



Situation of Agricultural Engineering R&D in Sri Lanka

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Introduction

- Agriculture plays a dominant role in economy.
- Agriculture contribution to the GDP declining.
- Agriculture is not considered as a profitable business.
- Mechanization is not considered as a priority area.



Agriculture Policy

- Transformation of subsistence agriculture in to a profitable commercial venture.
- Diversification, market orientation, modernization and profitable agro based industries.
- Incentives for agriculture.
- Social security for the farmer.



Mechanization Policy

1. Mechanize and manage agriculture to improve profitability of agriculture.
2. Encourage primary processing and value addition at farm level.
3. Promote the formation of agricultural machinery manufacturers and suppliers association.
4. Promote private sector to actively engaged in other economic activities in the rural sector.



Strategies for Policy Statement 1

- Establish a reliable and accurate database on status of agricultural machinery.
- Define standards for all mechanization inputs to assure quality and farmer protection.
- Allow importation of machinery meeting the specified standards.
- Protect local manufacturing industry by introducing protective tariff system.



Strategies for Policy Statement 2

- Provide incentives to private sector in introducing new technology for sorting, grading and handling at farm level.
- Organize farmers in to collective action and to pool their resources.
- Introduce group credit systems.
- Promotion of Agri business insurance.



Strategies for Policy Statement 3

- Encourage supplier of agricultural machinery to train the end users.
- Provide vocational training to agricultural machinery repair and service personnel.
- Establish Sri Lanka Agricultural Technology Secretariat (SLATS)



Strategies for Policy Statement 4

- Granting tax concessions to those generating rural economic activities.
- Improve rural infrastructure facilities.



The Overall Situation of R&D in the country

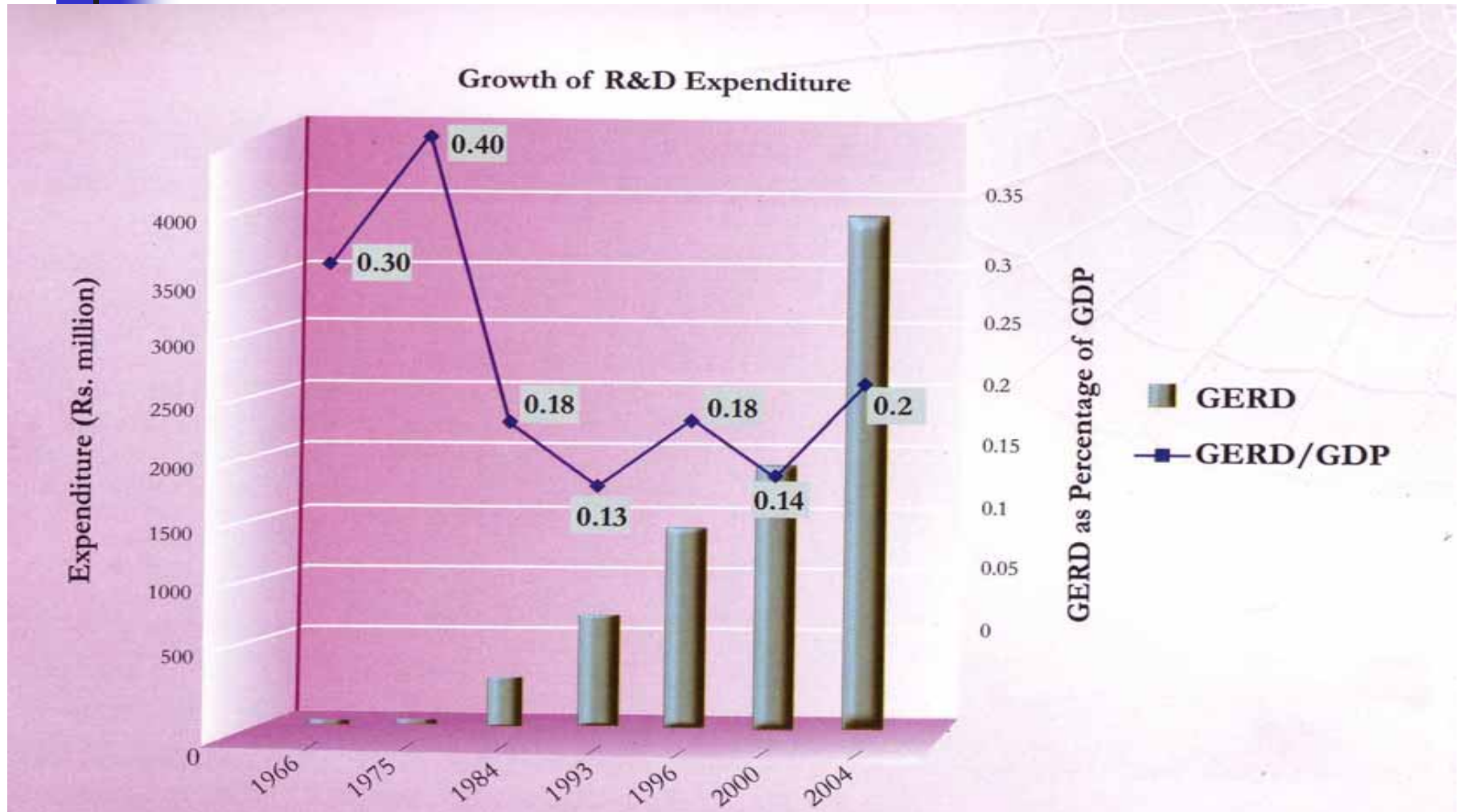
Financial Resources for
Research & Development

