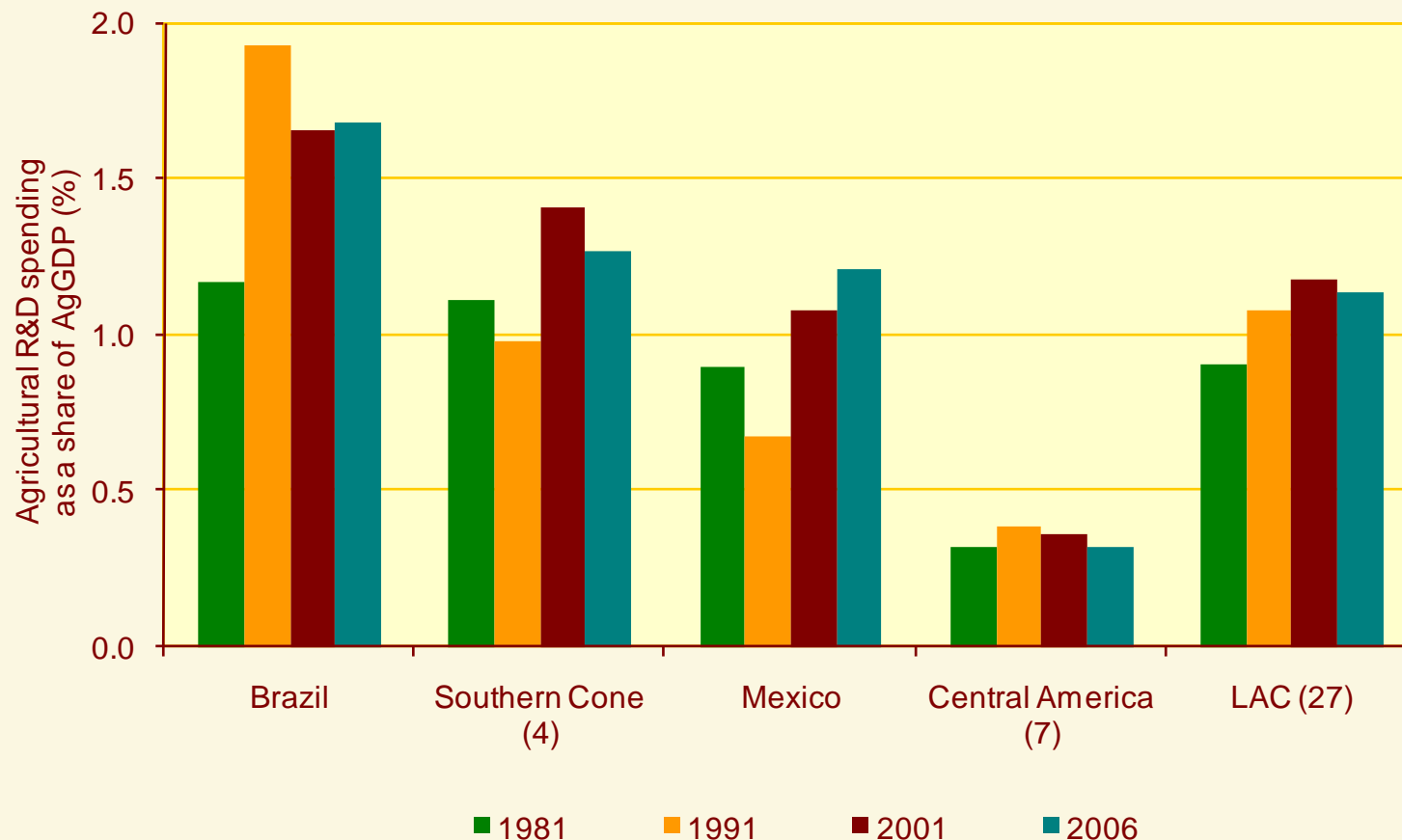
Southern Cone: Argentina, Chile, Paraguay, Uruguay

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

Average annual growth rates, 1996-2006 (14 countries)

↑	↓
Argentina (+ 4.3 %)	Guatemala (- 6.7 %)
Belize (+ 4.1 %)	El Salvador (- 5.8%)
Costa Rica (+ 3.5 %)	Paraguay (- 4.1 %)
Uruguay (+ 3.1 %)	Honduras (- 3.7%)
Dominican Republic (+ 3.1 %)	Chile (- 3.5 %)
Mexico (+ 1.6 %)	Brazil (- 1.7 %)
	Panama (- 1.4 %)
	Colombia (- 1.2 %)

