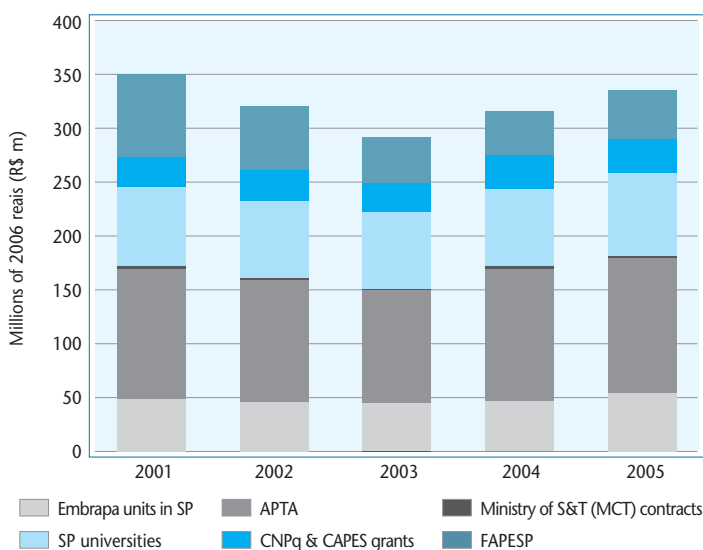


Public expenditure

- Public-sector investment in agricultural S&T in Brazil averaged about R\$1.6 billion per year in the period 2001-05, reaching R\$1.7 billion at the end of the period.
- Public expenditure on S&T in agriculture in São Paulo State averaged R\$321.5 million in the period 2001-05.
- APTA, the São Paulo State Agribusiness Technology Agency, had the largest budget, averaging R\$117.6 million in the period. This exceeded even aggregate investment by Embrapa's five units in the state.

São Paulo State: Public spending on agricultural S&T by type of funding and institution, 2001-05



Source: Embrapa (data supplied by Dept. of Admin.); APTA: 1996-2003 – Gonçalves, Junqueira & Barros Filho (2004). 2004-06 – search in Dept. of Agriculture & Supply (SAA) system, other state agricultural research organisations (OEPAS); MCT contracts: data from federal government's Transparency Portal (www.portaldatransparencia.gov.br); FAPESP (data supplied by FAPESP); CNPq/CAPES grants (respective websites); SP universities: survey of Unicamp (Feagri), ESALQ, USP (FZEA, FMVZ), Unesp (FOA, FMVZ, FCA, FEIS, FCAV), UFSCar (CCA).

- Federal expenditure under Ministry of Science & Technology (MCT) contracts with agricultural research institutions in São Paulo State (and indeed nationwide) rose in the period 1996-2006, totalling R\$49.6 million.
- FAPESP invested almost R\$700 million in the period 1996-2006, with a peak in 1999 (R\$106.1 million). Special Programmes accounted for a large proportion in 1996-99 owing to disbursements totalling R\$144.4 million under the Research Infrastructure Support Programme.
- Agronomy was the agricultural research area in which Fapesp invested most. It received R\$222.6 million in the period, with funding from Special Programmes accounting for 37.9% of projects.
- With regard to post-graduate grants, agrarian sciences accounted for 13%-15% of total disbursements by CAPES and CNPq nationwide in the period 2001-05.
- The budgets of agricultural colleges and agrarian research centres totalled R\$180.1 million in 1996 and R\$276.2 million in 2006, for growth of 53.3%.

Private expenditure

- Private-sector expenditure on agricultural ST&I is estimated to have averaged R\$1.5 billion between 2001 and 2005.
- According to PINTEC 2005, IBGE's survey of technological innovation in industry, expenditure on innovation activities linked to agribusiness totalled some R\$5.7 billion.
- Expenditure on innovation activities linked to agribusiness in Brazil have remained fairly stable.
- FINEP, the federal innovation agency, financed some R\$3.9 billion in the period 1996-2006, with agribusiness firms accounting for R\$782.1 million.
- São Paulo received more FINEP funds than any other state, accounting for 32.3% of the total and for 39.9% of agribusiness financing.

Development of human resources for S&T

- In 2006 there were 72 technical courses in agrarian sciences in São Paulo State. Most were in the administrative regions of Marília, São José do Rio Preto, Sorocaba and Presidente Prudente.
- Metropolitan São Paulo had no such courses in 2006. The Campinas administrative region had five.
- São Paulo State offered 123 undergraduate courses in agrarian sciences and related areas in 2006, according to the Ministry of Education. These courses accounted for 1.2% of the total number of courses in the state.
- The city with the most courses in São Paulo State was the state capital, with 12 undergraduate courses on offer.
- Most first degrees in agrarian sciences were received by students who graduated from private higher education institutions (65.0%), followed by state universities (32.1%). Federal universities in the state accounted for an insignificant proportion of students in this knowledge area (1.5%).

São Paulo State: Graduates from first-degree tertiary courses in agrarian sciences and all other knowledge areas in aggregate, 1998-2006

Year	Agrarian sciences	Total
1998	11,245	678,198
1999	12,121	740,113
2000	12,988	818,304
2001	14,240	898,643
2002	14,607	988,696
2003	15,588	1,050,054
2004	16,018	1,109,693
2005	17,682	1,185,028
2006	19,204	1,268,976
Total	133,693	8,737,705

Source: Ministry of Education (MEC), INEP 2008

- In 2006 there were 59 post-graduate programmes in agrarian sciences in São Paulo State, offered by nine institutions. USP offered the most.