The Total Expenditure on R&D

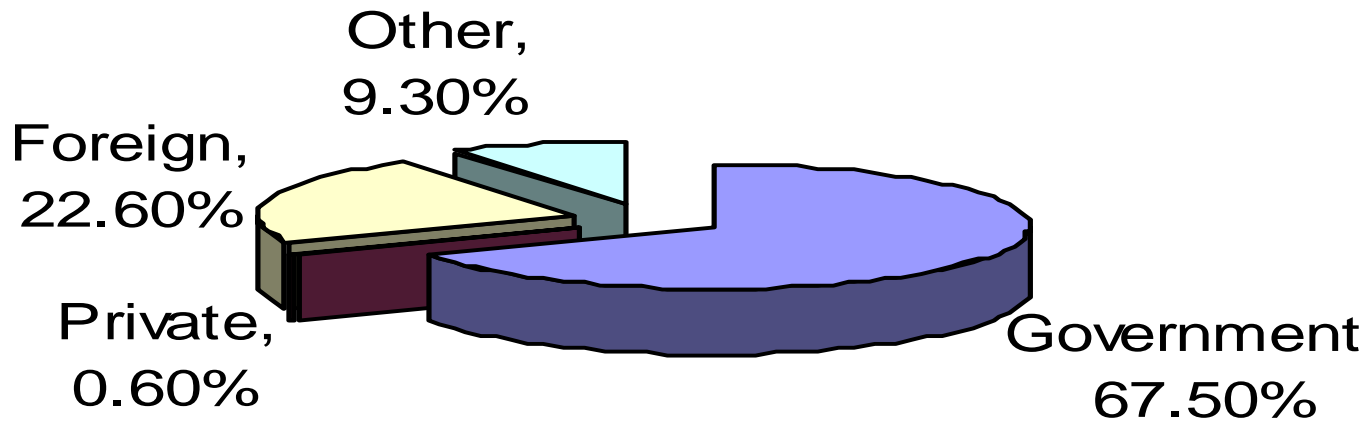
Year	GDP Current Prices Rs. million	GERD Rs. Million (US\$)	GERD as Percent of GDP	Total Population million	GERD per Million Population Rs.
1966	7,529	20 (4.2)	0.30	11.5	1.7
1975	11,100	45 (6.4)	0.40	13.5	3.3
1984	142,700	257 (9.7)	0.18	15.6	16.5
1993	49,800	649 (13.1)	0.13*	17.6	36.8
1996	769,900	1,410 (23)	0.18	18.3	77.0
2000	1,258,000	1,810 (22.9)	0.14*	18.4	98.4
2004	1,800,750	3,807 (40.9)	0.20	19.4	196.2

GERD – Gross Expenditure on R&D

Growth of R&D Expenditure



National Expenditure on R&D by Source of Funding



National R&D Expenditure by Sector of Performance

Sector	1984			1996			2004		
	Recurrent	Capital	Total	Recurrent	Capital	Total	Recurrent	Capital	Total
Higher Education	14.6	1.6	16.2 (6.3%)	299.3	58.4	357.7 (25.4%)	1,150.0	127.6	1,277.6 (33.5%)
State	143.8	72.5	216.3 (84.3%)	827.2	203.2	1,030.4 (73.1%)	1,319.0	1,001.2	2,321.1 (61.0%)
Private	15.9	8.3	24.2 (9.4%)	3.0	18.5	21.5 (1.5%)	132.4	76.4	208.8 (5.5%)
Total	174.3 (67.9%)	82.4 (32.1%)	256.7 (100.0%)	1,129.5 (80.1%)	280.1 (19.9%)	1,409.6 (100.0%)	2,602.3 (68.3%)	1,205.2 (31.7%)	3,807.5 (100.0%)