Intensity in LAC's public agricultural R&D spending, 1981-2006



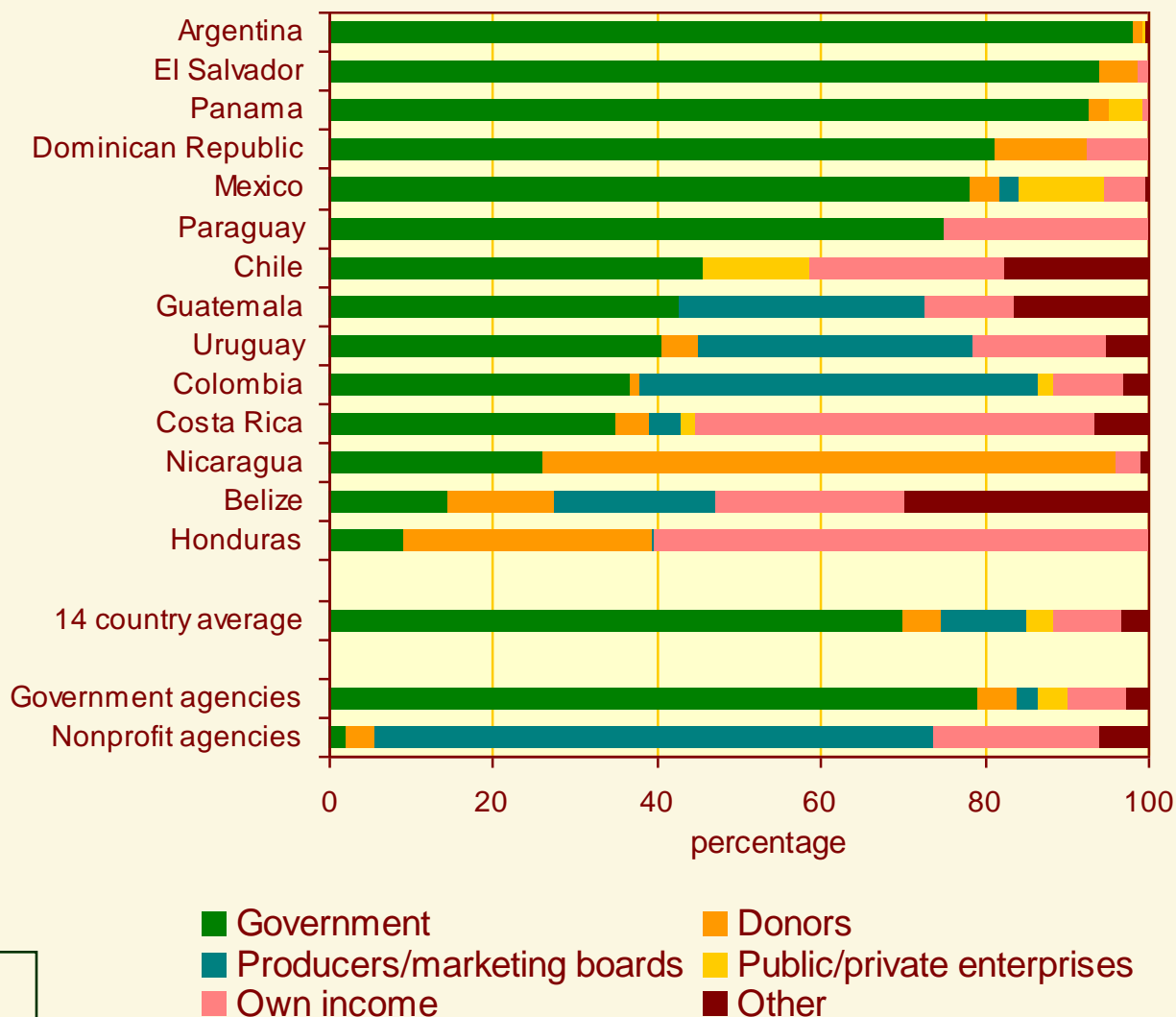
Southern Cone: Argentina, Chile, Paraguay, Uruguay

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

Intensity ratios of public agricultural R&D spending, 2006 (15 countries)