Economic impact of agricultural R&D

- In the period 1995-2006, total factor productivity in agriculture (crop and beef cattle production) rose 2.5% per annum, reaching an index of 134.4.

- Agriculture displayed slightly slower growth in productivity, with an index of 130.7 in 2006.

São Paulo State: Partial & total factor productivity in agriculture, 1995-2006

	Crops		Beef cattle		Total (crops & cattle)	
	TFP ¹	Land	Land	TFP ¹	Labour	
1995	100.0	100.0	100.0	100.0	100.0	100.0
1996	102.6	106.7	106.8	103.3	103.3	103.3
1997	108.1	111.6	113.6	110.5	113.2	113.2
1998	110.7	113.0	116.6	111.6	108.1	108.1
1999	116.1	113.6	121.5	117.1	112.6	112.6
2000	109.3	110.5	124.7	112.3	105.9	105.9
2001	115.7	111.9	124.2	118.7	120.5	120.5
2002	121.4	117.2	132.2	124.7	130.2	130.2
2003	120.5	112.7	134.7	125.2	140.7	140.7
2004	123.0	113.3	135.9	127.1	153.7	153.7
2005	124.3	110.9	138.9	129.0	155.6	155.6
2006	130.7	117.1	142.2	134.4	162.7	162.7

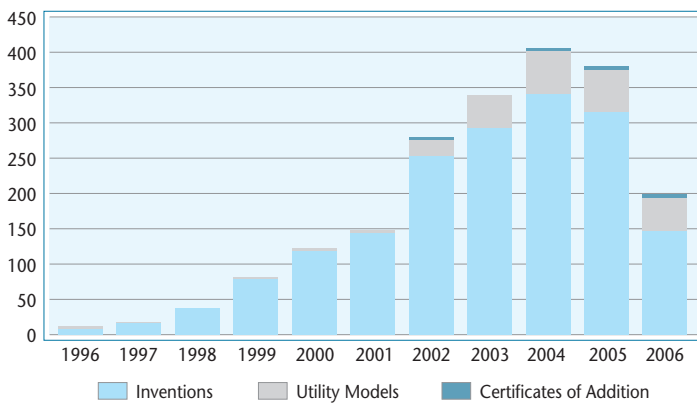
Source: APTA/IEA.

Note: ¹ TFP = total factor productivity (land, labour, fertiliser, agrochemicals, tractors).

Patents

- USPTO statistics show 43 patent applications for agricultural processes filed by researchers resident in Brazil and seven filings by organisations present in Brazil between 1996 and 2006, corresponding respectively to 2.4% and 3.7% of total Brazilian USPTO filings in the period.
- Over half the USPTO patent applications originating in Brazil in the period 1996-2006 were filed by institutions located in São Paulo.

Brazil: Agricultural patent applications filed with INPI, 1996-2005

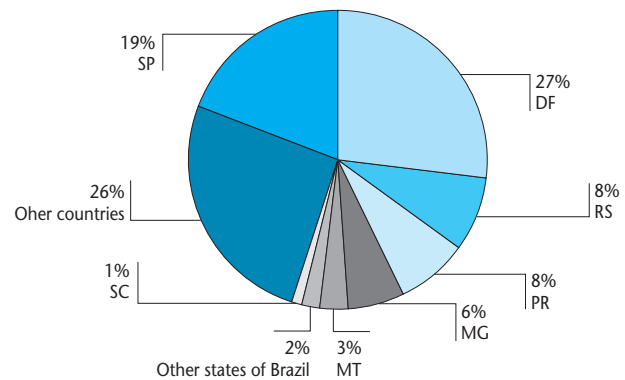


Source: INPI

- Patents held by non-residents account for 73% of the USPTO filings originating in Brazil.
- The number of agricultural patent applications filed with INPI rose from 11 to 409 between 1996 and 2004, increasing by a factor of 37.2.
- Residents filed 1,006 patent applications with INPI in the period. Of these, 40% were filed by residents of São Paulo State.

- Farm implements account for the largest proportion of agricultural patent applications by Brazilian firms.

Brazil: Origin of protected cultivar owners by state, 2008



Source: Ministry of Agriculture/SNPC (National Cultivar Protection Service).

Protection of cultivars

- In 2007, 43 crop species were protected in Brazil, corresponding to 1,073 cultivars. The main crops were soybeans (399), wheat (84), sugarcane (72), roses (67), and cotton (61).
- Plant breeders domiciled in Brazil held the rights to 74.1% of protected cultivars.

Scientific production

- The number of complete articles in the agrarian sciences published in Brazil rose 256% in the period 2000-06, according to the CNPq Research Group Directory, while the number published internationally rose 300%.
- In human resource development, the number of post-graduates also grew significantly in the period, with doctoral theses rising 224% and master's dissertations rising 172%.
- Researchers in agrarian sciences based in São Paulo State published 890 articles indexed by the Web of Science database between 1996 and 2006, with a steadily rising curve and a sharp peak in 2005.
- Only 13.8% of the 890 articles by researchers in São Paulo State indexed by the Web of Science were published in journals not indexed by CAPES's Qualis database. A large majority of these (71.2%) were published in journals classified as Qualis A International.

Competencies

- The CNPq Research Group Directory listed 802 agrarian science research groups in 1993 and 2,041 in the 2006 Census, for growth of 154.5%.
- The fastest growth was in veterinary medicine (more than 207%). Agrarian sciences groups accounted for 9.7% of the total registered by the CNPq Research Group Directory in 2006.
- São Paulo State was the base for 22.6% of agrarian science groups, 41.9% of researchers, 21.3% of students and 27% of technicians in the 2006 Census. This shows the importance of the state in the field of agricultural research.