The Overall Situation of R&D in the country

Human Resources in
Science and Technology

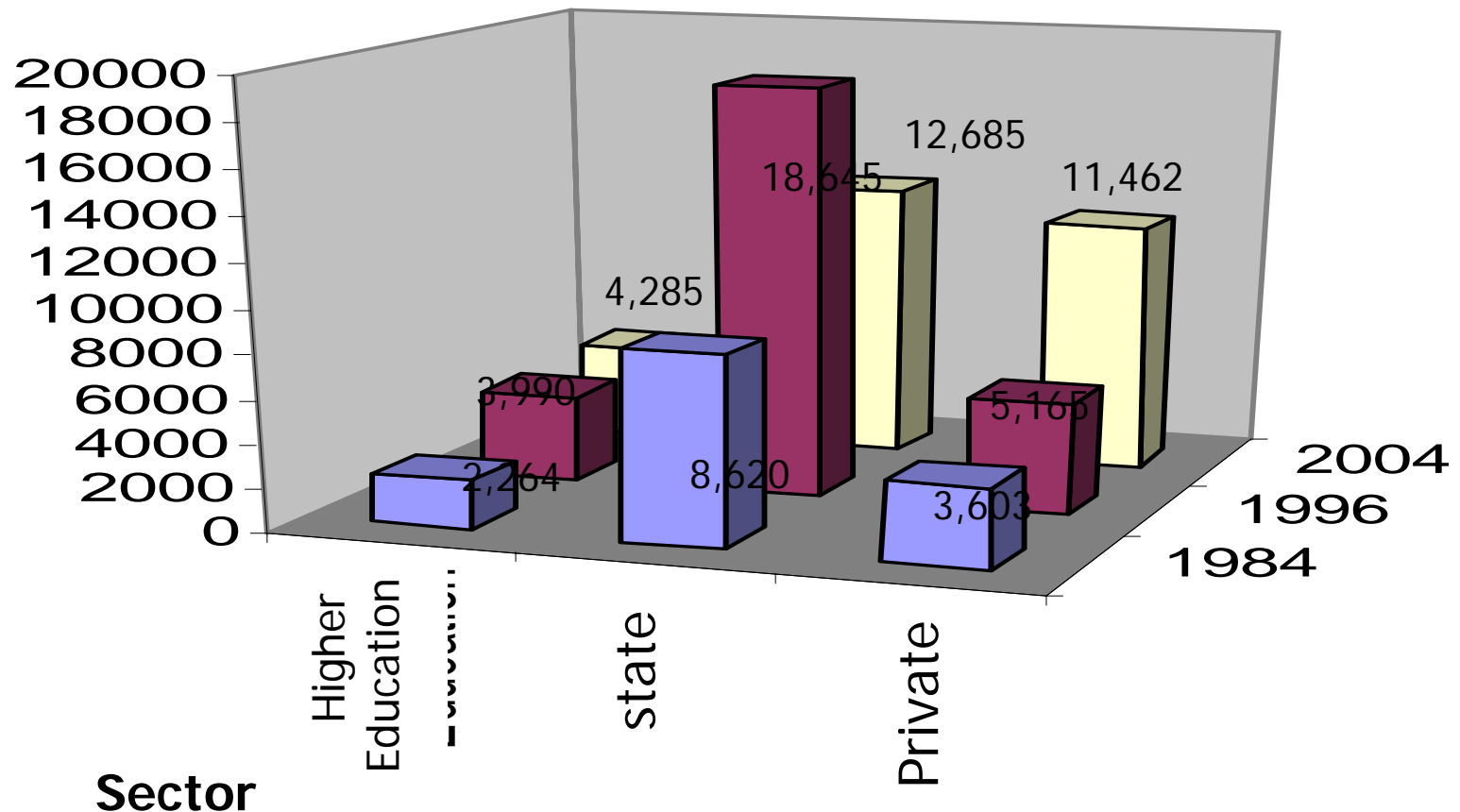
Science & Technology Personnel by Category

STP Category	1996			2004		
	Total Number	Per cent of STP	Per Million inhabitants	Total Number	Per cent of STP	Per Million inhabitants
Scientist	13,286	48.7	726	9,746	34.3	502
Technicians	14,514*	52.2*	793*	12,302	43.3	634
Other Supporting Staff				6,384	22.5	329
STP	27,800	100.0	1,519	28,432	100.0	1,465