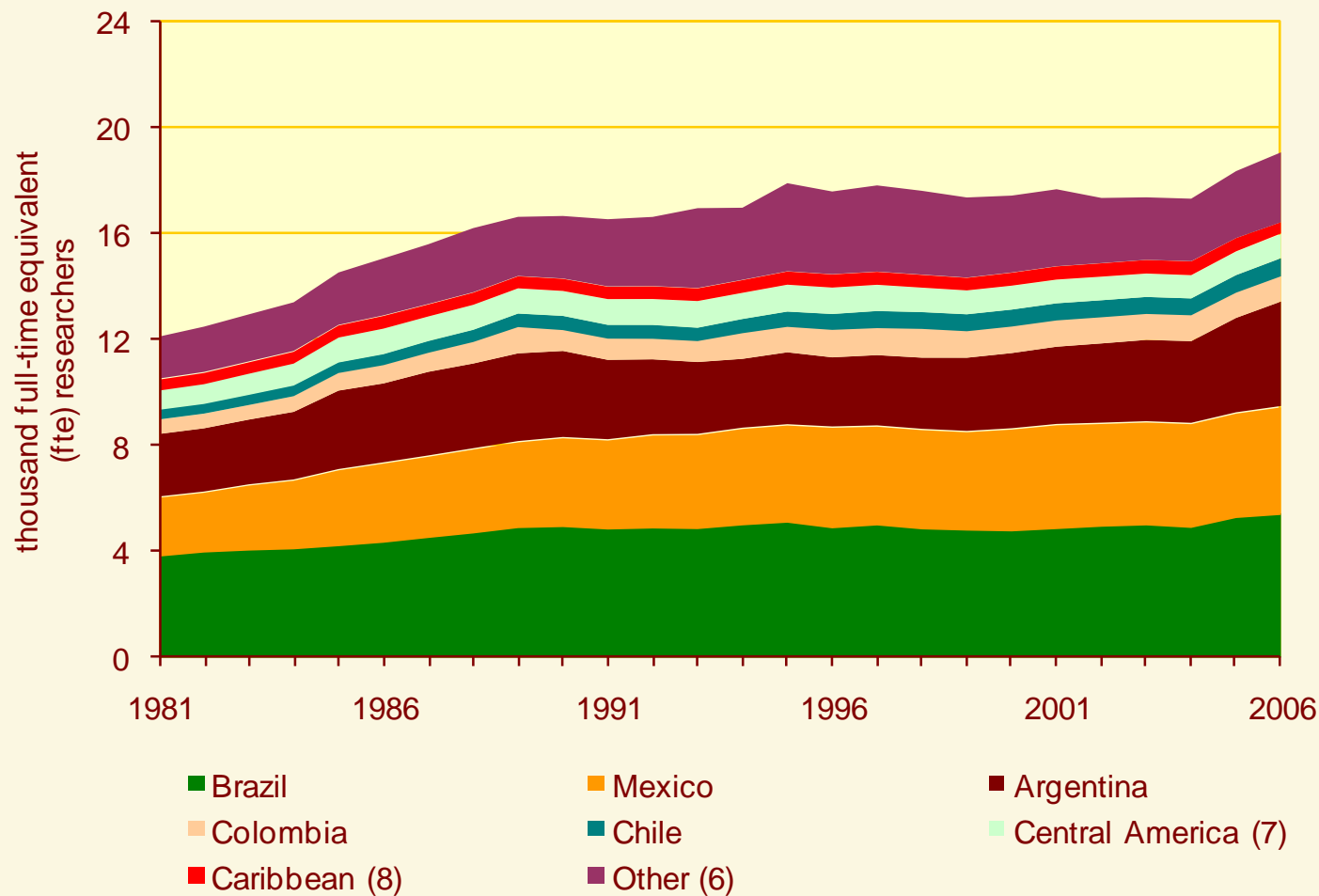
> 1.0%	0.5% - 1.0%	< 0.5%
Uruguay (2.0%)	Belize (0.9%)	Honduras (0.4%)
Brazil (1.7%)	Nicaragua (0.9%)	Dominican Republic (0.3%)
Argentina (1.3%)	Costa Rica (0.9%)	Paraguay (0.2%)
Mexico (1.2%)	Colombia (0.5%)	El Salvador (0.1%)
Chile (1.2%)	Panama (0.5%)	Guatemala (0.1%)

Funding sources of main government and nonprofit agencies, 2006 (14 countries)

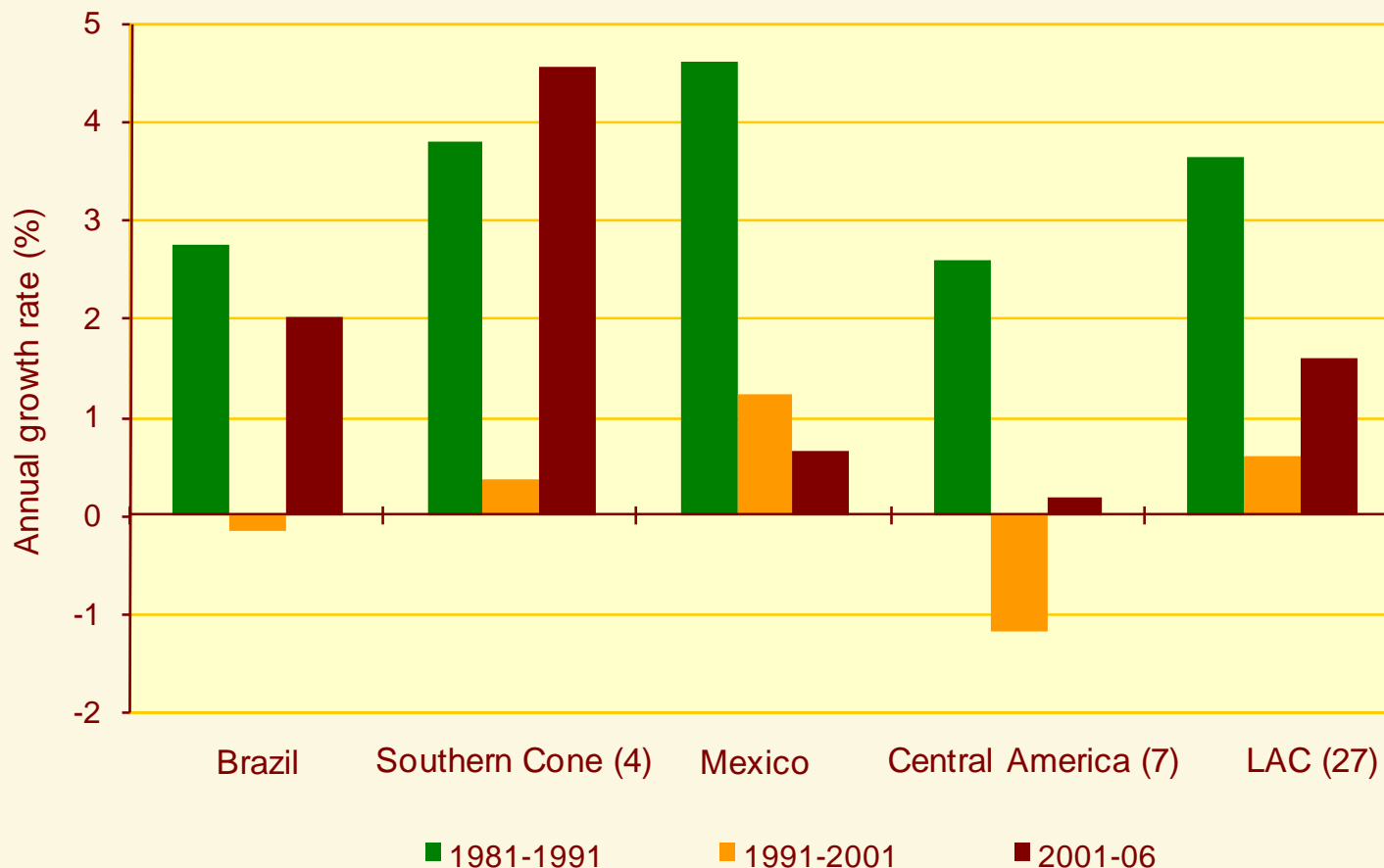


Preliminary data:
not for citation

LAC's public agricultural researcher trends by country/sub-region, 1981-2006



Growth in LAC's public agricultural R&D capacity, 1981-2006

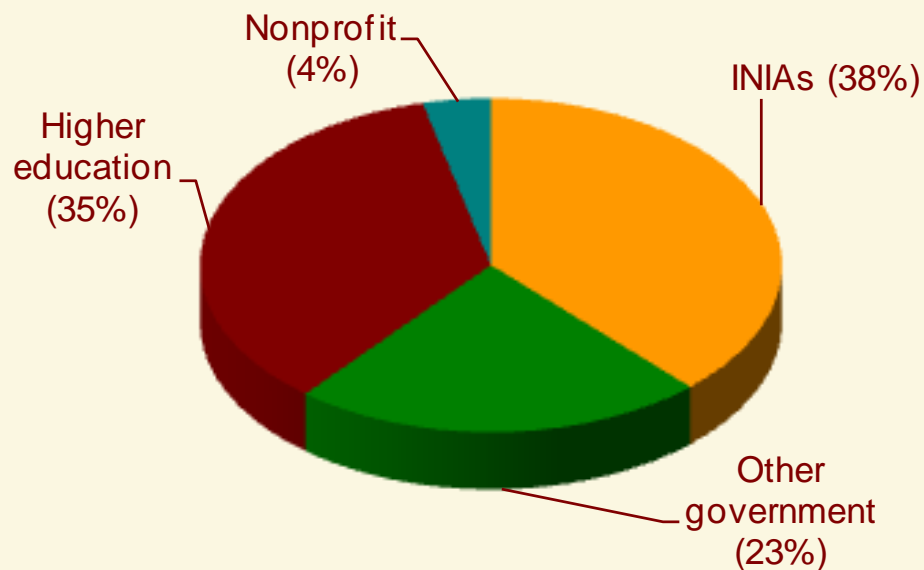