Distribution of Science & Technology Personnel by Sector

Sector	1984		1996		2004	
	STP	Percent	STP	Percent	STP	Percent
Higher Education	2,264	15.6	3,990	14.3	4,285	15.1
State	8,620	59.5	18,645	67.1	12,685	44.6
Private	3,603	24.9	5,165	18.6	11,462	40.3
Total	14,487	100.0	27,800	100.0	28,432	100.0

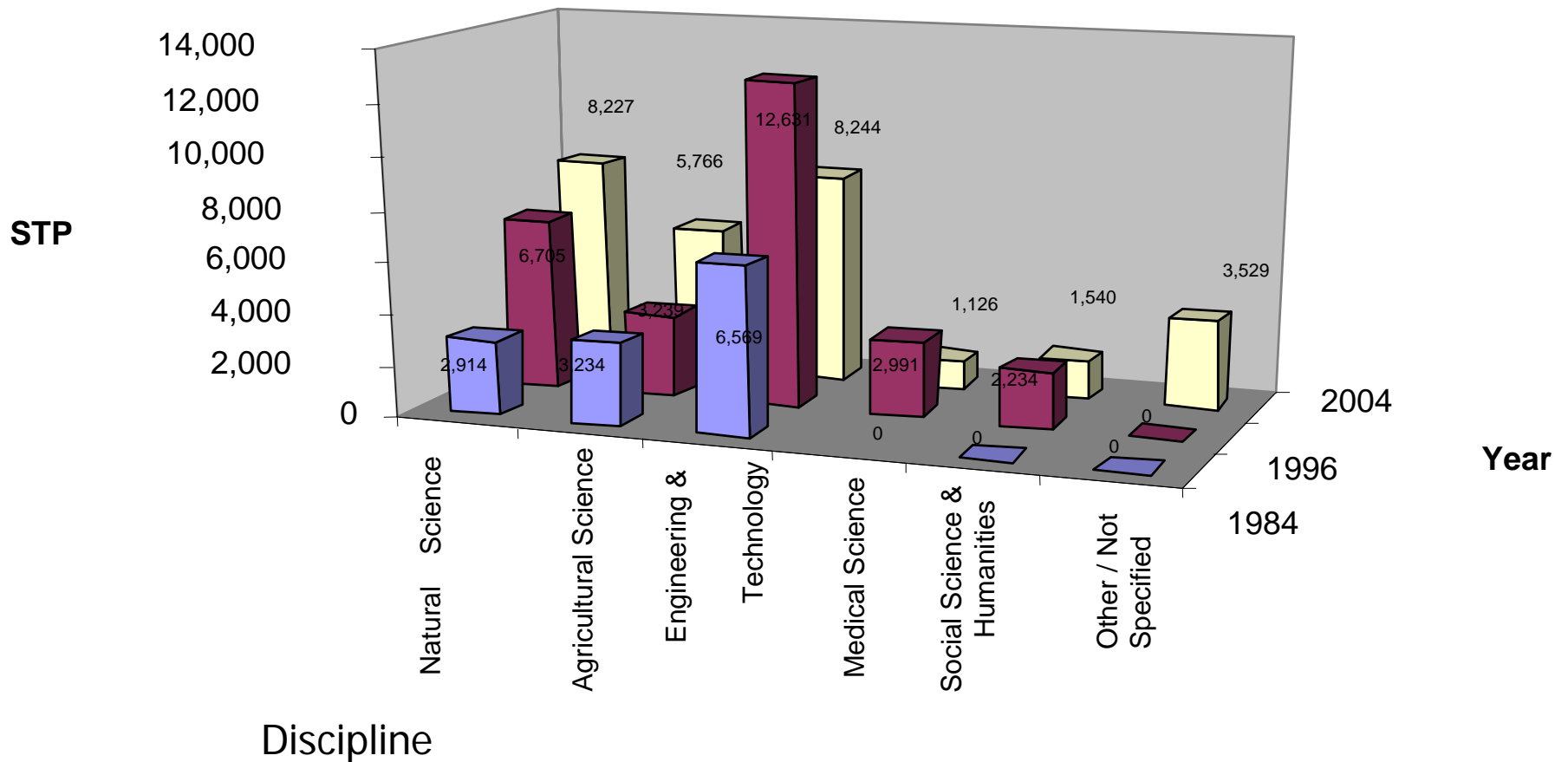
Distribution of Science & Technology Personnel by Sector