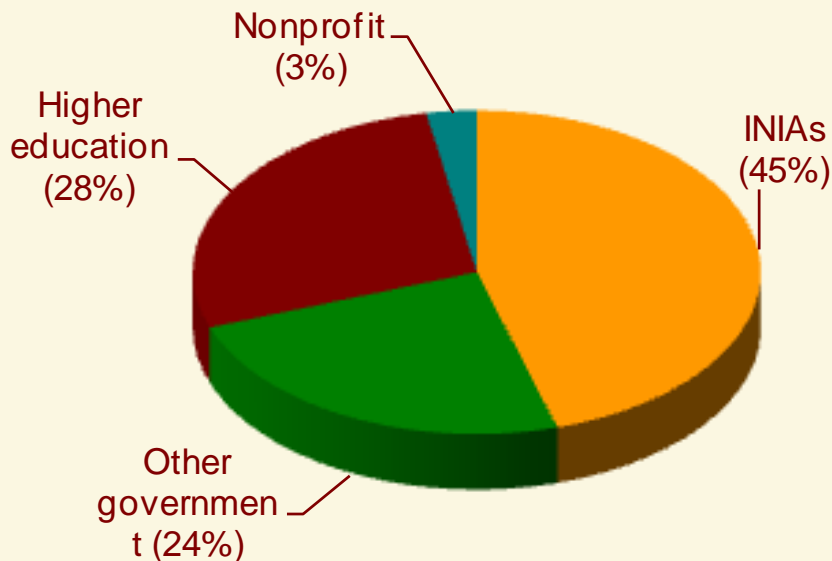


Southern Cone: Argentina, Chile, Paraguay, Uruguay

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

Institutional distribution of public agricultural R&D capacity, 1981 and 2006 (15 countries)

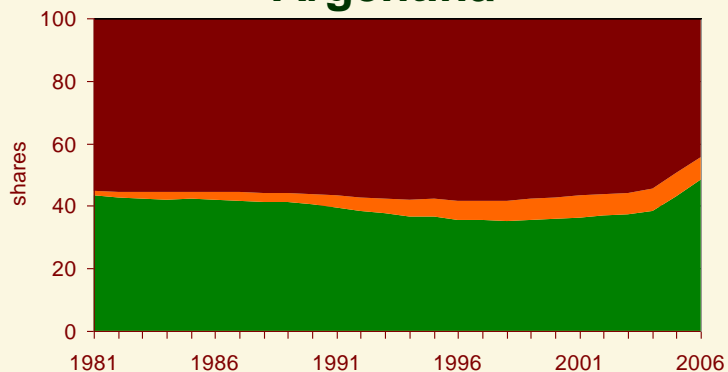
1981



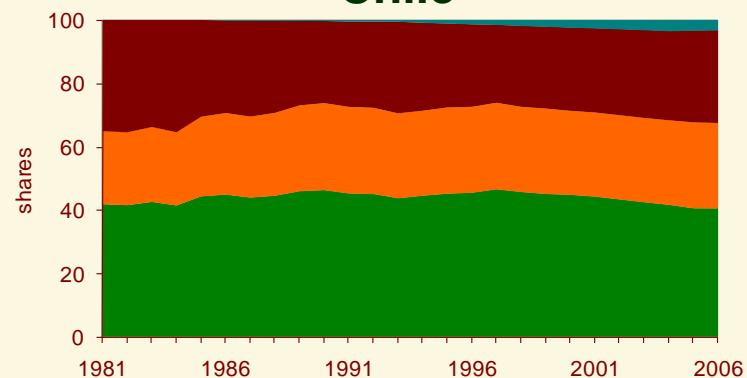
2006

Diversity in institutional distribution across Latin America

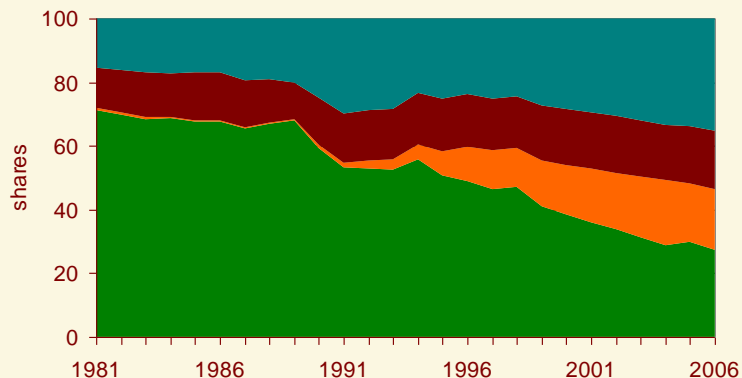
Argentina



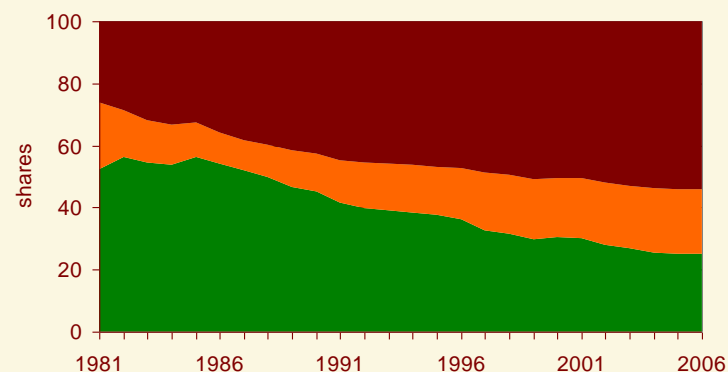
Chile



Colombia



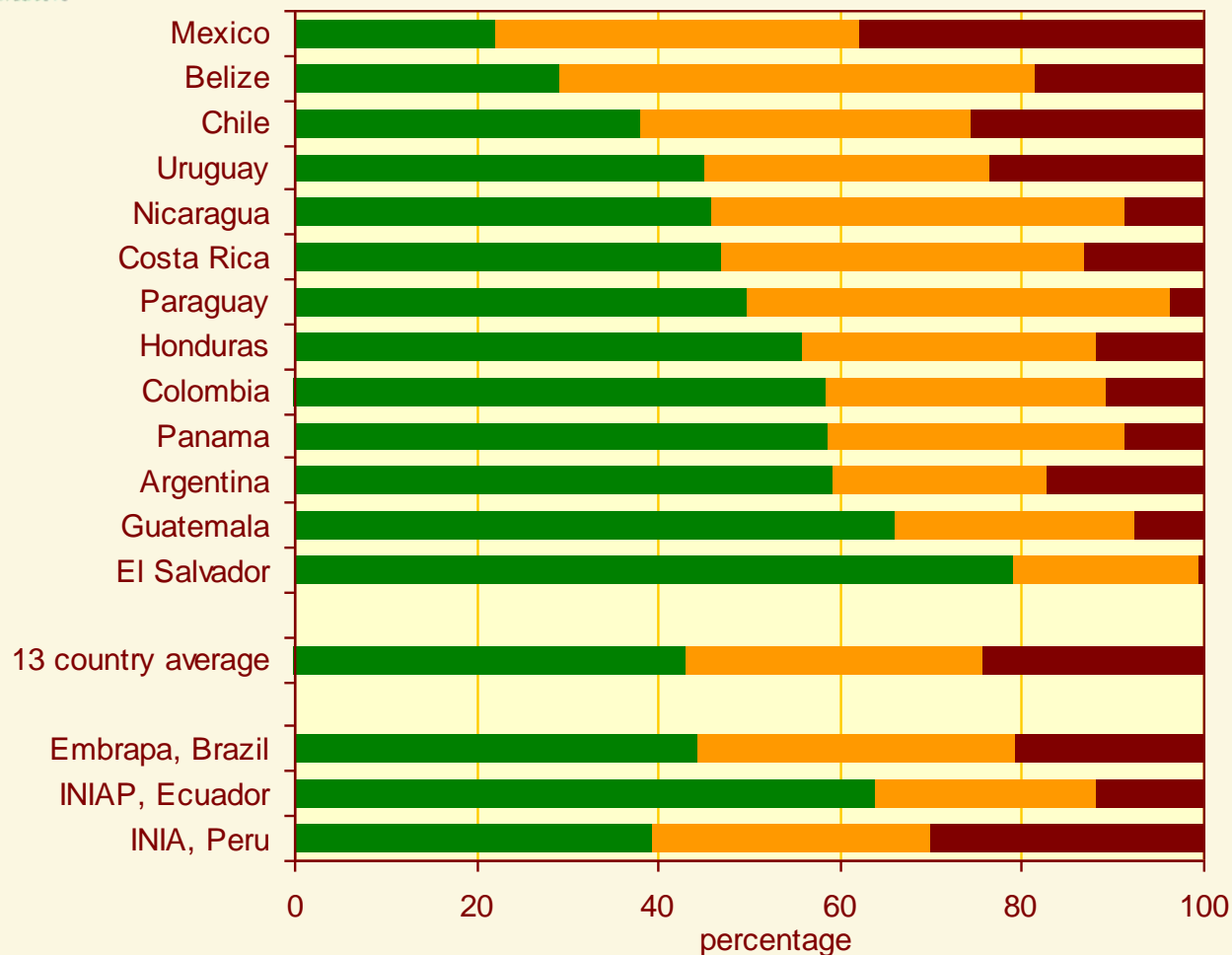
Mexico



■ Main agricultural R&D agency
■ Higher education

■ Other government
■ Nonprofit / Producer organizations

Degree levels of public agricultural researchers, 2006 (13 countries)



Preliminary data:
not for citation

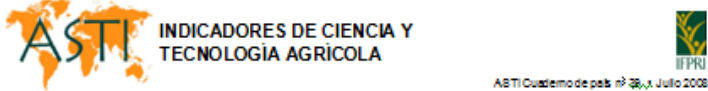
■ BSc/licenciado ■ MSc/maestría ■ PhD/doctorado

Other ASTI indicators

- Gender of research staff (by degree level)
- Support-staff-to-researcher ratios
- Spending by cost categories
- Research focus
 - By general commodity group (crops, livestock, fisheries, forestry, natural resources, postharvest, other)
 - By crop item
 - By livestock item

In summary

- In 2006, the LAC countries combined spent \$3.0 billion (in 2005 constant prices) on public agricultural R&D and employed roughly 19,100 fte researchers.
- Overall, public agricultural R&D spending in LAC remained fairly stagnant during the last decade (1996-2006).
- However, growth has been very uneven across countries, with some countries experiencing rapid increases in agricultural R&D spending and others facing severe cuts.
- Sources of agricultural R&D funding have become increasingly diversified and differ largely from one LAC country to the next.
- The role of the INIAs in agricultural R&D (in terms of capacity) has steadily declined over the past 2.5 decades.
- Important to continue monitoring agricultural R&D investment trends (and not wait until another decade has passed).



COLOMBIA

Por Gert-Jan Stads y Luis Romano