Distribution of Science & Technology Personnel by Disciplines

Discipline	1984		1996		2004	
	No	%	No	%	No	%
Natural Science	2,914	20.1	6,705	24.1	8,227	28.9
Agricultural Science	3,234	22.3	3,239	11.7	5,766	20.3
Engineering & Technology	6,569	45.4	12,631	45.4	8,244	29.0
Medical Science	-	1.3	2,991	10.8	1,126	4.0
Social Science & Humanities	190,1580	10.9	2,234	8.0	1,540	5.4
Other / Not Specified	-	-	-	-	3,529	12.4
Total	14,487	100.0	27,800	100.0	28,432	100.0

Distribution of Science & Technology Personnel by Disciplines



Distribution of R&D Scientist by Sector

Sector	1996				2004			
	Scientist		Technicians		Scientist		Technicians	
	No	%	No	%	No	%	No	%
Higher Education	3,993	66.9	402	40.2	2,920	62.3	622	30.6
State	1,916	32.2	533	53.4	1,413	31.9	1,045	51.3
Private & NGO	56	0.9	64	6.4	269	5.8	369	18.1
Total	5,965	100.0	999	100.0	4,602	100.0	2,034	100.0



Institutions Engaged in Agri Engineering R&D

- Farm Mechanization Research Centre (FMRC)
- Institute of Post Harvest Technology (IPHT)
- National Engineering Research and Development Centre (NERD)
- Universities
- Private Sector



Farm Mechanization Research Centre (FMRC)

Main Functions:

- Identify constrains and bottlenecks of mechanization
- Select and Test implements.
- Modify and adapt promising implements.
- Industrial / Agricultural Extension
- Coordination of National Farm Mechanization Committee (NFMC) Activities.



Allocations of DOA in 2005

Heading	Recurrent Expenditure Rs. million	Capital Expenditure Rs. million	Total	Percentage
General Administration	114.5	52.7	167.2	14.5
Agricultural Research & Development	385.8	48.3	434.1	37.5
Extension & Training	271.0	47.0	318.0	27.5
Seed Certification	158.0	77.0	235.0	20.37
Farm Machinery Research	0.75	0.8	1.55	0.13



Staff Position of DOA 2005

- Research Officers (Agronomy) 189
- Agricultural Extensional Officers 82
- Farm Machinery Research Engineers 03

(1.09% of the total research force)



Total Staff Position in 2006

Category	Number
Research Engineers	03
Agronomist	00
Technical Staff	07
Technical Supporting Staff	35
Minor Staff	08



Institute of Post Harvest Technology (IPHT)

Main Functions:

- Prevent Post Harvest losses
- Prevent the deterioration in quality by improper handling.
- Prevent the nutritional losses.
- Improve farm level storage and preservation facilities
- Introduce improved labour saving post harvest techniques.
- Promote viable rural agro base industries in to commercial scale.
- Popularize the use of foods.



Staff Position in 2006

Category	Number
Administration	05
Researchers (Agronomy)	11
Researchers (Agri. Eng.)	06
Extension Officers	02
Technical Staff	13
Others	50



Funds Allocated in 2006

- Capital - Rs. 8.0 millions
- Recurrent - Rs. 41.0 millions
- Total - RS. 49.0 millions
- 0.5 millions (US\$)

The funds allocated and the staff positions of the IPHT is comparatively large but only a fraction of the resources are being used in Research and Development in Agricultural Engineering.



National Engineering Research & Development Centre (NERD)

Main Functions:

- R&D on Biogas
- R&D on Civil Engineering Activities
- R&D on Electrical Engineering Activities
- R&D on Environment and Energy Management
- R&D on Agricultural & Post Harvest Technology



Funds Allocated in 2006

- Capital - Rs. 68 millions
- Recurrent - Rs. 39 millios
- Total - Rs. 107 millions

Total Allocation for Agricultural
Engineering Research - Rs. 01 million
(less than 01% of the total allocation)



Staff Position in 2006

- Total research engineers - 45
- Engineers for Agricultural Engineering Research - 03

(6.66% of the total research force)



Universities

The contribution from the universities for applied research is not significant. Universities carry out only academic research which helps to develop science, as a part of student's projects. There is a hardly anything in practical use.



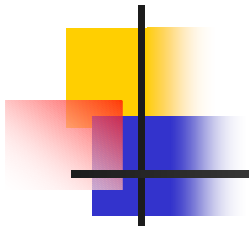
Private Sector

Private sector is very much concerned on profit. Their allocation and contribution in Research and Development is not significant.



Conclusion

The funds and manpower allocated to R&D of Agricultural Engineering is not sufficient with compared to other fields. Hence it is very important to convince the policy makers to pay more attention to this field to get the maximum benefit of Farm Mechanization.



Thank You!