Los datos cuantitativos son importantes para la medición, supervisión, y evaluación comparativa de los insumos, los resultados y el rendimiento de los sistemas de ciencia y tecnología agrícola (C&T). Constituyen una herramienta imprescindible para valorar la contribución de la C&T agrícola al crecimiento de la agricultura y, de forma más amplia, al crecimiento económico. Los indicadores de C&T ayudan a directores de investigación y responsables de políticas a formular políticas y tomar decisiones respecto de la planificación estratégica, la priorización, el monitoreo y la evaluación. Asimismo, proporcionan información al gobierno y demás instituciones (p.ej., institutos de investigación sobre políticas, universidades y sector privado) involucradas en el debate público en torno al estado de la C&T agrícola a escala nacional, regional e internacional. En el presente documento se analizan las principales tendencias institucionales, de inversión y de capacidad en el campo de la investigación agropecuaria pública en Colombia desde 1981, manejando datos recopilados en el marco de la iniciativa Indicadores de Ciencia y Tecnología Agrícola (ASTI) (IFPRI 2007-08).¹ El presente documento aporta datos actualizados importados acerca de las tendencias en el campo de la investigación agropecuaria pública en Colombia publicadas anteriormente por Baintema, Romano y Pardey (2001, 2006).

INTRODUCCIÓN

Colombia es el único país de Sudamérica con litoral en el Caribe y el Pacífico. El país se extiende a ambos lados del ecuador y de los Andes, pasando del nivel del mar a cumbres permanentemente nevadas que alcanzan 6.000 metros de altitud. Esta

Tabla 1.— Composición del gasto en investigación agropecuaria pública y personal de investigación, 2006

Tipo de agencia	Gasto total, 2006		Total de personal de investigación, 2006 (EPTCs)	Porcentaje		Agencias en la investigación (Número)
	2005 pesos colombianos (millones)	2005 dólares internacionales (millones)		Gasto	Personal de investigación (porcentaje)	
CORPOICA	55,6	55,1	272,0	34,7	27,3	1
Ótras agencias gubernamentales	12,5	12,3	190,2	12,6	19,1	6
Asociaciones de productores	53,0	49,0	253,1	34,0	25,3	13
Educación superior ²	21,2	20,9	102,5	15,7	15,3	15
Total	162,7	157,3	728,9	100	100	35

Fuente: Compilado por los autores a partir de datos de la encuesta ASTI (IFPRI 2007-08) y de los sitios web de varias agencias.

¹ Véase en la nota 2 la lista de las 27 agencias incluidas en la muestra.

² El gasto de I+D+D+i de I+D+i se refiere a una estimación basada en el gasto medio por investigador de las otras agencias gubernamentales. El personal empleado en las otras seis agencias gubernamentales equivale a entre el 15 y el 100 por ciento de su tiempo en investigación, es decir 190,7 investigadores ETC.

³ El gasto de CORPOICA, FEDERACAO, FENALCO, VECOL y CEPAV es una estimación basada en el gasto medio por investigador en las asociaciones de productores de diferentes departamentos. El personal empleado en las asociaciones de productores equivale a entre el 20 y el 100 por ciento de su tiempo en investigación, es decir 251,1 investigadores ETC.

⁴ El gasto de las instituciones de educación superior es una estimación basada en el gasto medio por investigador en las agencias gubernamentales. El personal involucrado es el 15 y 75 por ciento de su tiempo en investigación, es decir 154,5 investigadores ETC.

TENDENCIAS CLAVE

- Los porcentajes de CORPOICA en el gasto y la capacidad total de I&D agropecuaria de Colombia ha disminuido progresivamente en las últimas décadas en favor de las asociaciones de productores, otras agencias gubernamentales y las universidades.
- El gasto en I&D agropecuaria de Colombia permaneció estable en el periodo 1994-2002 pero se ha contenido sustancialmente en los últimos años por recortes drásticos en el presupuesto de CORPOICA.
- Más del 90 por ciento de la investigación que realizan las cuatro principales asociaciones de productores está financiado mediante impuestos al consumo aplicados a las exportaciones o a la producción del sector privado. En cambio, CORPOICA recibe más del 75 por ciento de sus fondos del gobierno colombiano.
- El sector privado de Colombia tiene una presencia limitada en I&D agropecuaria si bien juega un papel (indirecto) importante en el financiamiento de I&D.

ACERCA DE ASTI

La iniciativa Indicadores de Ciencia y Tecnología Agrícola (ASTI) reúne a una red de agencias de I&D agropecuaria nacional, regional e internacional y está gestionada por la división Servicio Internacional de Investigación Agropecuaria Nacional (SIENAR) del Instituto Internacional de Investigación en Políticas Alimentarias (IFPRI). La iniciativa ASTI compila, procesa y publica datos comparables a escala internacional sobre acciones e inversiones institucionales en I&D agropecuaria privada y pública en el mundo, y analiza e informa de las tendencias mediante boletines ocasionales de política que sirven para formular políticas de investigación y prioridades.

El financiamiento de las actividades de la iniciativa ASTI en América Latina proviene del Banco Internacional de Desarrollo (BID), el Banco Mundial a través del Grupo Consultivo sobre Investigación Agropecuaria Internacional (CGIAR) y el Instituto Internacional de Investigación en Políticas Alimentarias (IFPRI).

- Regional report and brief for Latin America
- ASTI country briefs for 7 countries
- Sub-regional report for Central America
- Updated datasets and institutional profiles

Internationally comparable data on agricultural R&D investments

[Site Map](#) | [IFPRI Website](#) | [CGIAR Website](#)

ASTI Agricultural Science and Technology Indicators

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ASTI Timeseries Database

The timeseries database provides access to agricultural R&D indicators for developing countries in tabular format
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The ASTI initiative compiles, processes, and makes available data on institutional developments and investments in agricultural R&D worldwide, and analyzes and reports on these trends in the form of periodic policy digests. It entails a large amount of original and on-going survey work focused on developing countries.
[More about the ASTI initiative](#)

Subscribe to ASTI updates

To receive notification by email (2-3 times per year) of new ASTI publications and data sets made available through the ASTI website, [please fill out the form on this page.](#)

Institutional context

The Consultative Group on International Agricultural Research (CGIAR), has been the principal source of internationally comparable data and policy analyses on agricultural research systems for nearly two decades.

ASTI activities are led by the [ISNAR division](#)

Key Publications

Agricultural R&D in the Developing World: Too Little, Too Late?:
(PDF 1.5M)

Agricultural R&D in Sub-Saharan Africa: An Era of Stagnation:
(PDF 479K)

Agricultural Research: A Growing global divide?:
(PDF 358K)
[...more publications](#)

Latest Country Briefs

- Philippines, 2007
(PDF 649K)
- Bangladesh, 2006
(PDF 296K)
- Jordan, 2006
(PDF 266K)
- Nepal, 2006

Muchas gracias